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Лексично-граматичний практикум з англійської мови за професійним спрямуванням

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Практикум

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Практикум сформовано відповідно до Програми з англійської мови з урахуванням досвіду викладачів кафедри іноземних мов. Практикум охоплює теоретичний і практичний матеріал усіх основних розділів курсу вивчення англійської мови за професійним спрямуванням і передбачає різні за функціональним призначенням завдання. Практикум має два розділи, де у першому подано граматичний матеріал з різними завданнями, а другий містить професійноорієнтовані тексти за спеціальностями, з яких готують фахівців у ВНТУ, із завданнями.

Призначено для студентів усіх курсів усіх спеціальностей, а також для використання їх викладачами під час занять зі студентами як денної, так і заочної форм навчання.

УДК 811.111'36'276.6

ЗМІСТ

SECTION I. ENGLISH GRAMMAR IN USE

1.   Видо-часові форми активного стану дієслова

Дієслово в англійській мові має чотири групи часових форм: Simple (Indefenite) Tenses (прості (неозначені) часи), Continuous Tenses (тривалі часи), Perfect Tenses (доконані часи) та Perfect Continuous Tenses (доконано-тривалі часи). У кожній групі дієслова вживаються у теперішньому (Present), минулому (Past) та майбутньому (Future) часах, а також в активному (Active Voice) та пасивному станах (Passive Voice).

1.1. Неозначені часи (INDEFINITE TENSES)

Неозначені часи вживаються для вираження дії, що відбувається в теперішньому, минулому чи майбутньому часі, але не вказують на її характер, тривалість, завершеність чи передування іншій дії або певному моменту в минулому чи майбутньому. Дієслова в неозначеному часі можуть перекладатися українською мовою дієсловами доконаного й недоконаного виду.

Час	Запитальне речення		Стверджувальне речення		Заперечне речення	
минулий	Did	I You We He She It They live?	I You We He She It They lived.		I You We He She It They live.	did not
теперішній	Do Does	I You We They He She It live?	I You We They live. He She It lives.		I You We They live. He She It	do not does not live.
майбутній	Will	I You We He She It They live?	I You We He She It They will live.		I You We He She It They will not live?

4

ТЕПЕРІШНІЙ НЕОЗНАЧЕНИЙ ЧАС
(THE PRESENT SIMPLE TENSE)

Теперішній неозначений час вживається для опису регулярної дії чи постійного стану. При цьому можуть називатися такі обставини часу: *always, often, usually, every, sometimes, seldom, rarely, never.* Стверджувальна форма теперішнього неозначеного часу утворюється таким чином:

$$I/you/we/they + V1 \qquad He/she/it + V_s$$

Заперечні та питальні речення теперішнього неозначеного часу утворюються з використанням допоміжних дієслів do та does (і частки not у заперечних реченнях), при цьому основне дієслово в 3-й особі однини закінчення -s не має.

$$I/you/we/they + do\ not\ (don't\ ) + V_1$$
$$He/she/it + does\ not\ (doesn't\ ) + V_1$$
$$Do + I/you/we/they + V_1?\ -Yes,\ I/you/we/they\ do.$$
$$No,\ I/you/we/they\ don't.$$
$$Does + he/she/it + V_1?\ -\ Yes,\ he/she/it\ does.\ No,\ he/she/it\ doesn't.$$

Наприклад:
They always go shopping on Fridays.
They don't always go shopping on Fridays
Do they always go shopping on Fridays? – Yes, they do / No, they don't
Frank knows his brother.
Frank doesn't know his brother.
Does Frank know his brother? – Yes, he does / No, he doesn't.

МИНУЛИЙ НЕОЗНАЧЕНИЙ ЧАС
(THE PAST SIMPLE TENSE)

Минулий неозначений час (The Past Simple Tense) вживається для повідомлення про регулярно повторювані у минулому дії, а також для опису послідовності дій, що відбувались у минулому. При цьому можуть вживатися такі обставини часу: *yesterday, last week (month, year), three days ago.*

У минулому неозначеному часі до основи правильних дієслів додається закінчення -ed: walk – walk**ed**, clean – clean**ed**. Неправильні дієслова мають спеціальні форми минулого часу: *buy – bought, meet –* met, speak – spoke і т.д. Стверджувальна форма минулого неозначеного часу утворюється так:

$$I/you/he/she/it/we/they + V_2\ (Ved)$$

Наприклад:
*We **worked** in the garden yesterday. He **sent** me an e–mail letter an hour ago.*

Утворюючи форму минулого неозначеного часу для правильних дієслів, варто дотримуватись таких правил правопису.

1) Якщо основа дієслова закінчується на –е, додається тільки –d:

*liv**e** – liv**ed**,* sav**e** – sav**ed**

2) Якщо основа дієслова закінчується на приголосний з попереднім наголошеним голосним, кінцевий приголосний подвоюється й додається –ed:

*stop – stopp**ed**, prefer – preferr**ed***

3) Якщо основа дієслова закінчується на –y з попереднім приголосним, то –y змінюється на –i й додається –ed:

study – stud**ied**, fry – fr**ied**

4) Якщо основа дієслова закінчується на –y з попереднім голосним, то додається –ed:

stay – stay**ed**, *enjoy* – enjoy**ed**

5) Якщо основа дієслова закінчується на –l, то з додаванням закінчення –ed цей приголосний подвоюється:

travel – trave**lled**

Форми минулого часу для дієслова *to be* – для **I/he/she/it – was**,

для **you/we/they – were**

Заперечна форма минулого неозначеного часу утворюється додаванням допоміжного дієслова ***did** із заперечною часткою **not** до* основного дієслова без закінчення –ed (для правильних дієслів) або в першій формі (для неправильних дієслів).

I/you/he/she/it/we/they + did not (didn't) + V$_1$

Наприклад:

She ***didn't clean** the house yesterday.*

*You **didn't go** to the swimming pool last Friday.*

Якщо в реченнях присудком є одна з форм дієслова **to be**, заперечна форма таких речень утворюється за допомогою саме цього дієслова.

1/he/she/it + was not (wasn't). You/we/they + were not (weren't)

He ***wasn't** at home yesterday evening.*

*We **weren't satisfied** with the results of the work.*

Для утворення питальної форми минулого неозначеного часу (загальних питань) допоміжне дієслово **did** ставиться на початку речення перед підметом, причому основне дієслово вживається без **–ed** або у першій формі.

Did + I/you/he/she/it/we/they + V$_1$?

Складаючи спеціальне запитання у минулому неозначеному часі, слова розташовують у такому порядку: питальне слово (*Wh–word*), допоміжне дієслово *did,* підмет, основне дієслово в першій формі або без закінчення –ed.

Wh–word + did I/you/he/she/it/we/they + V$_1$?

Для вираження дій, які були звичними і часто відбувались у минулому, але більше не відбуваються, вживається структура *used to: She used to live in a small flat but now she lives in a big house.*

Питальна та заперечна форми речень з цією структурою утворюються з використанням допоміжного дієслова **did**, причому основне дієслово вживається без **-ed** або в першій формі:

Did Martin use to have a pet?

Якщо йдеться про звички в минулому, яких більше немає, вживається як минулий неозначений час, так і структура **used to** без різниці у значенні:

Mary worked/used to work as a nurse.

Але **used to** не вживається у випадках, коли йдеться про події, що відбувались у певний час у минулому.

Правильно: *They went shopping yesterday.*

Неправильно: *They used to go shopping yesterday.*

МАЙБУТНІЙ НЕОЗНАЧЕНИЙ ЧАС
(THE FUTURE SIMPLE TENSE)

Майбутній неозначений час (the Future Simple Tense) вживається для вираження дій та подій у майбутньому. Майбутній неозначений час утворюється з використанням допоміжного дієслова *will* та без частки *to*.

Обставини часу: *tomorrow, next week (month), in a week (month).*

I/you/he/she/it/we/they + will + V₁

I/you/he/she/it/we/they + will not (won't) + V₁

Will + I/you/he/she/it/we/they + V₁? –Yes, I/he/... will. (No, I/he/... won't.)

EXERCISE 1. Make up the sentences using the verbs in the correct form.

1) Henry / advice / parents / for / always / his / ask. 2) sick / A / care / of / people / take / nurse. 3) hotel / excellent / provide / service / This. 4) often / from / Jane / friends / massages / receive / her. 5) little / daughter / of / sometimes / Her / headaches / complain. 6) move / The / Earth / Moon / the / around. 7) uncle / in / city / run / the / Her / small / center / a / the / shop / of. 8) computer / attend / times / Steve / a / courses / week / three. 9) interesting / article / facts / contain / This / some. 10) friends / mountains / often / My / in / holidays / the / spend / winter / their.

EXERCISE 2. Make the sentences negative and interrogative.

1) Jack finishes his work at six o'clock in the evening. 2) You enjoy skating, in winter. 3) His parents spend most of the weekends in the cottage house. 4) Sheila often exhibits her pictures. 5) I always discuss my problems with my friend. 6) Ron and Mark take part in different research projects. 7) This train arrives in the morning. 8) Students pass their final exams in summer. 9) The festival takes place every autumn. 10) Vegetables contain many vitamins.

EXERCISE 3. Put the verbs in brackets into the correct form.

1) – ... you ... *(to live)* in this house?
   – No, I .... I ... *(to live)* in the next house. My cousin ... *(to live)* in this house.

2) – ... Kate ... *(to study)* at university?
   – No, she ... She ... *(to work)* in the university library.

3) – ... your brother ... *(to drive)* a car well?

– Well, he ... *(not to drive)* a car well, but he ... *(to take)* driving lessons every week.

4) – ... you ... *(often to meet)* Sue?

– Unfortunately, we ... *(not to see)* each other very often. We sometimes ... *(to go)* to the cinema together.

5) – ... this clock ... *(to show)* the correct time?

– Yes, it ... By the way, all the clocks in our house ... *(to show)* the correct time.

6) – ... it... *(to take)* you much time to do the shopping?

– Oh, I sometimes ... *(to spend)* the whole day in search of the goods I ... *(to need)*.

7) – ... your children ... *(to attend)* any sport club?

– Of course, they .... My son ... *(to play)* volleyball and he ... *(to have)* trainings four times a week and my daughter ... *(to go)* figure skating.

EXERCISE 4. Put the verbs in brackets into the correct form.
Vitamins

Your body ... *(to be)* one powerful machine, capable of doing all sorts of things by itself. But one thing it can't do is make vitamins. Your body ... *(to get)* vitamins it ... *(to need)* from the foods you ... *(to eat)* because different foods ... *(to contain)* different vitamins. Though some people ... *(to take)* a daily vitamin, most of them ... *(not to need)* one if they ... *(to eat)* a variety of healthy food.

Vitamins ... *(to be)* substances that your body ... *(to need)* to grow and develop normally. There ... *(to be)* 13 vitamins your body ... *(to need)*. Each vitamin ... *(to have)* specific jobs. If you ... *(to have)* low levels of certain vitamins, you ... *(to develop)* a deficiency disease. For example, if you ... *(not to get)* enough vitamin D, you might develop rickets. Some vitamins ... *(to help)* you to prevent medical problems. Vitamin A... *(to prevent)* night blindness.

The best way to get enough vitamins is to have a balanced diet with a variety of foods. In some cases you ... *(to need)* to take a daily multivitamin for optimal health. However, high doses of some vitamins ... *(to lead)* to health problems too.

EXERCISE 5. Translate into English.

1) Моя бабуся завжди купує хліб у цьому магазині. 2) Його брат не часто їздить у відрядження за кордон. 3) Ти знаєш час прибуття цього поїзда? – Так, цей поїзд прибуває о десятій ранку. 4) Ти часто зустрічаєшся зі своєю двоюрідною сестрою? – Ні. Ми іноді запрошуємо одна одну повечеряти разом. 5) Влітку ви відпочиваєте на морі? – Незавжди. Влітку на морі дуже спекотно, а моїм батькам не подобається така погода. Вони часто проводять відпустку у горах. 6) Ваша сестра завжди зупиняється у цьому готелі? – Так, їй подобається цей готель. Цей готель надає всі види послуг для чудового відпочинку. 7) Ви знаєте іспанську? – На жаль, ні. Я

трохи знаю італійську. 8) Телефон працює? – Так. 9) Я хочу поговорити з вашим братом. – На жаль, його зараз немає вдома. Він зазвичай приходить додому о сьомій вечора. 10) Ти знаєш Майка? Він працює в цьому офісі.

EXERCISE 6. Write questions to the sentences using the question words in brackets.

1) Sandra sometimes prepares pizza for her family. *(Who? What?)* 2) The Parkers often spend weekends in their cottage house in summer. *(Who? Where? When?)* 3) His sister speaks two foreign languages. *(Whose? How many?)* 4) You usually take a shower in the morning. *(Who? What? When?)* 5) This story describes the adventures of children during their winter holidays. *(What story? Whose adventures?)* 6) The international conference starts at eight o'clock. *(What? What time?)* 7) Her grandparents often phone their doctor because of their health problems. *(Whose grandparents? Why?)*

EXERCISE 7. Write questions to the underlined words.

1) <u>Tony</u> often phone Liz. 2) Colin sometimes meets <u>Jane</u> at the bus stop. 3) Cathy adored <u>her daughter</u>. 4) <u>Monica</u> sends e–mail letters to her friends. 5) James often goes to the cinema with <u>Helen</u>. 6) Mrs Jacobs often bakes pies for <u>her grandchildren</u>. 7) <u>Chris</u> sometimes quarrels with his parents. 8) Pam often visits <u>her relatives</u>. 9) Nick likes Janet. 10) <u>Ted</u> helps Andy with Maths.

EXERCISE 8. Put the verbs in brackets into the correct form.

1) What time ... you ... *(to come)* home from university? – I usually … *(to come)* home at three o'clock, but twice a week we ... *(to go)* to the gym to play table tennis so I ... *(to return)* home later then. 2) How often ... Angela ... *(to go)* to the swimming pool? – I ... *(not to know)* exactly, but I often ... *(to meet)* her in the swimming pool on Saturdays. 3) Where ... the Browns ... *(to spend)* their holidays? – They usually ... *(to visit)* their relatives in the village and sometimes they ... *(to go)* to the seaside. 4) How many apples ... we ... *(to need)* for the apple pie? – My granny usually   … *(to take)* seven or eight apples, but I … *(to think)* we … *(not to need)* so many, because these apples … *(to be)* very big. 5) Why ... Alex ... *(to use)* his car so rarely? – His car ... *(to be)* very old and it often ... *(to break)*. But Alex ... *(not to want)* to buy a new one because he ... *(to believe)* that his car ... *(to be)* unique and ... *(to bring)* him luck. 6) Who usually ... *(to walk)* your dog? – My father ... *(to walk)* the dog in the morning because he always ... *(to wake up)* early in the morning. And I ... *(to walk)* it when I ... *(to come)* home from university. – ... your mother ... *(to walk)* your dog? – No, she .... She ... *(to be)* very busy doing the house chores.

EXERCISE 9. Find mistakes and correct them.

1) The weather usually change in the morning. 2) Patricia sometimes go to her cottage house on weekends. 3) My friends often sends me e–mail messages in the evening. 4) Do Mark and Sam eats Chinese food? 5) Do your cousin wear contact lenses? 6) What time does the bus departs? 7) Where does your parents

prefer to spend their vacation? 8) I often goes cycling on Saturdays. 9) Does Josh likes listening to rock music? 10) Who exercise in the gym every evening? 11) Her son always drink a cup of hot chocolate in the morning. 12) Does this hotel provides good service? 13) Who you usually buy sweets for?

EXERCISE 10. Translate into English.
1) Чому ти завжди прокидаєшся так рано? – Мені подобається спостерігати схід сонця. 2) Де працює ваша сестра? – Вона працює стоматологом у місцевій лікарні. 3) Хто доглядає вашу дитину, коли ви працюєте? – Моя сусідка. Вона дуже любить маленьких дітей. 4) О котрій годині вона завершує роботу? – Зазвичай, вона завершує роботу о шостій, але іноді працює до восьмої вечора. 5) Чому маленькі діти завжди ставлять так багато запитань? – Вони хочуть усе знати. Але іноді дуже важко відповісти на всі їх запитання. 6) Кому вона так часто телефонує? – Вона телефонує своєму синові. Він погано почувається. 7) Коли розпочинаються уроки у вашому університеті? – Вони розпочинаються о пів на дев'яту. 8) Які журнали Ольга любить читати? – Вона не читає журнали. У неї немає на це часу. 9) Ви любите тістечка? – Ні, я не їм солодкого. 10) Що Том зазвичай робить увечері? – Він часто зустрічається зі своїми друзями, і вони грають у футбол чи баскетбол.

EXERCISE 11. Complete the sentences with *was* or *were.*
Last summer my parents and I ... on our holidays at the seaside. It... the most terrible rest in my life! Firstly, the hotel ... too expensive and the service ... horrible. There ... too many people staying in the hotel. The stuff ... rude and the food in the restaurant ... disgusting. Secondly, the beach ... dirty and there ... no chaise loungers to lie on. The weather ... cloudy and windy. There ... no excursions and no shops to buy souvenirs. My mother ... disappointed, but father ... really happy. He ... busy sleeping, reading and watching TV. When our holidays ... over my mother and I ... really happy to return home. But Dad ... Upset because this rest ... the best in his life.

EXERCISE 12. Rewrite the text in the Past Simple Tense.
Steller's Sea Cow
While travelling with the explorer Vitus Bering in 1741, a naturalist Georg Steller discovers an amusing defenseless mammal near the Asiatic coast of the Bering Sea. It is a sea cow. The animal looks somewhat like a large seal, but has two stout forelimbs and a whale–like tail. The sea cow grows up to 7.9 metres long and weighs up to three tons. According to Steller, the animal never comes out on shore but always lies in the water. Its skin is black and thick and its head is small in proportion to the body. Sea cows' habitat stretches along the North Pacific coast to Japan and California. Scientists suppose that the arrival of humans is the cause of their extinction. People hunt sea cows for their meat. The animals die out within 27 years of their discovery.

EXERCISE 13. Put the verbs in brackets into the Past Simple Tense.

1) Dolly ... *(to see)* me talking to my coach yesterday. 2) Henry ... *(to recognize)* the man and ... *(to tell)* me about it a few minutes ago. 3) Last spring we ... *(to spend)* a week in the cottage house and then ... *(to return)* to the town. 4) I ... *(to get)* a message from you just an hour ago and ... *(to take)* a taxi to get to the airport. 5) The house ... *(to be)* full of smoke and we ... *(to hear)* a cry for help. 6) Nigel ... *(to take)* a pen and ... *(to write)* something on a piece of paper. 7) The children ... *(to decide)* to repair their bicycle and ... (to *ask)* Alex to help them. 8) The hurricane ... *(to be)* very strong and ... (to destroy) half of the buildings in the town. 9) Sue ... (to *cancel)* the appointment with the manager and ... *(to hurry)* to the hospital. 10) When the surgeon ... *(to finish)* the operation he ... (to *feel)* completely exhausted. 11) Yesterday Nora ... (to *leave)* me a note that she ... *(to want)* to see me. 12) The train ... *(to arrive)* on time and Fred ... (to *see)* Linda coming off the carriage. 13) When a group of tourists ... (to *come)* to the castle, the guide ... (to *show)* them around and ... (to *answer)* their questions. 14) Mike ... (to *have)* an appointment with his employee last Wednesday and ... *(to promise)* to make all necessary calculations as quickly as possible. 15) Julia ... (to *buy)* a magazine and ... (to *go)* to the bus stop to meet her friend.

EXERCISE 14. Make the sentences negative and interrogative.

1) Jack knew about the changes in the timetable yesterday morning. 2) The trip was long and tiring. 3) They stayed at their friend's house last summer. 4) Mike's father taught him to drive a car a year ago. 5) Sarah cooked fish for supper yesterday. 6) The children were hungry after the walk in the park. 7) Alan lost his credit card a week ago. 8) The tourists returned to the hotel late in the evening. 9) The Clarks moved to a new flat three months ago. 10) The secretary left the office an hour ago. 11) Little Eddy ate all the sweets yesterday. 12) It was boiling hot at the seaside last week. 13) Monica looked very smart in her new dress. 14) The burglar managed to escape from prison last night. 15) The parents were proud of their son's talents.

EXERCISE 15. Put the verbs in brackets into the correct form.

1) ... you *(to be)* busy last night? – No I ... . I ... *(to spend)* last evening with my friends. We ... *(to watch)* a new film with Johnny Depp starring. 2) ... Nick ... *(to travel)* around Europe last summer? – No, he ... . He ... *(to plan)* to spend his summer holidays in Spain, but he ... *(not to manage)* to book the tour beforehand. So he ... *(to fly)* to Thailand and ... *(to spend)* two weeks there, 3)... Sally ... *(to do)* the ironing yesterday? – Yes, she ... . She also ... *(to water)* the flowers in the garden and (to *tidy)* the flat. But she ... *(not to have)* enough time to go shopping and I... *(to decide)* to help her. 4)... there *(to be)* many people at the performance last night? – Yes, there ... . The concert hall ... *(to be)* overcrowded because the performance ... *(to be)* really wonderful. 5) ... Phil ... (to *return)* home late yesterday? – Yes, he ... . He ... (to *be)* so tired that he ... *(to*

go) to bed without having supper. 6) ... you (to *be)* satisfied with the results of your last experiment? –Unfortunately, we ... *(not to get)* any results. Something ... (to *go)* wrong and we ... (to *have)* to stop the experiment to find out the problem. 7) ... the weather *(to be)* good for a picnic yesterday? – Yes, it ... (to *be)* perfect. We ... (to *go)* to the lake and ... (to *have)* a wonderful time there. The boys ... (to *catch)* some fish and we ... (to *cook)* a tasty fish soup on fire. 8) ... Pam ... (to *feed)* the cat in the morning? –Yes, she ... . She ... *(to give)* it some sausages and ... *(to pour)* some milk. 9) ... Max ... (to *visit)* his dentist yesterday? – No, he ... , The nurse ... *(to phone)* Max and ... *(to postpone)* the visit because of some changes in the doctor's timetable. 10) ... it ... (to *rain)* yesterday? –No, it ... . The weather ... (to *be)* cloudy and damp but it... *(not to be)* cold.

EXERCISE 16. Find mistakes and correct them.

1) The pupils readed an interesting legend at the lesson yesterday. 2) He didn't went to the disco last night. 3) Dolly and Tina stoped in this hotel last year. 4) Did Mary left the office early yesterday? – No, she didn't. 5) Nigel spended a week in the mountains last month. 6) Were you at the seaside last summer? – No, we were. 7) The secretary copyd all the documents a day ago. 8) Was your friends disappointed to know the truth? 9) It weren't very hot last week. 10) Stuart graduate from university a year ago.

EXERCISE 17. Translate into English.

1) Вони купили квитки і зайшли до кінотеатру. 2) Він погано почувався вчора і вирішив піти з офісу раніше. 3) Я не прочитав твого повідомлення вчора, бо був дуже зайнятий. Але я прочитав його вранці і відразу тобі зателефонував. 4) Ми не були на концерті минулої суботи. Майку не вдалося купити квитки. 5) На щастя, Олена спіймала таксі і вчасно приїхала до аеропорту. 6) Ви знали про результати дослідження? –Так, я читав звіт минулого понеділка. 7) Ви відвідували семінар минулого тижня? – На жаль, ні. Я був у відрядженні і повернувся тільки вчора ввечері. 8) Ваша сестра отримала запрошення на вечірку вчора? – Так, вона пообіцяла прийти. 9) Вони ходили вчора на пляж? – Ні. Вчора було хмарно, і вони вирішили піти на екскурсію до ботанічного саду. 10) З вами щось трапилось учора ввечері? Ваша мати дзвонила нам кілька разів. Вона була дуже схвильована. – Все добре. У мене була термінова робота, і я хотів повідомити родину про це, але щось було негаразд з моїм телефоном, і мені не вдалося зателефонувати додому. 11) Олена була дуже здивована, коли отримала запрошення взяти участь у фестивалі. 12) Ми не знайшли шоколадний торт і замість цього вирішили купити коробку цукерок і фрукти. 13) Ти вчора прочитав мою записку? Я залишив її на столі на кухні. – Так. Я побачив її, щойно прийшов додому. 14) Ти вчора розповів братові про наші плани на канікули? – Так, але він не погодився позичити нам своє авто.

EXERCISE 18. Write questions to the underlined words.

1) He prepared a report for the conference yesterday. 2) The Walters flew to Egypt three days ago. 3) Janet was in the park, with her daughter in the evening. 4) Clive gave me this disc last Wednesday. 5) The tourists were in front of the museum some minutes ago.

EXERCISE 19. Put the verbs in brackets into the correct form.

1) Why ... you ... (to leave) this magazine on my table, Henry? – Because I ... *(to want)* you to have a look at one article there. 2) Where ... Alison ... *(to meet)* Pete last Saturday? – She ... *(to go)* to the new shopping center to buy some clothes and ... *(to meet)* Pete there. 3) ... your brother ... *(to win)* the competition last Friday? – No, he .... He ... *(to fall)* off the horse and ... *(to injure)* his leg badly. The ambulance ... *(to take)* him to hospital. 4) Who ... Den ... *(to buy)* the flowers for yesterday? – He ... *(to buy)* them for Margaret. It... *(to be)* her birthday yesterday and she ... *(to have)* a party. 5) ... Simon ... *(to have)* a car accident yesterday? – Yes, he ... . His car ... *(to crash)* into a tree. And how ... you ... *(to know)* about it? Who ... *(to tell)* you? – My neighbour. He ... *(to be)* at the bus stop at that time and ... *(to see)* everything. 6) When Fred ... *(to wake)* up yesterday morning he ... *(to find)* out that he ... *(to be*) alone in the house. He ... *(to take)* a shower and ... *(to go)* to the kitchen to make a cup of coffee. 7) Why ... you ... *(not to let)* me know about the meeting? – Sorry, I ... *(not to have)* my notebook with me and ... *(not to remember)* your phone number. 8) Who ... *(to send)* you such a nice card Polly? – Oh, I... *(to get)* it from Lucy last month. She ... *(to be)* in Paris on her holidays and ... *(to decide)* to write me about her trip. 9) What time ... the shop assistants ... *(to leave)* the department store yesterday? – Well, their working day ... *(to finish)* a bit later yesterday so they ... *(to leave)* the store at about nine o'clock in the evening. 10) What ... *(to be)* the weather like during your last trip to Australia? – Oh, it ... *(to be)* terrible. It ... *(to be)* cold and rainy and we ... *(not to leave)* the hotel for a few days.

EXERCISE 20. Put the verbs in brackets into the correct form and read the text.

Chewing Gum

People ... *(to enjoy)* chewing gum-like substances in many lands centuries ago. Some of these materials ... *(to be)* thickened resin and latex from certain kinds of trees. Others ... *(to be)* various sweet grasses, leaves, grains and waxes. Ancient Greeks, for example, ... *(to chew)* mastic gum which they ... *(to obtaine)* from the bark of the mastic tree. This tree ... *(to grow)* on the island Chios. Grecian women especially ... *(to like)* chewing mastic gum to clean their teeth and sweeten their breath.

From the Indians, the American colonists ... *(to learn)* to chew the gum-like resin that formed on spruce trees when the bark was cut. Lumps of spruce gum ... *(to become)* popular and merchants ... *(to sell)* them in the eastern United States making it the first commercial chewing gum in this country. Mexican

General Santa Anna ... *(to introduce)* such lumps to the inventor Thomas Adams, who ... *(to begin)* experimenting with it as a substance for rubber. Adams ... *(to try)* to make toys, masks and rain boots, but his experiments ... *(to fail)*. Sitting in his workshop one day, tired and discouraged, he ... *(to put)* a lump of gum into his mouth. Adams ... *(not to find out)* the way of producing rubber, but he ... *(to open)* the world's first chewing gum factory. Later Adams ... *(to try)* to add flavour to the gum. He ... *(to create)* a licorice–flavoured gum which ... *(to become)* popular with the public. But the gum ... *(to have)* one drawback – it ... *(not to hold)* the flavour.

Another man, William White ... *(to experiment)* with flavour of the gum. He ... *(to solve)* the problem by using the flavour of peppermint and it ... *(to stay)* in the gum during chewing. By the early 1900s, with improved methods of manufacturing, packaging and marketing, modern chewing gum ... *(to be)* on the way to its current popularity.

EXERCISE 21. Translate into English.

1) О котрій ви повернулись учора з екскурсії? – Ми повернулися близько дев'ятої вечора. Ввечері йшов сильний дощ і водій дуже повільно вів автобус, тому ми повернулись так пізно. 2) Чому твоя сестра була така щаслива вчора? – Вона отримала гарну оцінку на випускному іспиті, і батьки подарували їй комп'ютер. 3) Ви їздили в гори минулого літа? Вам сподобалась поїздка? – Так, ми чудово провели час. Готель був зручний, і краєвиди були чарівні. Наш гід водив нас у гори. Нам дуже сподобався відпочинок. 4) Коли ти бачив Тома? – Два дні тому. Я був у спортзалі, і він тренувався там. Але у нас не було часу побалакати. 5) Як Ользі вдалося купити квитки на цей концерт? – Нік допоміг їй. Він учився разом з кимось з музикантів цієї групи в школі. 6) Секретар вчора приготувала документи для наших партнерів? – Так. Вона залишила їх на вашому столі. 7) Що ви робили у селі в минулі вихідні? – Наші друзі запросили нас відвідати їх. До речі, ми прекрасно провели час. Ми купались у річці і готували шашлик. 8) Хто з'їв усі цукерки вчора? – Марк. Він засмутився, тому що ми не залишили йому піци, і з'їв всі цукерки. 9) Олена брала мій фотоапарат минулого вівторка? – Так, вона пообіцяла повернути його у суботу. Можливо, вона забула про свою обіцянку? 10) Минулого разу Діана не розповіла про свою подорож до Італії. Які міста вона відвідала? – Вона провела кілька днів у Римі, потім відвідала Мілан та Венецію.

EXERCISE 22. Choose the correct form to complete the sentences.
Groundhog Day

Every year in the middle of cold winter a popular tradition 1) ... people in the United States. On February 2nd they 2) ... Groundhog Day, one of the most well-known holidays in the country. It 3) ... in the 1700s when German settlers 4) ... the tradition of Candlemas Day. According to the Germans, on the 2nd of February the Groundhog always 5) ... out of his winter quarters and if he sees his

shadow he 6)... to his hole for another six weeks nap. But if the weather is cloudy he remains out, as the weather is going to be moderate.

This tradition 7) ... especially popular in Punxsutawney, Pennsylvania home of the world-known weather forecasting groundhog Phil. Pennsylvania's first official celebration of Groundhog Day 8) ... in 1886. There 9) ... many differences in the observance of this holiday between now and then. For instance, many years ago people 10)... groundhogs in the woods but nowadays thousands of visitors 11) ... the ceremony in the town of Punxsutawney.

1	a) excite	b) excites	c) excited
2	a) celebrate	b) celebrates	c) celebrated
3	a) begin	b) begins	c) began
4	a) introduce	b) introduces	c) introduced
5	a) peep	b) peeps	c) peeped
6	a) don't return	b) return	c) returns
7	a) becomes	b) became	c)didn't become
8	a) start	b) starts	c) started
9	a) are	b) was	c) were
10	a) watch	b) did watch	c) used to watch
11	a) witness	b) witnessed	c)used to witness

EXERCISE 23. Make the sentences negative and interrogative.
1) The Daniels will stay with us for a fortnight. 2) Mark will buy everything we need tomorrow. 3) Dinner will be ready in half an hour. 4) The police inspector will interrogate the burglar tomorrow. 5) Emily will book a room in the hotel for us. 6) Sam will take part in the next competition. 7) Jessica will have her final exam in two days. 8) It will be warm tomorrow.

EXERCISE 24. Complete the sentences with *shall, will* **or** *won't.*
1) – ... you take part in the festival next week, Cindy?
– No, I ..., but Belinda ....
– Unfortunately, I don't know her phone number.
– ... I give it to you?
– Yes. Please.
2) – ... David be in the office tomorrow, Jack?
– No, he ... .Why?
– I ... have the results of his survey tomorrow morning.
– That's good. He needs this information for his report.
– ... I send him the results via e–mail?
– It … be great.
3) ... you give me a lift, Nick?
– Of course, I ... I drive you to the office, Pam?
– No, I... work in the office today. I ... have an appointment with an estate agent. ... you stop the car opposite that building?
– OK.

4) – We are running out of food. ... you go shopping, Ben?
  – OK. But I need a shopping list.
  – I... prepare a shopping list for you. ... you give me your discount card?
  – Sorry I ... . Alice took my discount card yesterday and forgot to return it.
  – Well, I ... buy all the food at the market then.

EXERCISE 25. Write questions to the underlined words.
1) The students will know the results of the test tomorrow morning. 2) They will go to Italy next summer. 3) She will give me this article tomorrow. 4) Boris will finish repairing the roof in two days. 5) You will receive the parcel from them next week.

EXERCISE 26. Complete the text with will or won't and one of the verbs from the box.

Predictions About Our Future
Have you ever thought about our life in the future? What ... life ... like in thirty or fifty years from now? How far ... technology ...? How ... its development ... our lives? Here are some predictions made by science–fiction writers and technology experts.
1) People ... in flats and houses like we have nowadays. They ... environmentally friendly «smart houses». 2) Scientists ... new cheap sources of energy. This discovery... it possible to travel long distances not only around our planet, but also in space. 3) People ... their computers with the help of a keyboard or a mouse. They ... the power of their thoughts to surf the Net. 4) 3D holographic displays ... old computer screens. 5) New medicines... diseases like cancer and diabetes. Pharmacists ... drugs for individual needs of every sick person. 6) People ... the opportunity to continue their education at any time and age thanks to the development of virtual worlds for educational purposes.

EXERCISE 27. Make up questions using the Future Simple Tense. Answer these questions (make your predictions about the future).
1) What means of transport / to be popular / in future? 2) People / to use / mobile phones / in future? 3) What food / people / to eat / in future? 4) People / to find / life / on other planets? 5) How / people / to use / robots / in future? 6) What kind of literature / to be popular / in future? 7) How / people / to do the shopping / in future? 8) What clothes / people / to wear / in future?

EXERCISE 28. Translate into Ukrainian.

1) It is too muddy here. Let us go down another street. 2) It was winter then. There was much snow in the street. 3) I hope it'll be warm in September. 4) They got to the river at 10 o'clock. It was quite dark. 5) When we come to Odessa it'll be spring. 6) It's night, but it's rather light outside. 7) It's very hot in here, isn't it? 8) It's late now. Ring them up, please. 9) It's six o'clock now. I think it's too early to wake him up. 10) It's very dark in the room. I can't see what is there in that far corner.

EXERCISE 29. Make up sentence using Past and Future Simple Tenses.

1) It's cold today. 2) It's late now. 3) It's dark in the room. 4) Is it warm there? 5) Is it cold there at this time? 6) It isn't too late to ring them up. 7) It isn't dark yet.

EXERCISE 30. Choose the correct form to complete the sentences.

1) I shan't buy tomatoes till the price *(come)* down. 2) Stay here till the lights *(turn)* green. 3) When it *(get)* cold I'll light the fire. 4) The lift *(not start)* until you press that button. 5) She'll have to behave better when she *(go)* to school. 6) When you look at yourself in the glass you *(see)* what I mean. 7) He *(be)* here before you go. 8) I *(lend)* you my cassette recorder whenever you want it. 9) He *(wake)* up when we turn the lights on. 10) He *(ring)* us up when he arrives in England? 11) He will wash up before he *(go)* to bed.12) I won't come to London till the bus strike *(be)* over. 13) I *(give)* the children their dinner before he *(come)* home.14) They will be astonished when they *(see)* how slowly he works. 15) I *(go)* on doing it until he tells me to stop. 16) I'll buy that house when I *(have)* enough money. 17) You *(fall)* rapidly through the air till your parachute opens. 18) We'll have to stay here till the tide *(go)* out. 19) When the Queen *(arrive)* the audience will stand up. 20) When the fog *(lift)* we'll be able to see where we are. 21) The refrigerator *(go on)* making that noise till we have it repaired. 22) As soon as the holidays begin this beach *(become)* very crowded. 23) The car *(not move)* till you take the brake off. 24) The alarm bell *(go on)* ringing till you press this button. 25) As soon as she *(learn)* to type I'll get her a job. 26) Look before you *(leap)*.

1.2. Тривалі часи (CONTINUOUS TENSES)

На відміну від часів групи Indefinite, які вживаються для вираження дії стосовно теперішнього, минулого або майбутнього часу, не вказуючи на характер перебігу дії, часи групи Continuous виражають дію як процес, тобто дію, що відбувається (триває) в момент мовлення або в теперішній період часу (Present Continuous), тривала в якийсь момент чи період часу в минулому (Past Continuous), триватиме в певний момент чи період часу в майбутньому (Future Continuous). У додаткових підрядних реченнях після дієслів to say, to tell, to think та ін. у минулому часі замість Future Continuous вживається Future Continuous–in–the–Past. Оскільки тривала форма виражає незакінчену дію, вона перекладається на українську мову дієслівними формами недоконаного виду.

Часи групи Continuous утворюються з відповідних часів групи Indefinite допоміжного дієслова to be та дієприкметника теперішнього часу (Present Participle) основного дієслова.

Час	Запитальне речення	Стверджувальне речення	Заперечне речення
минулий	Were { You We They } / Was { I He She It } living?	You We They were / I He She It was living.	You We They were not / I He She It was not living.
теперішній	Am → I / Are { You We They He She It } living?	I ← am / You We They are / He She It is living.	I ← am not / You We They are not / He She It is not living.
майбутній	Will { I You We They He She It } be living?	{ I You We They He She It } will be living?	{ I You We They He She It } will not be living?

ТЕПЕРІШНІЙ ТРИВАЛИЙ ЧАС
(THE PRESENT CONTINUOUS TENSE)

Теперішній тривалий час вживається для опису дій, які тривають під час мовлення. При цьому можуть називатися такі обставини часу: *now, at the moment, today.*

Стверджувальна форма теперішнього тривалого часу утворюється за допомогою дієслова *to be* у теперішньому часі (am/are/is) та основного дієслова із закінченням –*ing.*

$$I \quad\quad + am$$
$$He/she/it \quad + is \quad\quad + V_{ing}$$
$$You/we/they \quad + are$$

Заперечні та питальні речення теперішнього тривалого часу утворюються з використанням допоміжного дієслова *to be* (am/are/is) (і частки *not* у заперечних реченнях) та основного дієслова із закінченням –*ing.*

$I + am\ not + V_{ing}$	$Am + I + V_{ing}?$
$He/she/it + is\ not\ (isn't) + V_{ing}$	$Is + he/she/it + V_{ing}?$
$We/you/they + are\ not\ (aren't) + V_{ing}$	$Are + we/you/they + + V_{ing}?$

Наприклад:

I am (I'm) watching TV now. I'm not watching TV now. Am I watching TV now?

He is (He's) reading now. He isn't reading now. Is he reading now?

We are (We're) playing now. We aren't playing now. Are we playing now?

Правила правопису дієслів із закінченням –*ing* такі:

1) Якщо односкладове або двоскладове дієслово закінчується в інфінітиві на приголосний з попереднім наголошеним голосним, що стоїть між двома приголосними, при додаванні закінчення кінцевий приголосний подвоюється: *cut – cutting, begin – beginning.*

2) Якщо дієслово в інфінітиві закінчується на –е, вона випадає при додаванні закінчення: *bake – baking, come – coming.*

3) Якщо дієслово в інфінітиві закінчується на –*l,* при додаванні закінчення цей приголосний подвоюється: *travel – travelling.*

Запам'ятайте! Lie – lying, die – dying.

Складаючи спеціальні запитання у теперішньому тривалому часі, слова розташовуються у такому порядку: питальне слово (*Wh–word*), допоміжне дієслово (*am/is/are*), підмет, основне дієслово (із закінченням –*ing*).

Wh–word + am + I + Ving?
Wh–word + is + he/she/it + Ving?
Wh–word + are + you/we/they + Ving?

Наприклад:
What are you reading now?
Where is he waiting?
Who are they talking to?

Запитання до підмета утворюється лише з використанням допоміжного дієслова *is*:

We are playing in the yard. – Who is playing in the yard?

Конструкція *be going to* (збиратися щось зробити) вживається у теперішньому тривалому часі для вираження наміру щось зробити у найближчому майбутньому:

Наприклад:

Where are they going to spend their weekend? – They are going to spend their weekend at the seaside. He is going to tell you about it tomorrow.

МИНУЛИЙ ТРИВАЛИЙ ЧАС
(THE PAST CONTINUOUS TENSE)

Минулий тривалий час вживається для опису дій, які тривали у певний час у минулому.

Стверджувальна форма минулого тривалого часу утворюється з використанням допоміжного дієслова *was/were* та основного дієслова з закінченням *–ing*.

$$I/he/she/it + \text{was} + V_{ing}$$
$$You/we/they + \text{were} + V_{ing}$$

Наприклад:

Anna was washing the dishes at 6 o'clock yesterday evening.

We were sunbathing all morning yesterday.

Показники часу, які вживаються з минулим тривалим часом: *when, while, as.*

While **вживається, коли дві дії, названі в одному реченні, відбуваються одночасно:**

*Greg was making tea **while** Liz was cutting bread for sandwiches.*

When та *as* **вживаються, якщо одна дія, названа в реченні, триває, а інша дія її перериває:**

*Ted was reading **when (as)** his mobile phone rang.*

Заперечна форма минулого тривалого часу утворюється з використанням допоміжного дієслова *was/were* та заперечної частки *not*.

$$I/he/she/if + \text{was not (wasn't)} + V_{ing}$$
$$You/we/they + \text{were not (weren't)} + V_{ing}$$

Наприклад:

Nina wasn't watching TV at 7 o'clock yesterday.

We weren't playing snowballs then.

Питальна форма минулого тривалого часу (загальне запитання) утворюється таким чином: допоміжне дієслово *was/were* ставиться на початку речення перед підметом.

Наприклад:

Was he listening to music? – Yes, he was. / No, he wasn't.

Were they writing a test at that time? – Yes, they were. / No, they weren't.

Складаючи спеціальні запитання у минулому тривалому часі, слова розташовують у такому порядку: питальне слово *(Wh–word?)*, допоміжне дієслово *was /were*, підмет, основне дієслово (із закінченням *–ing*).

Wh–word + was + I/he/she/it + V$_{ing}$?
Wh–word + were + you/we/they + V$_{ing}$?
Наприклад:
Why was he hurrying yesterday?
What book were you reading all the evening yesterday?

Запитання до підмета утворюються тільки з допоміжним дієсловом *was:*
Who was working in the office yesterday?

МАЙБУТНІЙ ТРИВАЛИЙ ЧАС
(THE FUTURE CONTINUOUS TENSE)

Майбутній тривалий час (The Future Continuous Tense) вживається для вираження дій, які будуть відбуватись у певний момент у майбутньому.

Стверджувальна форма майбутнього тривалого часу утворюється з використанням допоміжного дієслова *will*, дієслова *be* та основного дієслова із закінченням *–ing*.

I/you/he/she/it/we/they + will + be + V$_{ing}$

Наприклад:
*I **will be playing** football at 4 o'clock tomorrow.*
*They **will be swimming** at this time next Monday.*

Заперечна форма майбутнього тривалого часу утворюється з використанням допоміжного дієслова *will* та заперечної частки *not,* що ставиться перед дієсловом *be* та основним дієсловом із закінченням *–ing.*

I/you/he/she/if/we/they + will nof (won't) + be + V$_{ing}$

Наприклад:
*She **won't be playing** tennis at 5 o'clock tomorrow.*
*They **won't** be **writing** a dictation at 11 o'clock tomorrow,*

Питальна форма майбутнього тривалого часу (загальне запитання) утворюється таким чином: допоміжне дієслово *will* ставиться на початку речення перед підметом:

Will + I/you/he/she/it/we/they + be + V$_{ing}$?

Наприклад:
***Will** you **be having** a lecture at 5 o'clock tomorrow? – Yes, I will. / No, I won't.*

Складаючи спеціальні запитання у майбутньому тривалому часі, слова розташовуються у такому порядку: питальне слово *(Wh–word),* допоміжне дієслово *will,* підмет, дієслово be та основне дієслово із закінченням *–ing).*

Wh–word + will + I/you/he/she/it/we/they + be + V$_{ing}$?
Наприклад:
What will you be doing at 6 o'clock tomorrow?

EXERCISE 1. Make up the sentences using the verbs in the Present Continuous Tense.

1) children / along / Little / shore / swim / the. 2) dinner / Our / in / kitchen / the / prepare / mother. 3) on / We / a / project / work / new. 4) too / drive / fast / You. 5) get / The / louder / noise. 6) burn / The / in / fire / fireplace / the. 7) on / at / manager / phone / The / the / speak / moment / the. 8) quickly / goal / The / towards / footballer / the / run. 9) music / to / room / his / Bob / in / listen. 10) over / fly / the / We / continent.

EXERCISE 2. Make the sentences negative and interrogative.

1) A woman is speaking to the doctor now. 2) My brother is waiting for an important phone call. 3) The birds are flying high up in the sky. 4) You are speaking too loudly. 5) The students are discussing something in the library. 6) Peter is surfing the Net in his room. 7) Julia and her sister are choosing dresses for the party. 8) I'm looking for my report. 9) The water is boiling in the kettle. 10) It is getting colder.

EXERCISE 3. Put the verbs in brackets into the correct form.

1) Where are David and Andrew? I ... *(to look)* for them everywhere. – They ... *(to exercise)* in the gym. They ... *(to prepare)* for the sport competition. 2) Are you busy now, Rachel? – Yes, I... *(to type)* the report for the conference. 3)... Amanda ... *(to take)* a shower now? – No, she .... She ... *(to get)* breakfast ready. 4) ... you ... *(to wait)* for the doctor? – Yes, I .... The doctor ... *(to examine)* a patient now. 5) Look at the kitten! ... it ... *(to try)* to catch a goldfish? – Yes, it .... It ... *(to watch)* the goldfish so attentively! 6) We have to hurry. The wind ... *(to get)* stronger and it ... *(to get)* dark.– You're right. The weather ... *(not to change)* for the better. 7) ... your friend still ... *(to write)* a test? – No, he ... *(not to write)* a test, he ... *(to wait)* for the teacher to know his mark. 8)... you ... *(to choose)* a cake for a birthday party? – No, I... *(to choose)* a cake for a wedding anniversary. 9) I'm afraid you ... *(not to drive)* fast enough.– We ... *(to move)* so slowly because the road is too slippery. 10) ... Robert... *(to watch)* TV in his room? – No, he ... *(not to watch)* TV, he ... *(to sleep)*.

EXERCISE 4. Translate into English.

1) Ви слухаєте новини? – Так. 2) Де Марк? – Він розмовляє з кимось по телефону. 3) Діана зараз у своїй кімнаті? – Так, вона приміряє нову сукню. 4) Подивись! Маленький Том намагається дістати цукерку! 5) Ти слухаєш мене? – Вибач, я все ще аналізую результати нашого експерименту. 6) Ваш друг чекає на вас? – Так, ми зараз їдемо на виставку сучасного мистецтва. 7) Дівчата зараз прикрашають кімнату? – Ні, вони не прикрашають кімнату. Вони щось готують на кухні. 8) Діти ще дивляться мультфільми? – Ні, вони грають у бадмінтон на майданчику біля будинку. 9) Ви подорожуєте один? – Ні, я подорожую з другом. Він зараз розмовляє з адміністратором готелю. 10) Дощ ще йде? – Так, і холоднішає.

EXERCISE 5. Write questions to the underlined words.

1) <u>Frank</u> <u>is reading</u> a <u>newspaper</u> <u>in the kitchen</u> now. 2) <u>The boys</u> are speaking <u>to their teacher</u> <u>in the hall</u>. 3) <u>You</u> are speaking very <u>loudly</u>. 4) <u>Pam and Sam</u> are <u>having lunch</u> <u>in a cafe</u>. 5) <u>James</u> is waiting <u>for you</u> <u>near the cinema</u>. 6) Daniel <u>is repairing</u> <u>his</u> <u>car</u> <u>in the garage</u>.

EXERCISE 6. Make up the sentences using the Present Continuous Tense.

1) Laura / not to vacuum / the carpet / in the living room. 2) What / the children / to do / in the gym? 3) Sally / to look / for her scarf? 4) The Thompsons / to stay / at a five–star hotel. 5) Where / Simon and Mike / to hurry? 6) The manager / not to spea / to a client / now. 7) Who / Susan / to wait for? 8) Why / Ron and Tim / to cut / the grass / in the yard? 9) It / to get / warmer / outdoors. 10) The number of people / in the supermarket / not to increase.

EXERCISE 7. Complete the text with the Present Continuous form of the verbs in the box.

Smog

«Smog» is a contraction of the words «smoke» and «fog». A lot of factories and industrial plants ... still... coal and heavy oil for producing goods. While the coal ..., it ... dust particles. These particles ... with fog. This mixture reduces visibility to around 4 metres and causes breathing difficulties and even deaths. Smog ... also ... predominant in many cities, which are located in sunny, warm and dry climates with many motor vehicles. Smog ... damage to woods and crops. It ... the ozone layer of our planet.

EXERCISE 8. Put the verbs with be going to in the correct form.

1) – Where ... you ... *(to leave)* your car for this night?
  – I ... *(to leave)* it in my cousin's garage.
2) – Where ...,your parents ... *(to spend)* their holidays?
  – They ... *(to spend)* their holidays in Turkey.
3) – What towns ... Sarah ... *(to visit)* during her tour?
  – She ... *(to visit)* some towns in the south of France. She ... *(also to spend)* a week in Paris.
4) – What ... Nellie ... *(to cook)* for supper tonight?
  – She ... *(to cook)* a chicken with vegetables.
5) – ... Teddy ... *(to repair)* his old camera?
  – No, he ... . He ... *(to buy)* a new digital camera next week.

EXERCISE 9. Find mistakes and correct them.

1) The girls is picking up flowers near the river. 2) The scientists are work on an important project at the moment. 3) Is you reading this magazine now? 4) I'm not watch this show. 5) Who is the children waiting for? 6) What is speaking Anthony about? 7) Look! Somebody is swiming to our yacht, 8) Monica and Julia is talking about something over there. 9) An injured man is lieing beside the car on the road. 10) Are your cousin sitting at the table outside the cafe?

EXERCISE 10. Translate into English.

1) Де Том? – Він шукає якийсь журнал у бібліотеці. 2) Що він робить? – Він намагається завести машину. 3) Чому діти прикрашають кімнату? – Вони чекають на гостей. 4) Олена ще спить? – Ні, вона снідає на кухні. 5) З ким розмовляє ваша сусідка? – Вона розмовляє з листоношею. 6) Куди вони зараз їдуть? – Вони їдуть на вокзал зустрічати своїх родичів. 7) Що ти готуєш? – Я готую нам каву з бутербродами. 8) Що Катя зараз робить у саду? – Вона саджає квіти. 9) Кого вона збирається відвідати у цьому місті? – Вона збирається відвідати свою племінницю. 10) Кому ви телефонуєте? – Я телефоную своєму другові. Він чекає на мій дзвінок. 11) Де ваш брат збирається провести вихідні? – Він збирається на озеро рибалити з друзями. 12) Хто слухає музику в сусідній кімнаті? – Це Марк. Але він не слухає музику, він дивиться телевізор.

EXERCISE 11. Make up the sentences using the Past Continuous Tense.

1) We / to plant / the trees / all morning / yesterday. 2) Frank to work / in the garage / from 2 till 5 o'clock last Saturday. 3) Children / to train / in the gym / at 7 o'clock yesterday. 4) I / to snow / heavily / all the day / last Monday. 5) At 11 o'clock yesterday morning / Mr Brooks and his son / to wash / the car 6) Nelly / to talk / on the phone / at 3 o'clock yesterday. 7) Some girls / to play / tennis / at this time / yesterday. 8) You / to have lunch /from 1 till 2 o'clock last Wednesday. 9) Some workers / to load / the boxes / into the lorry / at that time. 10) Alice / to clear, the flat / all the afternoon / yesterday.

EXERCISE 12. Put the verbs in brackets into the Past Continuous Tense.

1) Pam and Bob ... *(to ski)* all the day last Sunday. 2) Margaret... (to *shop)* with her cousin from morning till evening yesterday. 3) The secretary ... *(to prepare)* the report for her boss at 10 o'clock yesterday morning. 4) The police ... *(to chase)* the burglars for two hours yesterday. 5) Little Den ... *(to play)* chess with his grandpa at 6 o'clock last Friday. 6) Nick and Martin ... *(to work)* in the science laboratory from 3 to 7 o'clock in the evening last Thursday. 7) At 5 o'clock yesterday we ... *(to sit)* at an outdoor cafe. 8) Sandy and I... (to *study)* for our English test all the day last Tuesday. 9) The doctor ... *(to examine)* a

patient when the ambulance arrived yesterday. 10) You ... *(to plant)* the flowers from 9 to 11 o'clock on Friday morning.

EXERCISE 13. Complete the text with the verbs from the box, using them in the Past Continuous Tense. Add 4–7 sentences to finish the story.

to burn	to practise	to get (2)	to breathe
to fly	to ski	to sleep	to enjoy
to search	to enter	to look	to snow

It was the beginning of winter holidays. Ron and his sister Tina ... to a skiing resort with their parents for their first skiing holiday. Soon the family ... a small, cosy hotelat the bottom of a mountain. A bright fire ... in a big fireplace in the middle of the hotel hall, A big brown dog ... in front of the fireplace. The children ... at the dog with admiration. Ron came up to the dog and read its name on the collar: «Buck». At that moment their mother called the children to the room.

Ron and Tina ... skiing all the week. They could ski rather well now and ... their time in the mountains.

Two weeks passed. It was the last day before their departure. It ... dark and the parents decided to return to the hotel. But Ron and Tina wanted to go down the mountain one more time. When Tina ... she lost balance and fell down into the deep snow. She couldn't move her legs and shouted for help. Then suddenly everything was dark.

Ron and Tina's parents were worried. The weather ... worse, it... heavily. Ron was in a state of shock and couldn't say a word. The rescue patrols with dogs ... for the girl all night. Suddenly a dog started barking and jumping up and down. It was Buck, the hotel dog. He was holding Tina's hat in its mouth. The men of the rescue patrol dug in the snow and found Tina's body underneath. Luckily, Tina still ....

EXERCISE 14. Complete the sentences with *when* or *while.*
1) Ron was watching TV ... his neighbour rang the doorbell. 2) ... Jessica was typing a report, Henry was surfing the Net in search of some information for the History project. 3) Roger was having a cup of coffee ... his wife was drying her hair. 4) ... the rescue brigade found the injured man, he was lying unconscious on the ground. 5)... Monica was sunbathing, Mick and Tom were playing beach volleyball with some other boys. 6) Mr Stevens was looking through some documents ... thelight in the office suddenly went out. 7)... I was vacuuming the carpet in the living room, my sister was dusting the furniture in the bedrooms. 8) The travellers were walking through the wood ... they heard a loud rumble of thunder.

EXERCISE 15. Match two parts of the sentences and join them with *when* or *while.*

1) Susan was looking through a magazine
2) I was speaking to my business partner on the phone
3) The doctor was examining a patient
4) The pupils were listening carefully
5) Mike was talking to his friend
6) It was getting colder
7) The children were walking towards the lake
8) We were waiting in the car

a. my secretary was typing some letters.
b. their teacher was explaining the aim of the laboratory experiment.
c. she found an article about her favourite pop singer.
d. Colin went out; of his friend's house and went to the bus stop.
e. our parents were buying food in the supermarket.
f. a nurse was preparing a syringe for the injection.
g. he saw Alison coming up to him.
h. they saw a baby bird on the path.

EXERCISE 16. Make the sentences negative and interrogative.

1) You were discussing a report with your colleague. 2) Stuart was waiting for a bus at the bus stop. 3) The doctor was operating on a patient. 4) Tourists were listening to the guide's story. 5) The sun was shining in the sky. 6) We were having a picnic near the river. 7) The birds were singing in the park. 8) Janet was washing her hair in the bathroom. 9) Carol and Wendy were having lunch in a cafeteria. 10) Eddy was exercising on the sports ground then.

EXERCISE 17. Find mistakes and correct them.

1) Amanda and Dolly was preparing for the party all day yesterday. 2) James was washing his bike while his neighbor came up to him. 3) Were Ron and Frank having a driving lesson at 6 o'clock yesterday? – Yes, they was. 4) We were decorated the hall for the exhibition all the morning yesterday. 5) I were looking through the mail at 10 o'clock last morning. 6) Was Mark and Vicky preparing their project from 3 to yesterday? – Yes, they were. 7) Was Rosy cooking supper when you came home yesterday evening? – No, she was. 8) Was you sleeping when I phoned you yesterday? – Yes, I was. 9) When I was talking to the shop assistant, my little son was playing with his new toy car. 10) You were waiting for the doctor at 2 o'clock yesterday? – No, I wasn't.

EXERCISE 18. Put the verbs in brackets into the correct form.

1) ... your neighbour ... *(to play)* the violin at 10 o'clock yesterday evening? – No, he ... . He ... *(to listen)* to some rock group at that time. 2) ... you ... *(to take)* a shower at 8 o'clock in the morning? – Yes, I ... . 3) Pam ... *(not–to watch)* a show on TV at that time. She ... *(to wash)* the vegetables for the salad. 4) Ella ... *(to feed)* the swans swimming in the lake while David ... (to *take)* some photos. 5) ... the car ... *(to move)* fast while the children ... *(to cross)* the street? – No, it ... . The man in the car ... *(to drive)* very slowly.' 6) ... Betty and

Sally ... *(to gather)* apples all the morning yesterday? – Yes, they .... I ... *(to wash)* them and our granny ... *(to make)* apple jam. 7) Little Tom and his friend ... *(toplay)* with a puppy in front of the house while Tom's grandpa ... (to *read)* a newspaper. 8) The siren ... (to *wail)* while the ambulance ... (to *drive)* towards the place of the accident. 9) ... it... (to *snow)* as you ... (to *walk)* home? –: Yes, it ... and a cold wind ... (to *blow).* 10) Andy and Ted ... *(not to ride)* their bikes all the day last Sunday. They ... (to *roller skate)* in the park.

EXERCISE 19.   Make up the sentences using the Past Continuous Tense.
1) Tina / to peel / some apples / for the pie / in the kitchen. 2) Mr Heel / to hang / the picture / in the hall / at that time? 3) We / to clean / the windows / in the classroom / at 2 o'clock yesterday. 4) I / not to listen / to the lecture then. 5) You / to mend / the fence / yesterday morning? 6) Phil / not to sleep / at that time / yesterday. 7) The boys / to walk / towards the stadium / at 6 o'clock yesterday. 8) Some noises / to come / from behind the door. 9) It / to rain / heavily / all day / yesterday? 10) Greg / not to fix / the microwave / at that time.

EXERCISE 20. Translate into English.
1) Діти голосно розмовляли на майданчику перед школою. 2) Вчора о третій ви готувались до іспиту в бібліотеці? – Ні, я писав реферат. 3) Том не працював у гаражі вчора о шостій. У цей час він дивився свою улюблену передачу по телевізору.   4) Важкі хмари вкривали небо. Вітер ставав сильнішим.   5) Ви грали в теніс учора вранці? – Так, ми грали з дев'ятої до пів на одинадцяту. 6) Поки Джек приймав душ, Лінда спостерігала за дітьми, які бігали на подвір'ї перед будинком. 7) Ви так голосно сміялись учора ввечері! – Так, Том весь вечір розповідав нам кумедні історії про свій відпочинок на морі. 8) Учора о сьомій Олена ще працювала в офісі? – Ні, саме тоді вона вечеряла у кав'ярні з подругою. 9) Діана щось пояснювала своєму братові, поки вони йшли до автобусної зупинки. 10) Дівчина повільно гортала сторінки журналу, але вона не дивилась ні на фотографії, ні на тексти статей. Вона думала про той загадковий телефонний дзвінок та слова незнайомця.

EXERCISE 21. Write questions to the underlined words.
1) You were playing bowling with your cousin in a new bowling club yesterday evening. 2) The journalists were asking the pop singer about her latest musical disc. 3) Pam was staying in bed because of her illness. 4) Nick was hanging a shelf in the kitchen at 11 o'clock yesterday morning. 5) We were waiting for Cathy in front of the theatre.

EXERCISE 22. Put the verbs in brackets into the correct form.
1) What ... Amanda ... *(to do)* in the garden from 4 to 7 o'clock yesterday? – She ... *(to plant)* roses. 2) Where ... Ben and Simon ... *(to stay)* during their trip to Budapest? ... they ... *(to stay)* in a hotel? – No, they .... They ... (to *stay)* at the house of Ben's friend. 3) What song ... you ... *(to listen)* to when I came into

your room yesterday evening? – I ... (to *listen*) to a new song of my favourite singer Ani Lorak. 4) Who ... (to *wait*) for you in the hall at 11 o'clock yesterday? – It... (to *be*) my cousin Jack. He ... (to *wait*) for me while I ... *(to speak)* to my Biology teacher. 5) ... Samantha ... *(to watch)* TV when you came home yesterday? – No, she .... She ... *(already to sleep)*. 6) Who ... Janet... *(to buy)* a T–shirt for in the department store yesterday morning? – She ... *(not to buy)* a T–shirt. She ... *(to choose)* a dress for her little niece. 7) Why ... Nigel ... *(to repair)* his car all the day yesterday? – Because he ... (to *prepare*) the car for the journey to the seaside. 8) Where ... Patrick and Alex ... *(to swim)* all the morning yesterday? – I think they ... (to *snorkel*) in a distant bay out of the town. 9) What ... Mrs Adams ... (to *tell*) you about yesterday afternoon? – She ... *(to ask)* me about my new job. 10) Where ... Nora ... (to *celebrate*) her birthday last Saturday? – She ... (to *celebrate*) her birthday in a night club with her friends.

EXERCISE 23. Translate into English.

1) Що ви робили вчора ввечері? – Нас відвідували наші друзі. Ми пили чай, моя дружина показувала фотографії, а мій друг розповідав про свою нову роботу. 2) З ким секретар розмовляла вчора вранці? – Вона розмовляла з нашим новим діловим партнером. 3) Де діти грали вчора після уроків? – Вони грали у волейбол на майданчику перед школою з другої до п'ятої. 4) Хто репетирував в актовій залі вчора о десятій ранку? – Наш шкільний драмгурток. Вони готувались до фестивалю. 5) Коли Сандра друкувала цю статтю? – Вона друкувала її вчора о сьомій вечора. 6) З ким Джон розмовляв учора під час обідньої перерви? – Він розмовляв з нашим менеджером. Вони обговорювали план роботи на осінь. 7) Що Ольга робила вчора весь день? – Уранці вона прибирала квартиру, а ввечері допомагала подрузі готувати святкову вечерю, її подруга вчора святкувала свій день народження. 8) О котрій Ден учора працював за комп'ютером? – Він працював з десятої ранку до шостої вечора. 9) Як довго хірург учора оперував пацієнта? – Він оперував пацієнта дві з половиною години. 10) Кому Гордон телефонував учора о п'ятій? – Він телефонував своєму агенту з нерухомості. Вони обговорювали купівлю якогось будинку.

EXERCISE 24. Make up the sentences using the Future Continuous Tense.

1) Sue / to do / homework / at 5 o'clock / tomorrow. 2) We / to sunbathe / from 9 to 12 o'clock / tomorrow morning. 3) Nick and Jack / to drive / to Berlin / at this time / next Monday. 4) You / to have / a conference / from 3 to 5 o'clock / tomorrow. 5) My cousin / to practice / in the gym / at 7 o'clock / tomorrow evening. 6) Nelly and Diana / to rest / in Hawaii / at this time / next week. 7) We / to dance / at the party / all the evening / tomorrow. 8) Kate / to visit / her grandparents / all day / next Saturday. 9) They / to prepare / to the wedding party / all next week. 10) I / to travel / around Canada / for two weeks / next month.

EXERCISE 25. Put the verbs in brackets into the Future Continuous Tense.

1) At this time tomorrow we ... *(to watch)* a new play in the theatre. 2) I ... *(to have)* lunch with our business partners from 3 to 5 o'clock tomorrow. 3) Mike ... *(to interview)* a famous showman at 6 o'clock next Thursday. 4) We ... *(to discuss)* this project at our morning meeting next Wednesday. 5) My lawyer ... *(to wait)* for us in his office at 11 o'clock tomorrow morning. 6) The workers ... *(to repair)* the road in the city centre for two days next week. 7) The students ... *(to write) a* test from 9 a.m. till 1 p.m. next Tuesday. 8) My friends ... *(to play)* cricket from 5 till 7 o'clock next evening. 9) I ... *(to fly)* to Cairo at this time next Sunday. 10) Alice ... *(to walk)* in the park with her daughter at 7 o'clock tomorrow evening.

EXERCISE 26. Make the sentences negative and interrogative.

1) She will be doing aerobics at 7 o'clock tomorrow evening. 2) We will be cycling tomorrow morning. 3) Henry will be walking his dog at 2 o'clock tomorrow. 4) Molly will be making a cake for our party at 3 o'clock tomorrow. 5) The girls will be preparing the costumes for the performance since 3 o'clock tomorrow. 6) Brian will be writing an article at this time next Friday. 7) We will be exercising in the gym from 2 p.m. till. 5 p.m. tomorrow. 8) Mr Peters will be visiting our country from Monday till Friday. 9) It will be raining all day tomorrow 10) You will be seeing your dentist at 5 o'clock next Thursday.

EXERCISE 27. Write questions to the underlined words.

1) Helen will be preparing for the exam in the library at 11 o'clock tomorrow. 2) We will be having tea in the garden at 6 o'clock tomorrow. 3) You will be translating an article at 3 o'clock tomorrow. 4) They will be playing volleyball on the beach at 10 o'clock tomorrow morning. 5) Jim will be snorkelling in the Red Sea at this time next Sunday.

EXERCISE 28. Translate into English.

1) Завтра о шостій я буду дивитись мій улюблений серіал по телевізору. 2) Ми не будемо грати у баскетбол на майданчику завтра о сьомій. 3) У середу з 9 ранку вони будуть складати іспит з англійської мови. 4) Що ти будеш робити завтра о восьмій вечора? – Я буду зустрічати батьків в аеропорту. 5) Який семінар ваша сестра буде відвідувати наступного вівторка о другій? – Вона буде відвідувати семінар з маркетингу. 6) У цей час завтра ми будемо летіти до Лос-Анджелесу 7) О котрій завтра у вас буде конференція? – У нас конференція буде проходити з десятої ранку до третьої дня. 8) Тож буде працювати весь наступний тиждень? – Ні, з наступного четверга він буде відпочивати в горах. 9) Наступної п'ятниці о десятій ранку мої друзі братимуть участь у змаганнях з плавання. 10) Ми будемо прикрашати зал для новорічного свята завтра о дев'ятій ранку.

EXERCISE 29. Make up the sentences using Present Continuous or Present Simple.

1) What … *(you, see)* in the corner over there? 2) Today George … *(work)* all day long; but usually he … *(work)* only in the morning. 3) At this moment we … *(do)* an exercise on tenses. 4) It … *(rain)*, take your umbrella. 5) Mother is in the kitchen; she … *(make)* coffee. 6) The sun … *(rise)* in the east. 7) Leave me alone, I … *(work)*. 8) Run downstairs, your grandmother … *(wait)* for you. 9) Keep quiet, we … *(listen)* to the music. 10) Jack usually … *(read)* novel in the evening, but today he … *(play)* cards. 11) The girl who … *(pass by)* … *(live)* upstairs.

EXERCISE 30. Make up the sentences using Past Continuous or Past Simple.

1) My friend … *(come)* to see me yesterday. 2) As he … *(cross)* the road, he saw his friend on the other side of the street. 3) I told him a joke and he … *(laugh)*. 4) I …*(talk)* about him when he suddenly came in. 5) I …*(have)* a bath when the bell rang. 6) What… *(you, do)* yesterday at this time? 7) Jack's mother … *(cook)* dinner, so he … *(leave)* home unseen. 8) Who … you *(dance)* with when I … *(want)* to talk to you? 9) At six o'clock Mr. Smith … *(stand)* outside the metro station waiting for a friend. 10) As he … *(eat)*, he could not answer my question clearly. 11) He smiled at me in a friendly way when he … *(see)* me. 12) I lost my fountain pen while I… *(work)* in the garden. 13) Who … *(tell)* you to come to see me? 14) She went into the kitchen and found the milk … *(boil)* over. 15) When I … *(come)* out, I … *(receive)* a letter from Smith.

1.3. Доконані часи (PERFECT TENSES)

Доконані часи виражають дію, що відбулася до певного моменту чи періоду в теперішньому часі (Present Perfect), минулому (Past Perfect), майбутньому (Future Perfect), майбутньому стосовно минулого (Future–in–the–Past).

Доконані часи звичайно виражають наявність якогось результату дії, пов'язаної з наступними подіями.

Доконані часи утворюються з відповідних неозначених часів допоміжного дієслова to have та дієприкметника минулого часу (Past Participle) основного дієслова.

Час	Запитальне речення	Стверджувальне речення	Заперечне речення
минулий	Had { You We They I He She It } written? / lived	You We They I He She It } had written / lived.	You We They I He She It } had not written / lived.
теперішній	Have { I You We They } Has { He She It } written / lived?	I You We They } have She It } has written / lived.	I You We They } have not He She It } has not written lived.
майбутній	Will { I You We They He She It } have written / lived?	I You We They He She It } will have written / lived?	I You We They He She It } will not have written / living?

ТЕПЕРІШНІЙ ДОКОНАНИЙ ЧАС
(THE PRESENT PERFECT TENSE)

Теперішній доконаний час (Present Perfect Tense) вживається, коли йдеться про події, що нещодавно відбулись, або час у минулому, коли вони мали місце, не названо. Стверджувальна форма теперішнього доконаного часу утворюються додаванням допоміжного дієслова *have/has* до

31

основного дієслова у третій формі (для неправильних дієслів) або із закінченням –ed (для правильних).

$$I/you/we/they + have + V_3 (V_{ed})$$
$$he/she/it + has + V_3 (V_{ed})$$

Наприклад:
*We **have** already **painted** the roof of the house.*
*She **has** just **had dinner.***

Неправильні дієслова мають спеціальні форми (третя форма неправильних дієслів (Past Participle) у таблиці):

do – done, fly – flown і т.д.

Обставини часу, характерні для теперішнього доконаного часу: *just* (щойно), *already* (вже), *ever* (коли-небудь), *never* (ніколи), *recently* (нещодавно, останнім часом), *lately* (нещодавно, останнім часом), *yet* (ще), *since* (з того часу як), *for* (протягом), *today* (сьогодні), *this week (month, year)* (цього тижня, місяця, року), so *far* (поки що). Обставини часу, як правило, розташовуються між допоміжним та основним дієсловом або *у* кінці речення. *Yet* уживається тільки в заперечних та питальних реченнях.

Наприклад:
We have never been to Paris.
I have seen him twice this week.

Прийменник *since* в обставинах часу вживається для позначення початку дії в минулому:

*Bill has been at the party **since seven o'clock.***

Прийменник *for* в обставинах часу вживається для позначення періоду, протягом якого відбувалася дія до теперішнього часу:

*He has lived in Dresden **tor six years.***

Заперечна форма теперішнього доконаного часу утворюється додаванням заперечної частки *not* і допоміжного дієслова *to have* у відповідній особі до основного дієслова в третій формі або з –ed

$$I/you/we/they + have\ not\ (haven't) + V_3 (Ved)$$
$$He/she/it + has\ not\ (hasn't) + V_3 (V_{ed})$$

Наприклад:
*You **haven't finished** reading this book yet.*
*He **hasn't repaired** his bike yet.*

Питальна форма теперішнього доконаного часу (загальне запитання) утворюється таким чином: допоміжне дієслово *have/has* розташовується на початку речення перед підметом, а присудок не змінює своєї форми.

$$Have + I/you/we/they + V_3 (V_{ed})?$$
$$Has + he/she/it + V_3 (V_{ed})?$$

Відповіді на такі запитання даються короткі, з використанням того самого допоміжного дієслова:

Have *you ever **been** to Egypt?* – *Yes, I have. /No, I haven't.*
Has *he **paid** the bill?* – *Yes, he has. /No, he hasn't.*

Складаючи спеціальні запитання у теперішньому доконаному часі, слова розташовуються у такому порядку: питальне слово (Wh–word), допоміжне дієслово *have*, підмет, основне дієслово із закінченням –*ed* або у третій формі.

Wh-word + have + I/you/we/they + V₃ (V$_{ed}$)?

Wh-word + has + he/she/it + V₃(V$_{ed}$)?

Наприклад:

Where have you been?   *Why has he told the lie?*

Запитання зі словом *When* не утворюються у теперішньому доконаному часі. Натомість використовується минулий неозначений час.

МИНУЛИЙ ДОКОНАНИЙ ЧАС
(THE PAST PERFECT TENSE)

Минулий доконаний час вживається, якщо дія завершилась до певного моменту в минулому або до початку іншої дії в минулому. Стверджувальна форма минулого доконаного часу утворюються з використанням допоміжного дієслова *had* та основного дієслова у третій формі (для неправильних дієслів) або із закінченням –*ed* (для правильних дієслів).

I/you/he/she/it/we/they + had + V₃ (V$_{ed}$)

Наприклад:

We **had finished** the work before seven o'clock yesterday.

*She **had cooked** supper before the children returned from the walk.* **(перша дія***: she cooked supper,* **друга дія:** *children returned from the walk)*

Заперечна форма минулого доконаного часу утворюється додаванням заперечної частки *not i* допоміжного дієслова *to had* у відповідній особі до основного дієслова в третій формі або з –*ed*

I/you/he/she/it/we/they + had not (hadn't) + V₃ (V$_{ed}$)

Наприклад:

He **hadn't read** this article before.

They **hadn't gathered** all the fruit by 7 o'clock.

Питальна форма минулого доконаного часу (загальне запитання) утворюється таким чином: допоміжне дієслово *had* розташовується на початку речення перед підметом, а присудок не змінює своєї форми.

Had + I/you/he/she/it/we/they + V₃ (V$_{ed}$)?

Відповіді на такі запитання даються короткі, з використанням того самого допоміжного дієслова:

Had she **cleaned** the flat by 5 o'clock? – Yes, she had./No, she hadn't.

Had they **been** to this exhibition before? – Yes, they had,/No, they hadn't.

Складаючи спеціальні запитання у минулому доконаному часі, слова розташовуються у такому порядку: питальне слово (Wh–word), допоміжне дієслово *had*, підмет, основне дієслово із закінченням –*ed* або у третій формі.

Wh–word + had + l/you/he/she/it/we/they + V₃ (V$_{ed}$)?

Наприклад:

What had you done by the end of lasf week? What countries had your brother visited?

МАЙБУТНІЙ ДОКОНАНИЙ ЧАС
(THE FUTURE PERFECT TENSE)

Майбутній доконаний час (The Future Perfect Tense) вживається для вираження дій, які завершаться до певного моменту у майбутньому. Стверджувальна форма майбутнього доконаного часу утворюється з використанням допоміжного слова *will,* дієслова *have* та основного дієслова у третій формі (для неправильних дієслів) або із закінченням *-ed* (для правильних дієслів).

$$I/you/he/she/if/we/they + will + have + V_3 (V_{ed})$$

Наприклад:

Заперечна форма майбутнього доконаного часу утворюється додаванням допоміжного дієслова *will,* заперечної частки *not,* що ставиться перед дієсловом *have* та основним дієсловом в третій формі або з *-ed*

$$I/you/he/she/it/we/they + will\ not\ (won't) + have + V_3 (V_{ed})$$

Наприклад:

She will not (won't) have returned by 3 o'clock tomorrow.

Питальна форма майбутнього доконаного часу (загальне запитання) утворюється таким чином: допоміжне дієслово *will* розташовується на початку речення перед підметом, а присудок не змінює своєї форми.

$$Will + I/you/he/she/it/we/they + have + V_3 (V_{ed})?$$

Відповіді на такі запитання даються короткі, з використанням того самого допоміжного дієслова.

Складаючи спеціальні запитання у майбутньому доконаному часі, слова розташовуються у такому порядку: питальне слово (Wh–word), допоміжне дієслово *will*, підмет, дієслова *have* та основне дієслово із закінченням –*ed* або у третій формі.

$$Wh\text{-}word + will + I/you/he/she/it/we/they + have + V_3 (V_{ed})?$$

Наприклад:

What book will he have read by next Tuesday?

Who will have washed the dishes by 5 o'clock?

EXERCISE 1. Make up the sentences using the Present Perfect Tense.

1) He / just / to send / a letter / to his friend. 2) We / already / to water / the flowers / in the garden, 3) I / never / to eat / oysters. 4) They / to know / each other / for years. 5) Sheila / to call / me twice / today. 6) The taxi / just / to arrive. 7) You / just / to destroy / all my plans. 8) Max / never / to ride / a motorbike. 9) The Professor / to give / five lectures / this week. 10) The seminar / already / to start. 11) We / to live / in this hotel / for three days / already. 12) The baby / just / to fall asleep. 13) The Connors / to move / into a new house /

already. 14) I / to remind / Tom / about the meeting / three times / today. 15) Andrew / to be / to Manchester / three times / this year.

EXERCISE 2. Put the words in brackets into the correct place in the sentences.

1) Monica has ... returned from the trip to Switzerland .... *(just)* 2) They have ... repaired five cars .... *(this week)* 3) We have ... ridden a camel .... *(never)* 4) Alice has ... typed five letters .... (so far) 5) I have ... arranged the time of the meeting .... *(already)* 6) We have ... made ... all the necessary preparations, (just) *7)* This surgeon has operated on ... four patients for appendicitis .... *(today)* 8) Tom has ... painted half of the fence ... . *(so far)* 9) You have ... driven ... a car. *(never)* 10) I have received ... only four letters from you .... *(this year)*

EXERCISE 3. Fill in since or *for.*
1) ... three weeks;   6) ...two years;
2) ...January;   7) ... our last meeting;
3) ...2003;   8) ... my childhood;
4) ... half an hour;   9) ...five days;
5) ... three o'clock;   10) ... along time.

EXERCISE 4. Complete the sentences with *for* or *since.*
1) Roger has worked as a dentist ... twelve years. 2) Sandra has studied in our class … October. 3) I have known Alex ... ages. 4) Ella has worked in the bank only ... two weeks. 5) Julia has been to seven countries ... she started her journey. 6) Belinda has changed a lot ... we met last time. 7) We have been to Tokyo … five days already. 8) Nick has had this car ... a year and a half. 9) Joe has been a designer ... she graduated from university. 10) James has been my business partner ... more than fourteen years.

EXERCISE 5. Make the sentences negative and interrogative.
1) You have cut the grass in the backyard. 2) Our boss has signed the trade agreement. 3) The members of the delegation have arrived. 4) The wind has stopped blowing. 5) All the tourists have paid the admission charge. 6) We have invited the chairman of the charitable organization to our meeting. 7) Alan has downloaded this document. 8) The policemen have captured the burglars. 9) Sarah has recovered from her illness. 10) My parents have left for New York.

EXERCISE 6. Write short answers to the questions.
1) Have you seen Henry lately? – No, ...2) Has Julia returned from the university? – Yes, ... 3) Have the students filled in the questionnaires? – Yes, ... 4) Has the plane landed? – Yes, ... 5) Have the children tidied their room? – No, ... 6) Have you been to the new bowling club? – No, ... 7) Has the waitress brought the bill? – Yes, ...8) Has Mrs Harrison spoken to the doctor? – No, ...

9) Have they obtained the results of the experiment? – Yes, ... 10) Has the taxi arrived? – No, ...

EXERCISE 7. Make up the sentences using the Present Perfect Tense.
1) Betty / not to phone / me / since last Wednesday. 2) I / to see / this woman / never. 3) The lecture / to finish / just. 4) Mike / not to ride / a bike / since childhood. 5) Martin / to consult / with a tax lawyer / yet? 6) We / not to meet / each other / for six years. 7) Wendy / to tell / me / about the results of the research / just. 8) They / to send / the invitations to their wedding / yet? 9) Simon / to be / to Norway / ever? 10) Our firm / to pay / all the taxes / already.

EXERCISE 8. Put the verbs in brackets into the correct form.
1) ... you ... *(yet to send) & message* to George? – Yes, I .... But George ... *(yet not to answer)* it. 2) Kate ... *(to be)* very upset these days. ... anything ... (to *happen)!* – Well, her boyfriend Sam ... *(to break)* his leg. He ... *(to be)* in hospital for two days now. 3) ... you ... *(to iron)* my T-shirt, Molly? – Yes, I .... And I ... *(to sew)* a button to your jacket. 4) ... Ed and Julia ... *(to prepare)* everything for the picnic? – They ... *(already to buy)* some meat and vegetables, but they ... *(yet not to decide)* about the place for the picnic. 5) ... your parents ... *(yet to leave)* for Greece? – Oh, they ... *(already to be)* there for three days. 6) ... you ... (lately to see) Peter and Nick? – No, I ... *(not to see)* them since March. 7) ... Pamela ... *(ever to be)* to England? – No; she .... But she ... *(already to plan)* her trip there. 8) ... the concert ... (yet to start)? –No, it ... . The musicians ... *(not yet to tune)* their musical instruments. 9) ... you ... *(to meet)* your boss today? – No, I .... My boss ... *(just to go)* to the bank. 10) ... Phil ... *(to jump)* with a parachute before? – No, he ... *(never to* jump) with a parachute. But he ... *(always to dream)* about it.

EXERCISE 9. Translate into English.
1) Студенти щойно повернулися з університету. 2) Мама ще не приготувала сніданок. Вона щойно поставила грітися чайник. 3) Я знаю твого брата вже 7 років. Він ніколи не скаржився на своє зоров'я. 4) Ви коли-небудь були у цьому театрі? – Так, я нещодавно був тут. 5) Майк уже продав своє авто? – Ще ні. Він щойно пофарбував його. 6) Діана вже закінчила університет? – Так, і вона вже знайшла роботу. 7) Ваш юрист уже підготував документи? – Так, але я ще не читав їх. 8) Де Ольга? – Її робочий день завершився. Вона вже пішла додому. 9) Ми живемо у цьому місті вже 17 років. 10) Ти бачив Тома сьогодні? – Ні, я не бачив його з вівторка.

EXERCISE 10. Write questions to the underlined words.
1) They have bought a small cottage near the river. 2) Chris has phoned the estate agency five times today. 3) You have seen this performance twice. 4) The journalist has interviewed a famous pop star. 5) We have bought three tickets for the concert.

EXERCISE 11. Make up the sentences using the Present Perfect Tense.
1) Alice / to wash / the fruit / just. 2) The bus / not to depart / yet. 3) Henry and Den / to return / from the gym / yet? 4) What dictionary / you / to buy / at the bookshop? 5) Where / Monica / to be / since morning? 6) Ron / to leave / his car / opposite the department store. 7) Why / Steve / to sell / his bike? 8) How many articles / you / to translate / this month? 9) I / not to hear / from Ben / for months. 10) Who / to order / this room?

EXERCISE 12. Complete the text with the verbs from the box, using them in the Present Prefect Tense.

to give	to adapt	to ride	to improve

to use	to become	to change

Bicycle
... you ever ... a bicycle? Certainly you have! Bicycles ... a part of modern life, the means of transportation which ... us an opportunity to move around and avoid traffic jams in big cities. People ... bicycles since the 19th century. Although the basic shape and configuration of a typical upright bicycle ... a little since the first chain–driven model was developed around 1885, people ... bicycles for such uses as children's toys, adult fitness, military and police applications, courier services and bicycle racing. Since the 19th century engineers ... many details to make the process of cycling more comfortable and fast. As the bicycle is an environmentally–friendly means of transport, cycling can contribute to the solution of the problem of air pollutions in megalopolises.

EXERCISE 13. Make up questions using the Present Perfect Tense and answer them. (Use the text of ex, 12.)
1) What opportunity / the / bicycle / to give / in modern life? 2) Since / what century / people / to use / bicycles? 3) What uses / people / to adapt / bicycles / for? 4) Why / the engineers / to improve / the details / of the bikes?

EXERCISE 14. Put the verbs in brackets into the correct form.
1) ... the secretary ... *(to print)* information leaflets for the staff? – Yes, she ... We ... *(already to distribute) them.* 2) How many people ... you ... *(to invite)* to your anniversary? – I ... *(to send)* twenty invitation cards by now, but I ... *(to plan)* to invite more people. 3) ... the archaeologists ... *(to find)* anything interesting in the valley? –Yes, they .... They ... *(recently to discover)* the remains of an ancient church and a settlement. We ... *(already to send)* them all the necessary equipment for digging them out. 4) ... you ... *(to see)* Jill this week? – No, I ... . I ... *(not to meet)* her since last month. 5) ... Margaret... *(yet to choose)* a dress for the party? – No, she .... She ...*(already to try) on* some dresses, but she ... *(yet not to decide)* which one to put on. 6) How long ...

Gordon ... *(to work)* as a computer programmer? – He ... *(to work)* as a computer programmer for twelve years. 7) Do you remember where you ... *(to leave)* your driving licence? – Perhaps I ... *(to leave)* it in the office. 8} Who ... *(to tell)* you about the accident? Amanda, She ... *(just to witness)* the car crashing into a traffic light. 9) ... you ... *(to hear)* the news? – No, I .... anything

... *(to happen)?* – Yes, Jerry ... *(just to fall)* down from the roof of his house. I'm afraid he ... *(to break)* his leg. Mrs Grey ...I *(already to call)* an ambulance. 10) Who ... you ... *(to buy)* these flowers for, Henry? – They are for my girlfriend. – I... *(never to see)* such beautiful flowers!

EXERCISE 15. Find mistakes and correct them.
1) It have just stopped raining. 2) Who has they sent this parcel for? 3) Have you spoke to your parents about the language courses? 4) I have gone here for an hour. 5) Why Helen hasn't left a note for me? 6) How many articles have you translated for last Monday? 7) Nelly has been to the market. She will return in an hour. 8) We have waited for Martin since three hours. 9) Where has Jane and Emma been? 10) Who have given you, my phone number? 11) You have ever told me about your cousin from Australia. 12) What have happened to Carol? 13) We have discussed this question yet. 14) Sam and I have been friends for childhood. 15) Pamela has finished cooking dinner just.

EXERCISE 16. Translate into English.
1) Ти вже прочитав цю статтю? – Ще ні. Я щойно повернувся *з* конференції. 2) Містер Грін вже повернувся з відрядження? – Ні, але він щойно телефонував. 3) Як давно твій друг живе в нашому місті? – Він живе тут чотири роки. 4) Хто запросив вас сюди? – Віка.– Як давно ви знаєте Віку? – Ми дружимо *з* дитинства. 5) Куди ти поклала мою парасольку? – Подивись у шафі. Я щойно бачила її там. 6) Ви вже щось замовили? – Так, ми щойно замовили м'ясо *з* овочами та морозиво на десерт. 7) Ваша донька вже була у новому кінотеатрі? – Так, була там лише раз. 8) Навіщо Том увімкнув комп'ютер? – Він щойно пригадав, що сьогодні ще не перевірив свою електронну пошту. 9) Кому Лінда розповіла про своє рішення продати будинок? – Вона тільки спитала поради в містера Вілсона. Він її адвокат уже більше десяти років. 10) Що ти зробив? – Я пофарбував двері будинка. – Навіщо ти їх пофарбував?

EXERCISE 17. Put the verbs in brackets into the Past Perfect Tense.
1) Ella ... *(to type)* six letters by lunchtime. 2) After we ... (to *buy) the* tickets, we went to the platform. 3) When our delegation arrived at the university, the conference ... *(already to begin).* 4) There were no oranges left because Jane and Max ... (to *eat)* them all. 5) Mary ... *(to give)* me a warm blanket before I went to bed. 6) The lawyer ... *(to prepare)* all the documents by 4 o'clock yesterday. 7) The workers ... *(to finish)* the reconstruction of the bridge by the beginning of June. 8*)* I ... *(to see)* that man somewhere before I

met him at the presentation. 9) By the time the police arrived, the burglars ... *(to escape)*. 10) The rain started after we ... *(to catch)* a taxi.

EXERCISE 18. Complete the text with the verbs from the box, using them in the Past Perfect Tense.

to notice	to commit	to place	to inform
to steal (2)	to walk	to pass	to work

The Theft of the Mona Lisa

On 21 August 1911, Leonardo da Vinci's Mona Lisa, one of the most famous paintings in the world, was stolen from the Louvre. It was such an inconceivable crime, that nobody ... even ... it until the following day.

About 60 investigators arrived to the Louvre to find out how the criminals ... a famous painting. Rumours and theories about the identity and the motive of the theft spread like wildfire. Some people believed that the Mona Lisa had been stolen to show how bad the Louvre was protecting the masterpieces; others suggested that the thief was going to blackmail the Government to get money for it. Two years ... before the thief made contact.

In the autumn of 1913, a well-known dealer, Alfredo Geri placed an advertisement in several Italian newspapers which stated that he was «a buyer at good prices of art objects of every sort. After he ... the ad, Geri received a letter which stated that the writer was in possession of the stolen Mona Lisa. Geri ... the police about the letter before he got in touch with its author. Some days later the police arrested Vincenzo Peruggia who actually ... the painting from the Louvre,

Vincenzo Peruggia ... in Paris at the Louvre by 1908. Still known by many of the guards, he ... into the museum, grabbed the Mona Lisa, removed the painting front its frame and walked away. Vincenzo explained that he ... that crime to return the painting to Italy.

The Mona Lisa was displayed throughout Italy before it was returned to France on 30 December 1913.

EXERCISE 19. Put the verbs in brackets into the correct form and read a joke.

The Absent-Minded Professor

Richard Rudd was a man whose memory was very bad. He was so absent-minded that he sometimes forgot what he was talking about in the middle of the sentence. As a rule his wife had to remind him about his appointments, lectures and even meals.

One hot summer day Professor Rudd decided to take his children to the beach. The seaside town he ... *(to plan)* to visit was about a three-hour train ride away. To make the trip more interesting for his young children he kept the name

of the town in secret. Unfortunately, by the time the Rudds ... *(to arrive)* at the train station, the poor professor ... *(to forget)* the name of: his destination himself. Fortunately, a friend of his happened to be in the station. He offered to take care of the children while Rudd went back home to find out where he was going.

The professor's wife was surprised to see her husband again so soon, but she guessed what... *(to happen).* The woman wrote the name of the town on a piece of paper and gave it to her husband.

Satisfied that she ... *(to solve)* the problem, the woman sent her husband off again. Some minutes later she was surprised to see that her husband ... *(not to leave)* for the station yet. Professor was standing in front of the gates thinking about something. The woman asked why he ... *(not to go yet)* and the professor said that he ... *(to forget)* where he ... *(to leave)* the children,

EXERCISE 20. Make the sentences negative and interrogative.
1) David had booked the room in the hotel before. 2) We had decorated the hall for the disco party by 4 o'clock. 3) They had agreed about the time of the meeting by Monday. 4) Sally had vacuumed the carpets before my arrival. 5) My parents had seen that performance before. 6) They had left for the airport before 5 o'clock. 7) You had fixed that camera by Tuesday. 8) Peter had paid the electricity bill before the weekend. 9) Wendy had shown me her fancy dress for the New Year party before. 10) It had stopped snowing by 9 o'clock.

EXERCISE 21. Make up questions and give short answers using the text of ex. 19.
1) The professor / to plan / his trip / before / he / arrived / at the station? 2) The professor / to tell / his children / the name of the town / before / they / set off? 3) The professor / to forget / the name of their destination / by the time / they / arrived / at the station? 4) The professor's wife / to guess / about the situation / before / the professor / returned home? 5) The professor's wife / to write / the name of the town / on a piece of paper / before / she / sent / her husband / back to the station? 6) The professor / to set off / for the station / before / his wife / saw / him / in front of the gates?

EXERCISE 22. Put the verbs in brackets into the correct form.
1) The party ... *(to begin)* before James and Chris came. 2) Pamela ... *(not to finish)* her project by the end of October. 3)... the ferry ...*(to reach)* the island by 7 o'clock yesterday? – Yes, it... . 4)... Richard ... *(to be)* to Sheffield before? – No, he .... 5) ... your brother ... *(to book)* the tickets for the concert beforehand? – Yes, he ... . 6) Kate ... *(to see)* this film before it was on at our local cinema. 7) The plane ... *(to land)* by the time we got to the airport. 8) Clive ... *(not to attend)* computer courses before he entered university. 9)... Nick ... *(to make)* all the calculations by the time the meeting began yesterday? – No, he .... He

finished all the calculations only after the meeting ... *(to begin)*. 10) I ... *(not to hear)* about the festival before you told me about it.

EXERCISE 23. Translate into English.
1) Наш механік відремонтував ваше авто вчора до шостої вечора. 2) Вона раніше ніколи не їла таких смачних цукерок. 3) До кінця минулого тижня я все ще не отримав ваше запрошення. 4) Ви вчора приїхали до початку презентації? – Так. 5) Тоді Генрі ще не розповів мені про свої плани на зимові канікули. 6) Ви повернулися з відпустки до початку нового навчального року? – Ні, ми приїхали тільки перед кінцем минулого тижня. 7) У нього раніше ніколи не було такої цікавої роботи. 8) Лінда вас бачила вчора перед початком лекції? – Ні. 9) Авто невідкладної допомоги приїхало вчора до восьмої. 10) Дощ припинився перед світанком? – Так.

EXERCISE 24. Write questions to the underlined words.
1) We had reached the town by 6 o'clock yesterday evening.
2) Molly had stayed in that hotel two times before.
3) The secretary had typed five letters by lunchtime.
4) Phil had come to the bank by the opening time yesterday.
5) They had learned to ski by the end of their holiday.

EXERCISE 25. Make up the sentences using the Past Perfect Tense.
1) I / to arrange / my visit to the estate agent / the day before. 2) Mike / quite / to forget / about the appointment / by the end of the day. 3) You / to discuss / your money affairs / with your boss / before the conference / yesterday? 4) How many articles / the journalist / to write / by the end of last month? 5) By what time / the messenger / to deliver / the mail / yesterday? 6) We / to eat / all the food / in the fridge / by the end of the week. 7) What museums / the tourists / to visit / before / their departure? 8) What / Ron / to learn / by the end of his studying? 9) Mr. Elliot / to save / enough money / for a new car / by the end of last year. 10) Amanda / to be / to Egypt / before our last trip?

EXERCISE 26. Put the verbs in brackets into the correct form.
1) I understood what mistake Nick ... *(to make)* two days before. 2) Unfortunately Sally ... *(not to come)* by the time the department store opened. 3) Henry didn't remember which button he ... *(to press)*. 4) How many patients ... the doctor ... *(to examine)* by the end of the day? 5) Yesterday Molly told me that she ... *(not to choose)* a present for you yet. 6) Where ... Den ... *(to go)* before we returned home? – He ... *(to go)* to meet some of his schoolmates. 7) Why ... Alice ... *(not to clean)* the flat before the guests came? – She ... (to *be*) busy cooking supper. 8) By what time ... you ... *(to get)* my message? – I ... *(to get)* it by four o'clock yesterday. 9) What ... Tina ... *(to give)* you before we left? – She ... (to *give*) a magazine which I wanted to read. 10) Where ... Ron ... *(to leave)* a note for us before he went to the market? – He said he ... *(to put)* it on the shelf near the front door.

EXERCISE 27. Circle the correct item.

1) Edgar *phoned/had phoned* me at 8 o'clock yesterday evening. 2) Mary *vacuumed/had vacuumed* the carpets by 3 o'clock yesterday. 3) We *went/had gone* home after it *stopped/had stopped* raining. 4) The waiter *brought/had brought* the drinks which we *ordered/had ordered* before. 5) Angela *paid/had paid* the money, *took/had taken* her purchase and *left/had left* the shop. 6) Before the Bells *chose/had chosen* the hotel, they *discussed/had discussed* all the details with their travel agent. 7) Paul *started/had started* working as a designer after he *graduated/had graduated* from university. 8) Tom *entered/had entered* the classroom and *closed/had closed* the door. 9) When Sam *came/had come* to the platform, the train *already arrived/had already arrived.* 10) By the time we *got/had got home,* the film *finished/had finished.*

EXERCISE 28. Put the verbs in brackets into the Past Simple or the Past Perfect Tense.

1) Julia ... *(to stop)* and ... *(to turn)* around to see who ... (to *cull)* her name. 2) Mr Brooks ... (to *take)* the documents which the secretary ...*(to prepare)* for him the day before. 3) I ... *(not to phone)* you because I ... *(to leave)* my mobile phone at home. 4) Vicky ... *(to show)* us her new skirt which she ... *(to buy)* at the sale a week before. 5) We ... (to *be)* hungry and ... *(to decide)* to go to a cafe for a snack. 6) The rescue team ... *(to arrive)* before the fire ... *(to destroy)* all the building. 7) What car ... your father ... *(to have)* before he ... *(to buy)* the Opel? 8) I ... *(not to see)* Jack yesterday because he ... *(to fly)* to Leeds for the conference three days before. 9) When I ... *(to return)* from the swimming pool yesterday, my mother ... *(to tell)* me that she ... *(to make)* my favourite cake. 10) The woman ... *(to be)* sure that the boy ... (to *tell)* her the truth.

EXERCISE 29. Choose the correct form to complete the sentences.
Alfred Nobel

Alfred Nobel was born on 21 October 1833 in Stockholm, Sweden. His father 1) ... an engineer and inventor. After his) father 2) ... an engineering firm providing equipment for that Tsar's armies, Nobel's family 3) ... to Russia. In 1850 Nobel's father 4) ... him abroad to study chemical engineering. During a two-year period Nobel 5)... Sweden. Germany, France and the United States. After the family firm 6) ... bankrupt in 1863J the Nobels 7) ... to Sweden.

Back in Sweden, Alfred Nobel 8) ... himself to the study of explosives. He 9) ... nitroglycerine into silica which 10) ... It] safer and easier to manipulate. This he 11) ... in 1867 under the name of «dynamite». Dynamite 12) ... Nobel's fame and was soon used in blasting tunnels, cutting canals and building railways and roads all over the world. In the 1870s and 18801 Nobel 13) ... up a network of factories all over Europe to manufacture explosives. He 14) ... to work in his laboratory inventing a number of synthetic materials and by the time Ms death he 15) ... 355 patents.

In November 1895, Nobel 16) ... his will providing the establishment of the Nobel Prize. He 17) ... to establish annual prizes in Physics, Chemistry, Physiology or Medicine, Literature and Peace. An Economics Prize was added later.

Nobel 18) ... at his home in Italy on 10 December 1896. He is buried in Stockholm.

1)	a) was;	b) had been.
2)	a) opened;	b) had opened.
3)	a) moved;	b) had moved.
4)	a) sent;	b) had sent.
5)	a) visited;	b) had visited.
6)	a) went;	b) had gone.
7)	a) returned;	b) had returned.
8)	a) devoted;	b) had devoted.
9)	a) incorporated;	b) had incorporated.
10)	a) made;	b) had made.
11)	a) patented;	b) had patented.
12)	a) established;	b) had established.
13)	a) built;	b) had built.
14)	a) continued;	b) had continued.
15)	a) registered;	b) had registered.
16)	a) signed;	b) had signed.
17)	a) decided;	b) had decided.
18)	a) died;	b) had died.

EXERCISE 30. Find mistakes and correct them.

1) By 8 o'clock everyone left. 2) Ann didn't travelled by plane before that day. 3) The professor had finished his lecture at 12 o'clock. 4) I have just woken up when somebody knocked at the door. 5) We had just finished supper when Mike had phoned. 6) How many books did you read by the end of last month? 7) Jane saw the picture and had understood how beautiful it was. 8) Little Polly had never seen snow before she had come to Iceland. 9) Den finished his work before his boss returned. 10) We had gone to bed after the TV programme had ended.

EXERCISE 31. Translate into English

1) Ганна показала нам фотографії, які вона зробила два дні тому. 2) Коли ми зустріли Тома, він уже купив квитки на виставу. 3) Після того як Ольга перечитала лист від сестри, вона пригадала їхню останню зустріч на вокзалі. 4) Перед тим як він вимкнув комп'ютер, ще раз перевірив електронну пошту. 5) Коли Боб приєднався до нас, ми вже замовили капу і тістечка. 6) Я не розумів, чому Майк не повідомив мене про своє рішення раніше. 7) Ти прибрав свою кімнату перед тим, як пішов на вечірку? 8) Перед тим як я вирішив поговорити з вами, я розмовляв з вашим

тренером. 9) Що Лінда сказала вам перед тим, як ви запитали мене про мого двоюрідного брата? 10) Джек переїхав до столиці після того, як ми закінчили школу. 11) Після того як вистава закінчилась, ми вирішили зайти до кав'ярні і повечеряти. 12) Охоронець викликав поліцію відразу після того, як почув якийсь шум усередині магазину.

EXERCISE 32. Put the verbs in brackets into the Future Perfect Tense.

1) Mike ... *(to prepare)* all the calculations by the end of his working day tomorrow. 2) I ... (to *learn)* some phrases in Japanese by the time the participants of the Japanese delegation arrive. 3) The chef ... *(to cook)* all the dishes by the time the banquet begins. 4) The secretary ... *(to arrange)* all the papers by the time the boss comes to the office tomorrow. 5) The ferry . . . *(to reach)* the port by 4 o'clock tomorrow. 6) They ... (to *deliver)* our pizza by the beginning of the party tomorrow. 7) Jack and Monica ... *(to send)* all the invitations by next Tuesday. 8) I ... *(la read)* your report by tomorrow morning. 9) The workers ... *(to unload)* the lorries by the end of their working day. 10) We … *(to analyse)* the results of the experiment by next Friday.

EXERCISE 33. Make the sentences negative and interrogative.

1) We will have played two games of cricket by 6 o'clock tomorrow.
2) They will have left the country by next Monday.
3) She will have returned from the walk by 8 o'clock tomorrow.
4) We will have done the shopping by 5 o'clock tomorrow.
5) Martin will have passed all the exams by next Wednesday.
6) You will have known the results of the test by tomorrow evening.
7) Angela will have written the essay by Tuesday.
8) The workers will have finished decorating our house by next month.
9) The performance will have finished by 8 o'clock.
10) The weather will have changed by tomorrow evening.

EXERCISE 34. Put the verbs in brackets into the correct form.

1) Janet ... *(to make)* the cake by 3 o'clock tomorrow. 2) ... Chris ... *(to book)* a table in the restaurant by next Sunday? – Yes, he .... 3) Unfortunately, Sam ... *(not to return)* from his business trip by next Wednesday. 4) ... Cindy ... *(to prepare)* her speech by Monday? – Yes, she .... 5) ... the bookkeeper ... *(to pay)* all the bills by next Friday? – No, he ... . 6) I ... (to *write)* a shopping list for you by tomorrow morning. 7) ... you ... (to *speak)* to your parents by tomorrow? – Yes, I ... . 8) ... Tom ... *(to pack)* his rucksack by the time the bus arrives? – Yes, he .... 9) I'm afraid Molly ... *(not to make)* photocopies of all the documents by the end of the working day. 10) ... we ... (to *reach)* the camp by sunset? – I hope we ...

EXERCISE 35. Write questions to the underlined words.

1) Max <u>will have painted</u> the roof of the house <u>by 7 o'clock</u>.
2) <u>We</u> will have put <u>the posters</u> <u>in the hall</u> by the beginning of the concert.
3) They <u>will have brought</u> <u>new furniture</u> <u>by 4 o'clock</u> tomorrow.

4) <u>Olga</u> will have returned <u>from the swimming pool</u> <u>by 7 o'clock</u>.
5) You <u>will have typed</u> <u>five</u> <u>letters</u> by the end of the working day.

EXERCISE 36. Translate into English.

1) Майк відремонтує ваше авто до вечора вівторка. 2) Ми не завершимо проект до кінця цього місяця. 3) Мій юрист підготує всі необхідні документи до четверга. 4) Ви отримаєте наше повідомлення до кінця робочого дня. 5) Олена приготує вечерю до сьомої вечора? – Так, вона все приготує, а ми накриємо на стіл до сьомої вечора, 6) Хто замовить квитки на літак до понеділка? – Джон їх замовить. 7) До якого часу завтра водій привезе обладнання? – Він привезе обладнання завтра до шостої вечора. 8) Ваш секретар надрукує звіт до наступного понеділка? – Так. 9) Скільки суконь вони пошиють до наступної середи? – Я гадаю, вони пошиють не більше двадцяти суконь. 10) Вона напише статтю до п'ятниці? – Ні, вона до п'ятниці ще не повернеться з відрядження.

1.4. Доконано-тривалі часи
(PERFECT CONTINUOUS TENSES)

Доконано-тривалі часи поєднують значення довершеності та продовження дії. Вони демонструють, що до певного моменту дія уже відбувалася протягом певного періоду часу і продовжує відбуватися або щойно завершилася.

Доконано-тривалі часи утворюються з відповідних неозначених часів допоміжного дієслова **to have**, дієслова **to be** у третій формі та основного дієслова із закінченням –*ing*.

Час	Запитальне речення	Стверджувальне речення	Заперечне речення
минулий	Had You We They I He She living' It been writing/	You We They I She He It had been writing/ living?	You We They I He She It had not been writing / living.
теперішній	Have I You We They He She It been writing / living? Has	I You We They has She It have been writing / living.	I You We They has She It have not been writing /living. not
майбутній	Will I You We They He She It have been writing / living?	I You We They He She It will have been writing / living?	I You We They He She It will not have been written / living?

ТЕПЕРІШНІЙ ДОКОНАНО-ТРИВАЛИЙ ЧАС
(THE PRESENT PERFECT CONTINUOUS TENSE)

Теперішній доконано-тривалий час вживається для вираження дії, що розпочалась у минулому, триває певний час і в момент мовлення ще не завершилась.

Стверджувальна форма теперішнього доконано-тривалого часу утворюється з використанням допоміжного дієслова *have/has,* дієслова *to be* у третій формі та основного дієслова із закінченням –*ing*.

$$I/you/we/they + have \ been + V_{ing}$$
$$He/she/it + has \ been + V_{ing}$$

Наприклад:

She **has been cooking** *for two hours now. (and hasn't finished yet)*

They **have been playing** *basketball since 10 o'clock. (and hasn't finished yet)*

Заперечна форма теперішнього доконано-тривалого часу утворюється за допомогою заперечної частки *not*, яка ставиться після першого допоміжного дієслова.

$$I/you/we/they + have \ not \ (haven't) \ been + V_{ing}$$
$$He/she/it + has \ –not \ (hasn't) \ been + V_{ing}$$

Наприклад:

He **hasn't been reading.**

They **haven't been playing** *chess.*

Питальна форма теперішнього доконано-тривалого часу (загальне запитання) утворюється за допомогою допоміжного дієслова *have/has*, яке ставиться на початку речення.

$$Have + I/you/we/they + been + V_{ing}?$$
$$Has + he/she/it + been + V_{ing}?$$

Відповіді на такі запитання дають з використанням того ж допоміжного дієслова.

Наприклад:

Have you been working since 9 o'clock? – Yes, I have. / No, I haven't.

Has she been sunbathing for two hours? – Yes, she has. / No, she hasn't.

Складаючи спеціальні запитання у теперішньому доконано-тривалому часі, слова розташовуються у такому порядку: питальне слово *(Wh–word)*, допоміжне дієслово *have/has,* підмет, дієслово *been* та основне дієслово із закінченням *–ing.*

$$Wh–word + have + I/you/we/they + been + V_{ing}?$$
$$Wh–word + has + he/she/it/ + been + V_{ing}?$$

Наприклад:

What has he been discussing?

How long have you been waiting?

МИНУЛИЙ ДОКОНАНО-ТРИВАЛИЙ ЧАС
(THE PAST PERFECT CONTINUOUS TENSE)

Минулий доконано-тривалий час вживається для вираження дії, що тривала якийсь час до певного моменту в минулому чи початку іншої дії в минулому.

Стверджувальна форма минулого доконано-тривалого часу утворюється з використанням допоміжного дієслова *had*, дієслова *to be* у третій формі та основного дієслова із закінченням *–ing*.

$$I/you/he/she/it/we/they + had \ been + V_{ing}$$

Наприклад:

*They **had been playing** basketball for an hour before it started raining.*

Заперечна форма минулого доконано-тривалого часу утворюється за допомогою заперечної частки *not*, яка ставиться після першого допоміжного дієслова.

$$I/you/he/she/it/we/they + had\ not\ (hadn't)\ been + V_{ing}$$

Наприклад:

*He **hadn't been reading** before you came.*

Питальна форма теперішнього доконано-тривалого часу (загальне запитання) утворюється за допомогою допоміжного дієслова *had*, яке ставиться на початку речення.

$$Had + I/you/he/she/it/we/they + been + V_{ing}?$$

Відповіді на такі запитання дають з використанням того ж допоміжного дієслова.

Складаючи спеціальні запитання у теперішньому доконано-тривалому часі, слова розташовуються у такому порядку: питальне слово *(Wh–word)*, допоміжне дієслово *had,* підмет, дієслово *been* та основне дієслово із закінченням *–ing*.

$$Wh–word + had + I/you/he/she/it/we/they + been + V_{ing}?$$

Наприклад:

What has he been discussing?

How long have you been waiting?

МАЙБУТНІЙ ДОКОНАНО-ТРИВАЛИЙ ЧАС
(THE FUTURE PERFECT CONTINUOUS TENSE)

Майбутній доконано-тривалий час вживається для вираження дій, які відбудуться протягом якогось часу до певного моменту у майбутньому.

Стверджувальна форма теперішнього доконано-тривалого часу утворюється з використанням допоміжного дієслова *will,* конструкцією *have been* та основного дієслова із закінченням *–ing*.

$$I/you/he/she/it/we/they + will + have\ been + V_{ing}$$
$$He/she/it + has\ been + V_{ing}$$

Наприклад:

*By the end of next month, we **will have been constructing** this building for 5 weeks.*

Заперечна форма теперішнього доконано-тривалого часу утворюється за допомогою заперечної частки *not*, яка ставиться після першого допоміжного дієслова.

$$I/you/he/she/it/we/they + will\ not + have\ been + V_{ing}$$

Питальна форма теперішнього доконано-тривалого часу (загальне запитання) утворюється за допомогою допоміжного дієслова *have/has*, яке ставиться на початку речення.

$$Will + I/you/he/she/it/we/they + have\ been + V_{ing}?$$

Відповіді на такі запитання дають з використанням того ж допоміжного дієслова.

Складаючи спеціальні запитання у теперішньому доконано-тривалому часі, слова розташовуються у такому порядку: питальне слово *(Wh-word)*, допоміжне дієслово *will,* конструкцією *have been* та основного дієслова із закінченням *–ing*.

Wh-word + will + I/you/he/she/it/we/they + have been + V_{ing}?

EXERCISE 1. Put the verbs in brackets into the Present Perfect Continuous Tense.

1) Richard ... *(to paint)* the portrait of Sally in the studio since 9 o'clock in the morning. 2) The attorney ... *(to speak)* to his client for an hour and a half now. 3) Molly ... *(to attend)* language courses for three months now. 4) Mike ... *(to drive)* his Toyota since last winter. 5) The Professor ... *(to give)* a lecture for an hour. 6) We ... *(to prepare)* for the festival since last month. 7) Mr Moor ... *(to wait)* for his flight in the airport for three hours. 8) Fiona ... *(to talk)* to her school friend since 3 o'clock. 9) They ... *(to travel)* around China for two weeks now. 10) Ann ... *(to gather)* strawberries since 8 o'clock in the morning.

EXERCISE 2. Make the sentences negative and interrogative.

1) Helen has been translating this article for an hour. 2) We have been listening to the latest news for five minutes. 3) She has been ironing since 5 o'clock. 4) Ben has been taking a shower for a quarter of an hour. 5) A cat has been watching a bird for ten minutes. 6) Tom's cousin has been doing karate for twelve years. 7) We have been walking around the Zoo since 11 o'clock. 8) The participants have been filling in the questionnaires for twenty minutes. 9) Mike has been searching for the information since last Tuesday. 10) Den has been driving for six hours now.

EXERCISE 3. Put the verbs in brackets into the correct form.

1) Is Jack in his room? – Yes, he ... (to *write*) an article for the school magazine since 5 o'clock. 2) Why are you so angry? – I... *(to phone)* my boss for forty minutes now but I can't get through. 3) ... Sue ... *(to rewrite)* her essay since early morning? – Yes, she .... She ... *(to work)* for three hours now. 4) Is Alice still in the bathroom? – Oh, she ... (to *have*) a bath for half an hour now! 5) Has Ben woken up yet? – No, he hasn't. He ... *(to sleep)* for more than twelve hours now. 6) ... Janet... (to *study)* French for five years? – No, she ... (to *study*) it for seven years now. 7) Is everything ready for the party? – No, the girls are still in the kitchen. They ... *(to cook)* since 7 o'clock in the morning. 8) Where is little Den? – He ... *(to play)* football with his friends for three hours now. 9) Have you read that detective story, Tina? – No, I ... (to *read*) it for two weeks, but haven't finished yet. 10) ... Janice ... (to *wait)* for her husband's call since 5 o'clock? – Yes, she ... *(to wait)* for it for three hours now.

EXERCISE 4. Write questions to the underlined words.

1) We have been waiting for the beginning of the concert for fifty minutes. 2) She has been typing letters for her boss for two hours. 3) You have been swimming in the swimming pool since 10 o'clock. 4) Alan has been listening to music in his room for three hours. 5) They have been discussing a new project for an hour.

EXERCISE 5. Put the verbs in brackets into the correct form.

1) Is Richard still in the gym? – He... *(to train)* since 8 o'clock in the morning! – Yes, he ... *(to prepare)* for the championship for seven months already. 2) Does your brother work for Mitsubishi Corporation? – Yes, he ... *(to work)* there for thirteen years. 3) Haven't you finished your article yet? – No, I haven't. I ... *(to write)* it for three days now. 4) What ... Diana ... *(to cook)* since 4 o'clock? – She ... *(to prepare)* curry chicken. 5) Is that serial so interesting? You ... *(to watch)* it for three weeks already.– No, I ... *(not to watch)* it for three weeks. I .... *(just to watch)* it for a week. And it is really exciting. 6) How long ... Jimmie ... *(to play)* the guitar in your rock group? – He ... *(to play)* in our rock group since last year. 7) What ... Pete ... *(to do)* in the kitchen since 3 o'clock? – He ... *(to fix)* a dishwasher. 8) You shouldn't drive to work today. It... *(to snow)* heavily since yesterday evening and the roads are blocked up..9) Mary is shocked with the news. She ... *(to sit)* without saying a word for hours! 10) Stuart should have a rest. He ... *(not to sleep)* since yesterday.

EXERCISE 6. Find mistakes and correct them.

1) Rob and Jack has been swimming for an hour and a half. 2) Cindy has been not translating this text for two hours. 3) You has been watching TV for hours! 4) Why have been they discussing their trip so long? 5) Who have been waiting for you in the hall? 6) Has Tina being looking for this article? 7) My cousin have been working in this bank for three years now. 8) Have you been sunbathing since 8 o'clock? – No, I have. 9) Who has they been preparing these costumes for? 10) How long has she looked for a new job?

EXERCISE 7. Translate into English.

1) Мої батьки розмовляють з лікарем уже півгодини. 2) Ми шукаємо цей готель з восьмої ранку. 3) Він не слухає музику з ранку. Він весь цей час готується до іспиту з історії. 4) Вона працює в цьому агентстві два роки? – Ні, вона працює тут з квітня. 5) Ви чекаєте на інспектора більше години? – Ні, я чекаю на нього двадцять хвилин. 6) З ким ваш шеф так довго розмовляє? – Він щось обговорює зі своїм юристом. Вони розмовляють уже дві години. 7) Що ви читаєте вже сорок хвилин? – Я читаю статтю про мого улюбленого актора. 8) Хто ремонтує дах вашого будинку з ранку? – Це мій двоюрідний брат. Він допомагає нам уже три дні. 9) Як давно ваш батько працює програмістом? – Він працює про-

грамістом уже двадцять два роки. 10) Кому вона дзвонить весь вечір? – Вона дзвонить своїй подрузі, її подруга живе у Вашингтоні вже сім років.

EXERCISE 8. Put the verbs in brackets into the Past Perfect Continuous Tense.

1) My sister ... *(to practice)* for two months before that concert. 2) The boys ... *(to fish)* for three hours before Tom caught the first fish. 3) We ... *(to discuss)* that problem for more than an hour before we found the right solution. 4) Henry ... *(to wait)* for half an hour before he saw his girlfriend getting off the tram. 5) Driving to the hospital was difficult as it ... *(to snow)* all night. 6) Polly ... *(to study)* economy since she entered university. 7) Ron's collection of coins was valuable as he ... *(to collect)* them since he was a schoolboy. 8) When Sam returned home we ... *(to watch)* that TV programme for a quarter of an hour already. 9) Bill's coat and mittens were wet because he ... *(to play)* snowballs with his friends in the yard. 10) David was irritated because the police inspector ... *(to ask)* him questions for more than an hour.

EXERCISE 9. Make the sentences negative and interrogative.

1) Brian had been trying to find a better job for three weeks. 2) Little Johnny had been riding his new bike all day yesterday. 3) Robert and Frank had been fixing that computer for two hours yesterday. 4) Julia had been typing the report all the morning yesterday. 5) It had been raining all night last Tuesday. 6) The Smiths had been building their house for four years. 7) We had been skating for three hours yesterday. 8) You had been decorating the classroom for more than two hours last Saturday. 9) The twins had been fighting in the backyard when their mother saw them. 10) Molly had been speaking on the phone for an hour and a half yesterday evening.

EXERCISE 10. Put the verbs in brackets into the correct form.

1) It ... *(to snow)* for five hours before the weather changed. 2) Betty and Jane ... *(to argue)* for half an hour when their parents returned home. 3) Why did Ed miss his training yesterday? – He couldn't come because he ... *(to prepare)* his project all day yesterday. 4)... Isabel... *(to work)* as a secretary for four years before she moved to another town? – No, she .... She ... *(to work)* as a secretary just for two years. 5)... Pete ... *(to play)* computer games all the evening last Friday? – No, he ... . He ... (to *write)* an essay for two hours and then he went for a walk. 6) Jean ... *(not to wait)* for our boss all the morning yesterday. She ... (to *speak)* to some clients for about an hour and then she went to the bank. 7) Kevin was exhausted because he ... *(to unload)* the lorry for three hours. 8) I was really happy that Ron won that competition because he ... *(to prepare)* for it for half a year. 9)... you ... *(to save)* money for a new computer for a long time? – Yes, I .... I... *(not to spend)* a penny for six months before I got a svifficient sum. 10) Cathy and Sue ... *(to tidy)* our cottage house for two days after that birthday party.

EXERCISE 11. Write the questions to the underlined words.

1) We had been preparing for the Art Festival for a month. 2) Nora had been swimming in the pool for an hour before the rain started. 3) The boys had been eating hamburgers in the park yesterday. 4) Gordon had been reading the article about new software for half an hour yesterday. 5) Helen had been speaking to her friend on the phone for two hours yesterday.

EXERCISE 12. Make up the sentences using the Past Perfect Continuous Tense.

1) We / to wait / outdoors / for twenty minutes / before / he / opened the door. 2) What / Sally / to cook / when / you / came / home / yesterday? 3) How long / you / to repair / your car / before / Nick / started / to help / you? 4) Sarah / to collect / dolls / since / she / was /a girl. 5) Where / they / to come / from / when / you / met / them / yesterday? 6) Who / to sing / karaoke / all the evening / yesterday? 7) Greg / to study / for his final exams / all last month? 8) They / to drive / for five hours / when / they / ran out of petrol. 9) Tony / to sleep / for an hour / before / you / woke / him up. 10) Our chief / to discuss / some affairs / with our business partners / for two hours / last Wednesday.

EXERCISE 13. Complete the dialogues with the questions.

Policeman: How long ... before you saw the car accident yesterday?
Witness: I had been driving for three hours. I left home at 8 o'clock in the morning.
P: Where ... when the red car overtook your car?
W: I had been driving seventeen kilometres away from Aberdeen.
P: What speed ... at when the red car overtook your car?
W: I had been driving at 100 kilometres per hour.
P: How long ... before the ambulance arrived?
W: I had been waiting for about half an hour.
P: Who ... to give first aid to the injured people?
W: My wife and I had been trying to give first aid to them.
P: OK, thank you for your help.

EXERCISE 14. Put the verbs in brackets into the correct form.

1) Where ... Robert... *(to work)* since 4 o'clock yesterday? – He ... *(to fix)* a fence in the garden. 2) What ... Wendy ... *(to do)* in the studio for three hours last Monday? – She ... *(to prepare)* some of her pictures for the exhibition. 3) Why ... you ... *(to hurry)* when I met you last Friday, James? – I ... *(to go)* to the railway station to meet my uncle. I was afraid to be late. 4) It ... *(to rain)* heavily when Mr Scott stopped his car in front of a cafe. He wanted to have lunch because he ... *(not to eat)* since early morning. 5) What ... the students ... *(to write)* since 9 o'clock yesterday morning? – They ... *(to write)* a test on Psychology. 6) How long ... Janet ... *(to work)* in the office before she went home yesterday? – She ... *(to make)* photocopies of some documents for the boss

52

for about an hour and then she ... *(to type)* some letters for two hours before her working day was over. 7) The government ... (to *carry*) on negotiations with the terrorists for three days before they reached some agreement. 8) Stuart ... *(to try)* to call you for a quarter of an hour before you finally answered the phone. 9) Emily felt horrible yesterday because she ... *(not to sleep)* all night. 10) Why was Janet so angry last Friday? – Because she ... *(to argue)* with her parents for an hour.

EXERCISE 15. Find mistakes and correct them.
1) Ann had been done the ironing for two hours yesterday. *2)* We had tried to catch a taxi for twenty-five minutes last Sunday before we managed to stop one. 3) Margaret had been not surfing the Net all day yesterday. 4) Nigel had being trying to get in touch with you for a week. 5) Had been they waiting for a bus for half an hour last Wednesday? 6) How long Nelly had been speaking on the phone yesterday? 7) Had Sue been sunbathing all day yesterday? – No, she had. 8) They have been dancing for more than an hour yesterday before Helen got tired. 9) Who had played the piano in your room from 3 to 4 o'clock yesterday? 10) Why had been crying your baby all the morning yesterday?

EXERCISE 16. Translate into English.
1) Учора дівчата весь день допомагали мені збирати яблука в саду. 2) Менеджер розмовляв з клієнтами більше двох годин учора. 3) Минулого тижня ми готувалися до іспиту з понеділка по четвер. 4) Я не користувався комп'ютером з п'ятої до сьомої вчора. 5) Учора ви тренувались у спортзалі дві години? – Так, ми тренувались з шостої до восьмої вечора. 6) Як довго хлопці вчора каталися на велосипедах? – Вони каталися близько трьох годин. 7) Чому він учора весь день працював у бібліотеці? – Він весь день готувався до конференції. 8) Який фільм діти дивились вчора з дев'ятої вечора? – Вони дивились якусь комедію. 9) Які документи ваш секретар готував весь день минулого вівторка? – Він готував звіти для наших торгових партнерів. 10) Що вчитель вам учора пояснював на першому уроці? – Він пояснював нові правила граматики.

EXERCISE 17. Make up the sentences using the Future Perfect Continuous Tense.
1) By the beginning of April / my father / to work as the General Manager of this corporation / for fifteen years. 2) By 8 o'clock / we / to surf the Net / for five hours. 3) By the end of next month / we / to live / in this city / for ten years. 4) By the end of this day / Dolly / not to design / this fancy dress / for seven hours. 5) Ted / to work / as an attorney / for twenty years / by the end of March? 6) Jack and Alison / to build / their house / for a year by Easter? 7) My parents / to run / this café / for six years / by next September. 8) By 4 o'clock / they / to play volleyball / for three hours. 9) By 3 o'clock / the students / to write / the

test for two hours and a half. 10) By next Friday / Henry / to train / for the competition / for ten months.

EXERCISE 18. Put the verbs in brackets into the correct form.

1) By the 25th of December she ... *(to work)* on this project for six months. 2) By Saturday, Fred ... (to *paint)* this picture for two weeks. 3) We ... *(to study)* marketing for a year by the end of the academic year. 4) By tomorrow morning Laura ... *(to sleep)* for twelve hours. 5) ... they ... (to *work)* together for ten years by the end of May? – Yes, they ... . 6) ... Nick ... (to *train)* for four hours by 6 o'clock? – No, he .... 7) By 5 o'clock Jessica ... *(to sit)* at the dentist's for three hours. 8) By 12 o'clock the children ... *(to swim)* for two hours. 9) By the end of the day the workers ... *(to paint)* this house for nine hours. 10) By 6 o'clock in the evening we ... *(to wait)* for his message for five hours.

2. Видо-часові форми пасивного стану дієслів
(THE PASSIVE VOICE)

Пасивний стан дієслів в англійській мові вживається, коли дія більш важлива, ніж її виконавець; коли виконавець дії невідомий; коли ми звертаємо увагу на виконавця дії. Також пасивний стан вживається для підкреслення ввічливості та офіційності ситуації.

Наприклад:

The animals on the farm are fed three times a day. (виконавець дії невідомий та неважливий)

This poem was written by Robert Burns. (звертаємо увагу на виконавця дії)

All the participants will be sent invitation cards. (підкреслюємо офіційність ситуації)

Дієслова пасивного стану в англійській мові вживаються у неозначених часах (теперішньому, минулому, майбутньому); тривалих часах (теперішньому та минулому); доконаних часах (теперішньому, минулому, майбутньому), у сполученні з модальними дієсловами.

	Simple	**Continuous**	**Perfect**
Present	**am** **is** + **V₃** **are** *He is asked.* *We are woken.*	**am** **is** + **being** + **V₃** **are** *He is being asked now.* *We are being drawn.*	**have** **has** + **been** + **V₃** *He has been asked.* *We have been woken.*
Past	**was** **were** + **V₃** *He was asked.* *We were woken.*	**was** **were** + **being** + **V₃** *He was being asked.* *We were being drawn.*	**had** + **been** + **V₃** *He had been asked.* *We had been woken.*
Future	**shall** **will** + **be** + **V₃** *He will be asked.* *We shall be woken.*		**shall** **will**+**have** +**been**+ **V₃** *He will have been asked.* *We shall have been woken.*

2.1. ПАСИВНИЙ СТАН ДІЄСЛІВ НЕОЗНАЧЕНИХ ЧАСІВ
(SIMPLE TENSES PASSIVE)

Пасивний стан дієслів неозначених часів (Simple Tenses) утворюється додаванням допоміжного дієслова *to be* у відповідному часі до основного дієслова у третій формі (для неправильних дієслів) або із закінченням *–ed* (для правильних).

$$to\ be + V_3\ (V_{ed})$$

Заперечна та питальна форми речень з дієсловами пасивного стану утворюються з використанням відповідних форм допоміжного дієслова *to be*.

Для утворення пасивного стану дієслів теперішнього неозначеного часу (The Present Simple Passive) вживаються форми допоміжного дієслова *to be* в теперішньому часі *(am/is/are)*.

I + am + V₃ (V_{ed})   *Am + I +V₃ (V_{ed})?*
He/she/it + is +V₃ (V_{ed})   *Is + he/she/it + V₃ (V_{ed})?*
We/you/they + are + V₃ (V_{ed})   *Are + you/we/they + V₃(V_{ed})?*
I + am not + V₃ (V_{ed})
He/she/it + is not (isn't) +V₃ (V_{ed})
We/you/they + are not (aren't) + V₃ (V_{ed})

Пасивний стан дієслів у теперішньому неозначеному часі вживається, якщо дії є регулярними чи повторюваними або йдеться про загальновідомі факти. Характерні обставини часу: *always, usually, often,every week (month, etc.), sometimes, seldom, rarely, never.*

 Наприклад:
*Bread **is baked** in an over.*
*Bread **isn't baked** in a frying pan.*
***Is** the dog **fed** regularly? – Yes, it is. / No, it isn't.*

Пасивний стан дієслів у реченнях минулого неозначеного часу (The Past Simple Passive) утворюється за допомогою форм минулого часу допоміжного дієслова *to be (was/were)*.

I/he/she/it + was +V₃ (V_{ed})
We/you/they + were + V₃ (V_{ed})
I/he/she/it + was not (wasn't) +V₃ (V_{ed})
We/you/they + were not (weren't) + V₃ (V_{ed})
Was + I/he/she/it + V₃ (V_{ed})?
Were +you/we/they + V₃(V_{ed})?

Пасивний стан дієслів у минулому неозначеному часу вживається, якщо дії відбулись і завершились у визначений момент у минулому або йдеться про події чи загальновідомі факти, що мали місце у минулому. Характерні обставини часу: *yesterday, last week (month,etc.) three days, ago.*

Наприклад:
*This house **was built** 5 years ago.*

*This house **wasn't built** 3 years ago.*

***Was** this garage **built** 5 years ago? – Yes, it was. / No, it wasn't.*

Пасивний стан дієслів у реченнях майбутнього неозначеного часу (the Future Simple Passive) утворюється за допомогою форми майбутнього часу допоміжного дієслова *to be (will be)*.

$$I/you/he/she/it/we/they + will\ be + V_3\ (V_{ed})$$
$$I/you/he/she/it/we/they + will\ not\ (won't)\ be + V_3\ (V_{ed})$$
$$Will + I/you/he/she/it/we/they + be + V_3\ (V_{ed})?$$

Пасивний стан дієслів у майбутньому неозначеному часі вживається, якщо дії відбудуться у певний час у майбутньому. Характерні обставини часу: *tomorrow, next week (month, etc.), in a day (a week, etc.).*

Наприклад:

*Your room **will be cleaned** in an hour.*

*Your room **won't be cleaned** in an hour.*

***Will** your room **be cleaned** in an hour? –* Yes, it will./No, it won't.

Складаючи спеціальні запитання до речень з дієсловами пасивного стану, слова розташовують у такому порядку: питальне слово *(Wh–word),* допоміжне дієслово *to be* у відповідному часі, підмет та основне дієслово у третій формі (для неправильних дієслів) або із закінченням *–ed* (для правильних).

$$Wh\text{-}word + am/is/are + subject + V_3\ (V_{ed})?$$
(The Present Simple Passive)
$$Wh\text{-}word + was/were + subject + V_3\ (V_{ed})?$$
(The Past Simple Passive)
$$Wh\text{-}word + will + subject + be + V_3\ (V_{ed})?$$
(The Future Simple Passive)

Наприклад:

Where is this magazine published? What was done yesterday? When will this dish be cooked?

2.2. ПАСИВНИЙ СТАН ДІЄСЛІВ ТРИВАЛИХ ЧАСІВ (THE CONTINUOUS TENSES PASSIVE)

Для утворення пасивного стану дієслів теперішнього тривалого часу (The Present Continuous Passive) та минулого тривалого часу (the Past Continuous Passive) вживаються форми допоміжного дієслова *to be* в теперішньому часі *(am/is/are)* чи в минулому часі *(was/were)*, дієслово *to be* із закінченням *–ing* та основне дієслово у третій формі (для неправильних дієслів) або із закінченням *–ed* (для правильних). Питальні та заперечні речення утворюються за допомогою форм дієслова *to be.*

$$I + am + being + V_3\ (V_{ed})$$
$$He/she/it + is + being + V_3\ (V_{ed})$$
$$You/we/ihey + are + being + V_3\ (V_{ed})$$

*The test **is being written** now.*

*The test **isn't being written** now.*

***Is** the test **being written** now? What **is being written** now?*

$$I/he/she/it + was + being + V_3 (V_{ed})$$
$$You/we/they + were + being + V_3 (V_{ed})$$

Наприклад:

*Dinner **was being cooked** at 3 o'clock yesterday.*

*Dinner **wasn't being cooked** at 3 o'clock yesterday.*

***Was** dinner **being cooked** at 3 o'clock yesterday?*

*What **was being cooked** at 3 o'clock yesterday?*

Пасивний стан дієслів теперішнього тривалого часу вживається, якщо дія відбувається над об'єктом у момент мовлення.

Пасивний стан дієслів минулого тривалого часу вживається для вираження дії, яка відбувалася над об'єктом у певний момент у минулому чи протягом певного часу у минулому.

2.3. ПАСИВНИЙ СТАН ДІЄСЛІВ ДОКОНАНИХ ЧАСІВ (THE PERFECT TENSES PASSIVE)

Для утворення пасивного стану дієслів теперішнього (the Present Perfect Passive), минулого (the Past Perfect Passive) та майбутнього доконаного часу (the Future Perfect Passive) вживається форми допоміжного дієслова *to have* у теперішньому *(have/has),* минулому *(had)* чи майбутньому часі *(will* have), дієслово *to be* у третій формі (been) основне дієслово у третій формі (для неправильних дієслів) або із закінченням -*ed* (для правильних). Питальні та заперечні речення утворюються за допомогою форм дієслова *to have.*

Пасивний стан дієслів теперішнього доконаного часу вживається, якщо дія над об'єктом нещодавно завершилась (точний час завершення дії невідомий) та явний результат.

$$I/you/we/they + have been + V_3 (V_{ed})$$
$$he/she/it + has been + V_3 (V_{ed})$$

Наприклад:

*The article **has been read** by Monday.*

*The article **hasn't been read** by Monday.*

***Has** the article **been read** by Monday?*

*What **has been done** by Monday?*

Пасивний стан дієслів минулого доконаного часу вживається, якщо дія над об'єктом завершилась до певного моменту у минулому або до початку іншої дії в минулому.

$$I/you/he/she/it/we/they + had been + V_3 (V_{ed})$$

Наприклад:

We **had been told** about it by 5 o'clock yesterday.

We **hadn't been told** about it by 5 o'clock yesterday.

Had we **been told** about it by 5 o'clock yesterday?

By what time **had we been told** about it yesterday?

Пасивний стан дієслів майбутнього доконаного часу вживається, якщо дія завершиться до певного часу у майбутньому.

$$I/you/he/she/it/we/they + will + have\ been + V_3\ (V_{ed})$$

Наприклад:

The article **will have been typed** by 2 o'clock tomorrow.

The article **won't have been typed** by 2 o'clock tomorrow.

Will the article **have been typed** by 2 o'clock tomorrow?

By what time **will the article have been typed** tomorrow?

EXERCISE 1. Circle the correct item.

1) The brakes of your car *were/will be* tested tomorrow. 2) The cows *are/will be* always milked three times a day. 3) This cave *is/was* found two years ago. 4) This newspaper *is/will be* published every day. 5) Your ice cream *is/will be* served in some minutes. 6) Mike's car *was/will be* serviced last month. 7) Milk *is/was* always used for making milkshake. 8) This TV programme *was/will be* shown tomorrow evening. 9) The new refrigerator *is/will be* delivered next Monday. 10) The first photograph *was/is* taken in 1826.

EXERCISE 2. Make the sentences negative and interrogative.

1) Coffee is grown in Brazil. 2) The carpets were vacuumed yesterday. 3) The flowers for the party will be delivered tomorrow morning. 4) Snails are eaten in France. 5) This sweater was knitted by my granny. 6) This picture will be sold by auction next Tuesday. 7) The children were scared by a big dog. 8) Volkswagen cars are produced in Germany. 9) The electricity bill will be paid in three days. 10) Dinner is served at 2 o'clock.

EXERCISE 3. Put the verbs in brackets into the Present Simple Passive, the Past Simple Passive or the Future Simple Passive.

1) The stuff ... *(to instruct)* by the manager tomorrow morning. 2) Yoghurt... *(to make)* from milk. 3) This stadium ... (to *build)* five years ago. 4) The classroom ... *(to clean)* every day. 5) The missing boat... *(to find)* yesterday. 6) The patient... *(to operate)* on tomorrow. 7) Australia ... *(to discover)* by captain Cook. 8) Nowadays basketball ... *(to play)* all over the world. 9) The toothbrush ... *(to invent)* in the fifteenth century. 10) This bridge ... *(to reconstruct)* next summer.

EXERCISE 4. Make up the sentences using the Present Simple Passive, the Past Simple Passive or the Future Simple Passive.

1) The Great Pyramids / to visit / by thousands of tourists / every year. 2) The first electronic computer / to develop / in 1943. 3) The injured woman / to examine / by a doctor / in a minute. 4) These letters / to type / an hour ago. 5) Tea / to make / from leaves of the tea plant. 6) Your photos / to publish / in the next issue / of our magazine. 7) The international conference / to hold / in Quebec / last month. 8) The broken parts of your car / to repair / in two days. 9) The results of the test / to know / tomorrow morning. 10) This TV programme / to broadcast / all over the world / every day.

EXERCISE 5. Make up questions using the Present Simple Passive, the Past Simple Passive or the Future Simple Passive and answer them as in the example.

Examp1e: This actress / to interview / last Friday? (Yes)

Was this actress interviewed last Friday? – Yes, she was.

1) Peter's car / to steal / last night? *(No)* 2) The chocolates / always / to wrap / in foil? *(Yes)* 3) Your paintings / to display / at the next exhibition? *(Yes)* 4) The books of this writer / often / to demand / in the library? (*No*) 5) An e–mail letter / to send / to Sally / yesterday? (*No*) 6) Our pizza / to deliver / in an hour? *(Yes)* 7) The animals in the Zoo / always / to keep / in cages? *(No)* 8) Their house / to sell / a month ago? *(Yes)* 9) You / always / to give / such nice presents for your birthday? *(Yes)* 10) The fireplace / to build / long ago? *(No)*

EXERCISE 6. Put the verbs in brackets into the correct form of the Present Simple Passive, the Past Simple Passive or the Future Simple Passive.

1) ... those invitations ... *(to send)* yesterday? – No, they .... They ... *(to send)* a bit later today. 2) ... the flowers in the Botanical garden ...*(to water)* every day? – Yes, they .... Today they ... *(to water)* just an hour ago. 3) ... Tom's advertisement, ... *(to place)* in the local newspaper last week? – Yes, it ... .It ... (to *publish)* again next week. 4) ... the office ... *(to clean)* every day? – No, it.... It... *(to clean)* three times a week. 5)... Pamela's new song ... *(to record)* next month? – Yes, it... . And the disc ... *(to release)* in two months. 8)... the photocopier often ... *(to use)* in your institute? – Yes, it .... 7) ... our flat ... *(to redecorate)* next week? – No, it ... . Unfortunately, the wallpapers ... *(not to deliver)* yesterday and we can't continue our work now. 8)... the new software ... (to set) up yesterday? – No, it ... *(not to set up)* because of the problems with electricity in your office. It ... (to *set)* up tomorrow morning. 9) A terrible crime ... (to *commit)* in our town two days ago. The results of the investigation ... *(to report),in* the news programme in some minutes. 10) ... olive oil ... *(to produce)* in France? – No, it ... j *(to make)* in Spain and Greece.

EXERCISE 7. Put the verbs in brackets into the correct form of the Present Simple Passive or the Past Simple Passive

Coca-Cola

Coca-Cola ... *(first to make)* in Atlanta, USA, on 8 May 1886. Dr John S. Pemberton, a local pharmacist, made the first syrup for Coca-Cola and carried a jug of it down the street to Jacob's Pharmacy where people tasted it and said it was «excellent». The syrup ... (to *sell)* for five cents a glass, but it was very strong tasting because it ... *(not to mix)* with water. The drink ... (to *call)* «Coca-Cola» because of the coca leaves and kola fruits that ... *(to use)* to add flavour. Dr Pemberton's partner*,* and bookkeeper, Frank Robinson, suggested the name «Coca Cola» because he thought that using the letter «C» instead of j the letter «K» in the word «Cola» would look better. Coca–Cola ... *(first to make)* the way it is now in Columbus, Georgia. It *(to sell)* as a medicine to help cure colds and give people more energy. Nowadays this drink ... (to *know)* all over the world. It ... (to *recognize)* as the world's best–selling soft drink. The company's headquarters ... *(to situate)* in Atlanta, Georgia.

EXERCISE 8. Make up questions and answer them using the text of ex. 7.

1) Coca-Cola / first / to make / in the USA? 2) Coca-Cola / to make / by a bookkeeper? 3) The drink / to call / «Coca-Cola» / because of the names of chemical ingredients? 4) The letter «C» / to change / for the letter «K» / in the name of the drink? 5) Coca-Cola / to sell / only in few countries / nowadays? 6) The headquarters of the company / to situate / in Columbia?

EXERCISE 9. Write questions to the underlined words.

1) The tablecloths in our restaurant are changed every day. 2) The police inspector was informed about the robbery at 8 o'clock yesterday evening. 3) Your luggage will be brought to your room in ten minutes. 4) Those goods were delivered to our supermarket last Monday. 5) Fresh vegetables are sold in the shop around the corner.

EXERCISE 10. Put the verbs in brackets into the Passive Voice (use the correct grammar tense).

1) When ... new computers ... (to *set up)?* – They ... (to *set up)* next Wednesday. 2) What colour ... Brian's bike ... (to *paint)* yesterday? – It ,.. *(to paint)* dark blue. 3) Who ... the tests ... *(usually to check)* by? – They ... *(usually to check)* by our professor. 4) Why ... the mail ... (to *deliver)* so late yesterday? – Because the postman ... (to *delay)* by traffic. 5) What hotel... *(to reconstruct)* next year? – According to our plan The Flamingo Hotel ... (to *reconstruct)* next year. 6) How much money ... *(to steal)* from the bank yesterday? – 1 million dollars ... (to *steal)* yesterday. 7) What places in your city ... *(usually to visit)* by

the tourists? – The Fine Arts Museum ... (to *visit) most* frequently. 8) What time ... the library ... (to *close)* last Friday? – It... (to *close)* at 6 o'clock in the evening, as usual. 9) How many TV sets ... (to *produce)* by this plant every month? – I think more than 1000 TV sets ... *(to produce)* by this plant monthly. 10) Where ... your dog ... (to *see)* last time? – It... (to *see)* near our local school last Tuesday.

EXERCISE 11. Translate into English.

1) Мобільними телефонами користуються в усьому світі. 2) Де вирощують чай? – Чай вирощують в Індії. 3) Коли було засновано цей університет? – Його було засновано у дев'ятнадцятому столітті. 4) Моє оголошення опублікують завтра? – Так. У нашій газеті оголошення публікують щодня. 5) Коли відремонтують мій комп'ютер? – Його відремонтують за два дні. 6) Де продають квіти? – Квіти продають у магазині біля супермаркету. 7) Коли прибирали цю кімнату? – Її прибирали вчора ввечері. 8) Які іноземні мови викладають у вашому університеті? – У нашому університеті викладають англійську, німецьку та французьку мови. 9) Де в останній раз бачили цього чоловіка? – Його бачили біля метро три дні тому. 10) Коли привезуть нові меблі? – Нові меблі привезуть за два дні.

EXERCISE 12. Make up the sentences using the Present Continuous Passive or the Past Continuous Passive.

1) A new sports club / to build / in our town / now. 2) This bridge / to build / for two years. 3) A new song / to record / at the studio / at the moment. 4) The press conference / to hold / from 2 to 3 p.m. / yesterday. 5) The letters / to type / at the moment? 6) This project / to discuss / at the meeting / for an hour / yesterday? 7) What film / to show / at 6 o'clock yesterday? 8) What / to cook / for supper / now? 9) Who / to interview / at the moment? 10) What time / the competition / to hold / yesterday?

EXERCISE 13. Put the verbs in brackets into the Present Continuous Passive or the Past Continuous Passive.

1) – Why didn't you phone me after the presentation yesterday? – Sorry, the phone ... *(to repair)* at that time. 2) Your shirt is dirty! Why don't you wash it? – It's impossible right now. The washing machine ... *(to fix)*. 3) This church is three hundred years old. How long ... this church ... *(to build)?* – It ... *(to build)* for thirty–five years. 4) Where is the injured man? – He ... *(to examine)* by the doctor at the moment. 5) ... the windows in my room ... *(to wash)* now? – Yes, they ... . 6) She didn't know where she ... *(to take)*. 7) Have they caught the thief yet? – No, the thief ... *(to chase)* at the moment. 8) Can you give j me a lift? – Sorry, my car ... *(to service)* now. 9) A new assembly hall... *(to decorate)*

for the party now. 10) A famous actor visited our town yesterday. He ... *(to interview)* by local journalists for more than an hour and the interview ... *(to film)*.

EXERCISE 14. Translate into English.

1) У нашому офісі установлюють нові вікна. 2) Цю інформацію збирали протягом двох днів. 3) Цю проблему обговорюють зараз на конференції. 4) Що зараз показують по телевізору? – Зараз показують останні новини. 5) О котрій годині вчора показували цей фільм? – Його показували вчора о 8 вечора. 6) Як довго будували цей театр? – Його будували протягом трьох років. 7) На вас чекають біля входу до банку. 8) Цю дорогу зараз ремонтують? – Так. 9) Йому зараз роблять операцію? – Ні. Йому робили операцію вчора протягом п'яти годин. 10) Що зараз будується у центрі міста? – Там будують новий супермаркет.

EXERCISE 15. Make up the sentences using the Present Perfect Passive, the Past Perfect Passive or the Future Perfect Passive.

1) The carpets / just / to vacuum. 2) All the issues of this magazine / to sell / by 6 o'clock / yesterday evening. 3) The fence / to paint / by 4 o'clock tomorrow. 4) The suspect / to arrest / yet? 5) The report / to write / by tomorrow morning? 6) The equipment / to deliver / by the end of the working day yesterday? 7) What books / to return / to the library / by 4 o'clock yesterday? 8) By what time / the new software / to set up / tomorrow? 9) Which document / just / to sign / by your boss? 10) What rooms / already / to prepare / for the participants of the festival?

EXERCISE 16. Put the verbs in brackets into the Present Perfect Passive, the Past Perfect Passive or the Future Perfect Passive.

1) The missing jewellery... *(just to find).* 2) By what time yesterday ... the grass on the football pitch ... *(to cut)?* – It ... *(to cut)* by 10 o'clock yesterday morning. 3) Is dinner ready? – Yes, the turkey ... *(just to cook).* 4) By what time ... these advertisements ... *(to publish)?* – They ... *(to publish)* by the beginning of next week. 5) Who ... this bill ... *(just to pay)* by? – It ... *(to pay)* by a middle–aged gentleman. 6) The rubbish ... *(already to collect)* when we left the office last Friday. 7) ... the invitations for the party ... *(to send)* by the end of the working day yesterday? –Yes, they ... *(to send)* by 5 o'clock yesterday. 8) The new novel of this writer ... *(not to publish)* by next Wednesday. It ... *(to be publish)* by the beginning of next month. 9) The office ... *(to clean)* before our chief arrived. 10) This note ... *(to leave) on your* desk before you returned from the negotiations last Monday.

EXERCISE 17. Translate into English.

1) У нашому місті щойно побудували нову лікарню. 2) Ваш мобільний телефон відремонтують завтра до шостої вечора. 3) Коли гості прийшли до нас учора, стіл був уже накритий. 4) До наступної п'ятниці цей проект буде закінчено. 5) Дах вашого будинку не пофарбували до того, як розпочався дощ. 6) Що було зроблено до кінця робочого дня вчора? 7) Гроші отримають до наступного понеділка? – Так. 8) Посуд уже помили? – Ще ні. 9) Цей лист вам відправили до нашої зустрічі вчора. 10) Вам уже повідомили про зміни у розкладі? – Ні, мені ще не повідомили про це.

✓ Утворюючи речення з присудком пасивного стану з модальними дієсловами, слова розташовують у такій послідовності.

Modal verb + be + V₃ (V_{ed})

Наприклад:
This letter must be typed.
The bike can be repaired.
This book should be read.

EXERCISE 18. Make up the sentences using the Passive Voice.

1) These documents/must/sign/today. 2) This work/could/ finish/a week ago. 3) Dictionaries/can/hot/use/during the exam. 4) The application/must/fill/in/with a pen/not pencil. 5) The sick child/should/examine/by a doctor. 6) The photo-copier/may/use/by anyone. 7) This story/should/not/tell/to little children. 8) Mobile phones/must/not/use/during a flight in airplanes. 9) The dog/should/take/to the vet. 10) The parcel/ could/not/deliver/yesterday.

✓ У реченнях з дієсловами пасивного стану часто вживаються прийменники *by* та *with. By* вживається, коли йдеться про виконавця дії, *with* вживається, коли йдеться про знаряддя, яким виконується дія.

Наприклад:
*This play is written **by Shakespeare.***
*This note was written **with pencil.***

EXERCISE 19. Complete the sentences with *by* or *with*.

1) The window was broken ... a big stone. 2) The florist contest has been won ... Mrs Drake. 3) The house and the yard were decorated ... flowers and balloons. 4) This envelope was delivered ... a stranger. 5) A little girl has been stung ... a bee. 6) Look! Her basket is filled ... blackberries. 7) We were scared ... a huge dog. 8) Who was the party organized ...? 9) The lock of the front door has been broken ... an axe. 10) His birthday cake was decorated ... candied fruit.

EXERCISE 20. Choose the correct form to complete the sentences.
Dictionaries

1) A dictionary is a book which 1) ... the meanings of words. The words 2) ... in alphabetical order so that they 3) ... quickly. The word «dictionary» 4) ... from the Latin «diction» («word»). There are several types of dictionaries which explain words and how they 5) ..., dictionaries which 6) ... words from one language to another, technical dictionaries which explain the meanings of technical words or words connected to a particular subject.

Dictionaries 7) ... since ancient times. The earliest mention of a dictionary in history is from Babylon in the 6 BC. The first written dictionary in China 8) ... in 100 AD and Japanese history mentions their first dictionary in 7 AD.

The first English alphabetical dictionary 9) ... «A Table Alphabetical». It 10) ... by a teacher Robert Cawdrey and 11) ... in London in 1604. In 1857, the Philological Society of London 12) ... to undertake a comprehensive study of English and publish the first complete dictionary of the English language, which came to be known as the Oxford English Dictionary (OED). It 13) ... in 12 separate volumes between 1888 and 1980,

Nowadays dictionaries 14) ... an essential tool for anyone who likes to read and study. Using dictionary you 15) ... your speech richer and your written skills more fluent.

1) a) explains;	b) is explained;	c) was explained.
2) a) arranged;	b) are arranged;	c) will have been arranged.
3) a) can find;	b) can be finding;	c) can be found.
4) a) comes;	b) is coming;	c) has been coming.
5) a) use;	b) are used;	c) were being used.
6) a) translate;	b) are translated;	c) have been translated.
7) a) used;	b) were used;	c) have been used.
8) a) appeared;	b) was appearing;	c) has appeared.
9) a) calls;	b) was called;	c) has been called.
10) a) has written;	b) has been written;	c) was written.
11) a) published;	b) was published;	c) was being published.
12) a) decided;	b) was decided;	c) has been decided
13) a) released;	b) was released;	c) will be released.
14) a) become;	b) were becoming;	c) have become.
15) a) will make;	b) is made;	c) will be made.

EXERCISE 21. Circle the correct items.

1) The teacher *pointed/was pointed* out my mistakes. 2) All the preparations *have already done/have already been done.* 3) You *will meet/will be met* by the guide at the bus stop. 4) The porter *has already brought/has already been brought* your luggage. 5) Your car *must*

service/must be serviced at once. 6) You *can pay/can be paid* this bill a bit later. 7) The murderer *sentenced/was sentenced* to life imprisonment. 8) This plant *produces/is produced* household appliances. 9) These tickets *has just delivered/has just been delivered.* 10) The computer is *using/is being used* now.

EXERCISE 22. Change the sentences using the Passive Voice.

1) They asked the policeman for help. 2) Peter gave me these photographs two days ago. 3) We have already sent for the doctor. 4) Sue will look after the children tomorrow. 5) A lot of children use the Internet nowadays. 6) Will you post these letters? 7) Will they have fixed the printer by the end of the week? 8) Jessica hasn't cooked dinner yet. 9) They are picking the vegetables right now. 10) Were they filming our performance last Friday? 11) You should switch off your computer for the night. 12) You haven't cleaned this room for weeks. 13) You must take this mixture three times a day. 14) Are the girls decorating the room for the party? 15) Mary doesn't take her children to the cinema every week.

EXERCISE 23. Find mistakes and correct them.

1) Three men are seen running out of the jewellery shop yesterday evening. 2) His car was washed by the time he arrived. 3) This fantastic puppet was made with my daughter. 4) The words you don't know can found in the dictionary. 5) Julia and Henry will invited to our wedding party. 6) The apples were being gathering at the time you phoned yesterday. 7) Have the ironing been done yet? 8) Is being coffee made now? 9) The cake was cut by a knife. 10) The fire have just been put out by a fire brigade.

EXERCISE 24. Put the verbs in brackets into the Passive Voice using the correct grammar tense.

1) Children ... *(always to give)* presents at Christmas. 2) Because of a terrible storm last night a lot of houses ... (to *flood). 3)* A new library ... *(to open)* in our town next week. 4) A picture of a famous artist... *(to steal)* from a local museum. 5) By the end of the working day yesterday all the necessary documents ... (to *type).* 6) Jam ... *(not to make)* from candied fruit. 7) The meeting ... *(just to cancel)* by the chief manager. 8) The results of the exam ... *(to announce)* by next Thursday. 9) Your microwave ... *(not to repair)* yet. It ... (to *repair)* by the day after tomorrow. 10) When ... this charitable organization ... *(to establish)? –* It... (to *establish)* fifteen years ago. 11) By what time ... the tickets ... (to *deliver)* tomorrow? – They ... (to *deliver)* by 3 o'clock. 12) ... the play ... (to *perform)* yet? – Yes, it ... (to perform) some years ago. 13) ... the robbers ... (to *arrest)* yesterday? – No, they ... (to *chase)* for three hours, but they managed to escape. 14) Mark ... *(not to tell)* about the time of the meeting yesterday.

EXERCISE 25. Change the sentences into the Passive Voice.

1) Someone is planting flowers in the garden. 2) She sent him an e–mail letter last Tuesday. 3) The children were laughing at the clown. 4) They will finish the building of a new airport soon. 5) Relatives can visit this patient. 6) Somebody was washing your car when it started to rain. 7) Where did you see that boy before? 8) Who is making photocopies now? 9) You must not tell lies to your parents. 10) By what time will you have prepared the chicken?

EXERCISE 26. Find mistakes and correct them.

1) This hat knitted by my mother last year. 2) The work hasn't being done yet. 3) My watch were mended a week ago. 4) The cutlery is being polishing right now. 5) My camera haven't been returned yet. 6) The parcel was tied up by a string. 7) You will have been met at the airport tomorrow. 8) A new metro station is being build in our city at the moment. 9) Were been the curtains hung at the time you came in? 10) Children must be not shown that horror film.

EXERCISE 27. Translate into English

1) Скільки разів на день годують риб? – Їх годують раз на день. 2) Коли побудували вашу школу? – Її побудували тридцять п'ять років тому. 3) Піцу вже принесли? – Ні, її зараз готують. 4) Коли відремонтують цю дорогу? – Її відремонтують до кінця місяця. 5) Мені вчора не сказали про ваш візит. 6) Де Джек? На нього чекають. 7) Вас коли-небудь вчили, як себе поводити? 8) Дітей відправили спати перед тим, як розпочався фільм. 9) Де Лінда? – Їй зараз показують її нову кімнату. 10) Щось треба зробити для цих людей.

3. Модальні дієслова та їхні еквіваленти
(MODAL VERBS AND THEIR EQUIVALENTS)

✓ В англійській мові є такі модальні дієслова: **can** (могти, вміти), **could** (міг), **must** (повинен, потрібно), **may** (можеш, може), **should** (слід), **ought to** (слід), **have to** (повинен, вимушений)

Модальні дієслова (крім *have to*) мають одну форму для всіх осіб і чисел та самостійно (без допоміжних дієслів) утворюють питальні та заперечні форми.

Після модальних дієслів (крім *ought to*) інфінітив вживається без **to**:

Can *your friend* **skate**? *I'm afraid he* **can't skate**, *but he* **can ski**.

Після дієслова **have to** інфінітив вживається з **to**, а питальні та заперечні речення потребують відповідних допоміжних дієслів.

Наприклад:

Do *they* **have to come** *at five*? – *No, they* **don't**. *They* **have to come** *at six*.

Модальні дієслова мають відповідні форми у минулому та майбутньому часах.

Present	*Past*	*Future*
can	could	will be able to
must	had to	will have to
may	might	will be allowed to

Наприклад:
She ***will be able to meet*** *you tomorrow.*
We ***had to take*** *a taxi because we* ***couldn't miss*** *the train.*
I hope my parents ***will allow*** *me* ***to go*** *fishing.*

Складаючи спеціальні запитання до речень з модальними дієсловами, слова розташовують у такій послідовності: питальне слово (*Wh–word*), модальне дієслово, підмет, дієслово-присудок.

Наприклад:
What can we do for you?
Why must you hurry?
Where may he go for a walk?
How could she swim then?

EXERCISE 1. Circle the correct item.
1) You *can/could* buy the present yesterday. 2) I think we *could/ will be able* to buy the tickets beforehand. 3) Eddy *must /had to* return me this book yesterday. 4) The pupils *must/ mustn't* make a noise in the classroom. 5) The children *may /will be allowed to* play in the park today. 6) My mother *may not /won't allow* me to take her camera. 7) Your cousin *can/may* play the guitar

very well. 8) All the students *had to/will have to* pass the exams at the end of the year. 9) Last year Ben *could/couldn't* speak English, but now he *can/can't* speak English rather well. 10) I think they *can/will be able to* take part in this festival next year.

EXERCISE 2. Complete the sentences with the verbs in brackets.

1) Jane ... play the violin a year ago, but now she ... play well. She ... play in the concert in two months, (*can, could, be able to*). 2) You ... watch this film yesterday. I ... you to go for a walk when you finish your homework. Your friend ... visit you today. (*may, might, will allow*) 3) Oscar ... take aspirin an hour ago. He ... go to bed right now. He ... visit the doctor in three days. (*must, had to, will have to*) 4) My friend ... speak French very well. He ... speak French when he was twelve. I think he ... go to university in France in his future, (*can, could, will be able to*) 5) We ... clean the flat now. We ... clean the flat yesterday, but we had a lot of homework to do. We ... go shopping tomorrow evening. (*must, had to, will be able to*) 6) Tony and Den ... go to the cinema yesterday. If they have already had dinner, they ... play computer games. Their parents ... the boys to go to tht river next Saturday. (*may, might, will allow*)

EXERCISE 3. Complete the sentences using modal verbs and words in brackets at in the example.

Example: Ron can play football but *(to play basketball –)*
    Ron can play football but he can't play basketball.
    Sue must learn the poem but *(to write an essay?)*
    Sue must learn the poem but must she write an, essay?
1) Jack and Paul may ride bikes but *(to ride fast –)*
2) Amy could skate last year but *(to ski ?)*
3) You may watch the cartoon but *(to watch the film –)*
4) I must paint the roof but *(to paint the fence ?)*
5) Eric can read in French but *(to speak French ?)*
6) Children must eat fruit but *(to eat many sweets –)*
7) At the age of two Betty could walk but *(to speak –)*
8) You may take my car but *(drive without a licence –)*

EXERCISE 4. Choose the correct modal verb from brackets to complete the proverbs.

1) A cat ... look at a king. *(must, may)* 2) Don't bite off mor than you ... chew. *(must, may, can)* 3) The leopard ... chang his spots. *(can't, mustn't, may not)* 4) No man ... serve two masters. *(must, may, can)* 5) Never put off till tomorrow wha you ... do today. *(must, may, can)* 6) The wolf ... lose his teeth but never his nature. *(must, may)* 7) You ... make an omelette without breaking eggs. *(mustn't, can't, may not)* 8) You never know what you ... do till you try. *(must, may, can)*

EXERCISE 5. Translate into English.
1) Він уміє користуватись комп'ютером.
2) Ми не повинні допомагати вам.
3) Вона може взяти мій словник.
4) Я не можу показати вам дорогу до аеропорту.
5) Моя сестра не вміє водити автомобіль.
6) Ви можете сказати мені вашу адресу? – Так.
7) Боб уміє грати на гітарі? – Ні.
8) Ми можемо залишити записку для вас? –Так.
9) Я не повинен хвилюватись.
10) Вона не могла прийти до вас учора.
11) Він повинен був відправити повідомлення вчора.
12) Ви вміли розмовляти, коли вам було два роки? – Так.
13) Ми не зможемо купити квіти завтра.

EXERCISE 6. Write questions to the underlined words.
1) The boys can swim in the lake in summer.
2) We must buy a present for our mother.
3) Pam may listen to music in her room.
4) They could ski in the mountains in winter.

EXERCISE 7. Translate into English.
1) Хто вміє грати на піаніно? – Моя сестра вміє.
2) Коли він повинен повернути фотоапарат? – Він повинен повернути фотоапарат сьогодні.
3) У якому віці ваш брат умів читати? – Він умів читати у шість років.
4) Що їй можна робити? – Вона може подивитися мультфільм.
5) Куди Пітер має покласти ключ? – Він має покласти ключ на полицю біля дверей.
6) Хто має читати доповідь? – Доповідь має читати представник нашої делегації.
7) Як я можу допомогти вам?
8) Куди вони могли піти вчора? – Вони могли піти до театру.
9) Як ваш друг міг грати в баскетбол рік тому? – Він міг грати гірше, ніж зараз.
10) Що я маю сказати вашій бабусі?

✓ Модальне дієслово **must** вживається для вираження обов'язків та вказує на необхідність щось зробити.
Must вживається, коли людина приймає рішення самостійно:
You must do it now.
Must not виражає заборону:
You must not make a noise in the hospital.

Модальне дієслово **have to** вживається у теперішньому, минулому, майбутньому часах і також вказує на необхідність щось зробити та виражає обов'язки, але, на відмінну від дієслова **must**, воно вживається, колилюдина має виконувати чужі, а не свої рішення чи змушена щось робити під впливом обставин:

I don't want to walk the dog, but I have to.

My doctor says I have to take vitamins.

Дієслово **have to** потребує відповідних допоміжних дієслів для утворення питальних та заперечних речень:

Does *she **have to get up** early? – Yes, she **does**.*

Did *he **have to meet** you? – No, he **didn't**.*

Will *they **have to take part** in the conference? – No, they **won't**.*

EXERCISE 8. Complete the sentences with *must* or *have to.*

1) I'm very tired. I ... go to bed earlier today. 2) My parents think I... go to bed early to have a good sleep. 3) 1... buy bread, My mother asked me about it. 4) I have got a terrible headache, 1 ... take an aspirin. 5) My teacher says I ... pay more attentior to my pronunciation. 6) We have nothing to eat. We ... go shopping. 7) Paul's coach says he ... exercise more to get gooc results at the competition. 8) Vicky's room is a mess. She .. tidy it. 9) The weather is so wonderful today! We ... go out foi a picnic. 10) Jane's boss thinks she ... speak to the clients mon politely.

EXERCISE 9. Complete the jokes with *must, mustn't* or *have to.*

1) Mother: Did you enjoy your first day at school?

Girl: First day? Do you mean I... go back tomorrow?

2) The old lady is going to take a taxi. She says to the driver, «You ... take me to the station. You ... drive slowly and' carefully. You ... go on the red traffic light and you ... rush round the corners as the road is very wet».

«All right, madam», replies the driver. «But if we have an accident what hospital... I take you to?»

EXERCISE 10. Complete the sentences with the correct form (positive, negative of interrogative) and tense (present, past or future) of have to.

1) Sam has got a toothache so he ... visit his dentist today. 2) ... we ... prepare all the documents yesterday? – No, you ... 3) It's my day off tomorrow so I ... go to the office. 4) It wal raining yesterday so Frank ... take his umbrella. 5) Sally has recovered so now she ... stay in bed any more. 6) Sheila and Marion can't come to our party because they ... study for thl test tonight. 7) ... you ... type all these letters today? – Yel, I ... . 8) My aunt arrives tomorrow so I ... meet her at the railway station. 9) It was very warm yesterday and Jessie ... put on her warm sweater. 10)... Clara ... fill in this report right now? – No, she ... . 11) Let's go shopping now so that we ... do it tomorrow. 12) ... Mike ... book the hotel room yesterday? –Yes, he ... .

✓ Здатність щось робити (ability) виражається за допомогою дієслів **can, could, be able to.**

Can виражає вміння щось робити тепер:

*She **can swim** very well. She **can teach** you to swim.*

Could/was able to виражає вміння щось робити у минулому:

*He **could/was able to ride** a bike when he was five.*

Was able to виражає здатність щось робити у минулому в результаті особливих обставин (у значенні «вдалося зробити»):

*He **was able to help** me in spite of his tiredness.*

Will be able to виражає здатність щось робити у майбутньому:

*She **will be able to meet** you tomorrow.*

EXERCISE 11. Circle the correct item.

1) My little brother can/could count when he was six. 2) I will be able/was able to send the invitations tomorrow. 3) We can/could order a taxi right now. 4) She won't be able/wasn't able to understand the rule because she had a headache. 5) Alan could/was able to win the competition because his leg didn't hurt. 6) I'm afraid Sue can't/won't be able to take you ito the exhibition because she'll be very busy next Friday. 7) It was snowing hard and we can't/weren't able to drive fast. 8) Olga can't/couldn't say a word in English two years ago but now she can/could speak English fluently.

EXERCISE 12. Complete the dialogue with *can, could* or *be able to* in the correct tense and form.

– You are a champion skater now, but ... you skate in your childhood?

– No, I .... I even ... think about skating because I was afraid of this kind of sport. But I ... play the violin very well then and my teacher thought I ... become a famous musician.

– But how did you manage to learn to skate? – Well, my father was fond of skating. One day he took mA to the skating-rink to teach me skating. When I went on thJ ice for the first time I felt very excited. I ... think of anything else. But suddenly I fell down and broke my arm. After thai accident I ... become a musician. So I had nothing to do mil learn to skate.

– ... you play the violin now?

– Unfortunately I... .

– Do you go in for other kinds of sport?

– Well, I ... ski and swim. And I ... play computer game* I hope one day I ... take part in some computer gaming competition.

– I wish you luck then.

✓ Для висловлювання можливості чи ймовірності (possibility/ probability) використовуються такі дієслова:

1) **May** (можливо, дуже ймовірно): *She **may return** home before dinner.*

2) Might (можливо, дуже ймовірно): *It **might rain** in the evening.*

Хоча **might** – це форма минулого часу дієслова **may**, вона може вживатися для описання ситуації у теперішньому часі.

3) **Could** (можливо): *He **could** still **be** in the office.*

4) **Must** (майже впевнений): *I often see them together.   They **must be** good friends.|*

5) **Can't** не думаю, що це можливо):   *You **can't be** thirty-five. You look much younger.*

EXERCISE 13. Rewrite the sentences using may/might, must, can't, could as in the example.

Example: I don't think this film is interesting.– This film can't be interesting.

1) He usually phones me. I think he will phone me today.
2) I don't know if we meet our cousins.
3) I hope your little brother is near the sandpit.
4) I don't think the plane arrives on time in such bad weather.
5) I'm not sure if our teacher is still at school.
6) Perhaps your parents will give you some good advice.
7) It's quite possible that Nick will buy the cake.
8) It's certain that they are of the same age.
9) I don't think that the situation is so bad.

EXERCISE 14. Translate into English.

1) Наші сусіди мають бути на роботі зараз.
2) Ми запізнюємось. Наш учитель може розсердитись.
3) Це не може бути її номер телефону. Вона нещодавно змінила номер.
4) Мій брат може забути про зустріч.
5) Ти можеш думати, що це питання не таке вже й важливе.
6) Вона не може бути здивованою. Вона знала про це заздалегідь.
7) Твої однокласники можуть мати інші завдання.
8) Цей журнал має бути у твого брата. Я давав його йому тиждень тому.
9) Ці дівчата можуть бути сестрами.
10) Я думаю, може піти дощ.

✓ У запитаннях з метою отримання дозволу (permassion) використовуються такі модальні дієслова:

1) **Can** (дружнє звертання): ***Can I use** your pencil.*
2) **Could** (ввічливе звертання): ***Could** we **have** a break, please?*
3) **May** (ввічливе звертання): ***May I talk** to you?*
4) **Might** (дуже ввічливе звертання): ***Might I ask** you some questions, please?*

Для вираження дозволу/заборони (refusing permassion/prohibition) використовуються такі модальні дієслова.

1) **Can** (дозволити по-дружньому): *You **can take** a piece of cake if you want.*
2) **May** (дати дозвіл більш офіційно): *She **may leave** her recommendation letter.*

Для вираження заборони використовуються такі модальні дієслова:

73

1) **Mustn't** (категорична заборона): *You **mustn't walk** your dog here.*
2) **Can't** (заборона): *He **can't swim** too far from the shore.*

EXERCISE 15. Translate into English.

1) Ти можеш користуватися комп'ютером, якщо у тебе є робота. 2) Ти не можеш дивитися телевізор. Ти ще не зробив уроки. 3) Учням не дозволено користуватися калькуляторами на уроках математики. 4) Можна мені взяти вашу валізу? 5) Можна мені позичити вашу машину, будь ласка? 6) Ви може залишатися з нами. 7) Тут не дозволено залишати авто. 8) Він може приєднатися до нас, якщо хоче. 9) Можна мені подивитися на ваші розрахунки, будь ласка? – Так, звичайно. 10) Можна мені яблуко? – Спершу, тобі потрібно помити руки, а потім ти можеш узяти яблуко.

✓ Для вираження поради (advice), використовують модальні дієслова **should/ought**:
*You **should/ought to go** in for sport to stay healthy.*
*You **shouldn't/oughtn't to eat** a lot of sweets.*
*What **should** we **do** in this case?*

EXERCISE 16. Complete the dialogue with *should/shouldn't* or *ought/oughtn't*.

– My family has just moved to another town and I have friends here yet.What... I do to make friends?

– I think you ... try to make friends among your r classmates. First, you ... to be rude. You ... to smile when j speak to people. Then you ... try to be helpful. Rememb a friend in need is a friend indeed!

– But school isn't the only place to meet new friends.

– Of course not. YOU ... to be confined to school and ho only. You ... join some club or a gym. Hobby is a wonder chance to meet interesting people and new friends. You ... afraid of communicating. If you are a sociable person it is: a problem for you to make friends with somebody.

✓ Для висловлювання прохання (request) або пропозиції (offer/ suggestion) використовують такі модальні дієслова та конструкції з ними:
1) **Can** (прохання): *Can you **tell** me the time?*
2) **Could** (ввічливе прохання чи пропозиція): *Could you **help** me, please?*
3) **Would you like** (ввічлива пропозиція): *Would you like some more coffee?*
4) **Shall I/we** (пропозиція): *Shall I **repeat**! Shall we play a game of chess?*
5) **Will** (дружня пропозиція чи прохання): *I'll show you the way if you want. Will you wait for me?*

EXERCISE 17. Circle the correct item.

1) *Can/could* you buy a newspaper for me, please? 2) I *shall/will* give you my umbrella if you don't mind. 3) *Would/could* you like a ham sandwich? 4)

Can/could you phone me in the evening? 5) *Shall/will* we go to the concert tonight? 6) *Can/would* you like to try this jumper on? 7) Wait a minute! I *shall/will* write you my address. 8) *Shall/will* we have lunch in a cafe? 9) *Shall/will* you leave a message for me? 10) *Can/could* he show me the cheque?

EXERCISE 18. Circle the correct item.

1) I... feed my dog now.
 a) has to b) must c) should

2) ... we leave our luggage here?
 a) would b) will c) can

3) You ... smoke in the hospital.
 a) can't b) mustn't c) won't

4) ... we have supper together?
 a) shall b) will c) could

5) My parents say I ... eat more vegetables.
 a) must b) have to c) has to

6) ... you like to look at this ring?
 a) will b) shall c) would

7) You ... to sleep more.
 a) ought b) should c) must

8) It's rather late now and they ... be at home.
 a) were able to b) will c) must

9) ... you bring me the bill, please?
 a) could b) would c) should

10) She looks very young. She ... be forty.
 a) can't b) mustn't c) couldn't

EXERCISE 19. Translate into English.

1) Коли йому було п'ять років, він умів рахувати до двадцяти. 2) Вона може перекласти цю статтю досить швидко. 3) Вчитель каже, що ми маємо вивчити цей вірш напам'ять. 4) Було дуже темно, і він не міг вести авто швидко. 5) Вони мають бути зараз вдома. 6) Я повинен відвести мого молодшого брата до лікаря. 7) Вам варто запитати вчителя про це. 8) Я можу допомогти вам? 9) Мені купити морозиво?

4. Безособові форми дієслова
(INFINITIVE AND GERUND/ING-FORM)

Інфінітив – це неособова форма дієслова, яка тільки називає дію і відповідає на запитання «що робити!», «що зробити!»: *read, to dance.*

Герундій – це неособова форма дієслова із закінченням *-ing,* що має властивості дієслова та іменника. Як і інфінітив, герундій називає дію. У реченні герундій виконує функції, властиві як дієслову, так й іменнику:

*We like **dancing**.* (Ми любимо танцювати. Або: Ми любимо танці.)
***Smoking** is dangerous for your health.* (Паління шкідливе для вашого здоров'я.) В українській мові немає форми, яка б відповідала герундію.

✓ **Зверніть увагу на правила вживання інфінітива та герундія**

Інфінітив з часткою *to* (Full Infinitive) вживається у таких випадках:
1) Для вираження намірів: He *went **to meet me.***
2) Після конструкцій *would like, would love, would prefer:* ***I'd like to buy** some ice cream.*
3) Після таких прикметників, як *glad, happy, angry, sorry, pleased* тощо: I'm **glad to see you.**
4) Після таких дієслів, як *advise, agree, appear, decide, expect, hope, manage, offer, promise, refuse, seem, want* і т.д.: We **decided to catch** a *taxi.*
5) Після питальних слів, які виконують функцію сполучника (*who, how, what, where, which*): We don't know **how to get** there.
6) Зі словами too, enough: He is *old **enough to drive a car.***

Інфінітив без частки *to* (Bare Infinitive) вживається у таких випадках:
1) Після модальних дієслів: *You **must help** your parents.*
2) Після дієслів *make, let, see, hear, feel + object* (додаток): He **let me take** his camera. Mother **made me** dean *my room.*
3) Після структур *had better/would rather: We'd **better watch** TV tonight.*

Герундій (Gerund/ing-form) вживається у таких випадках:
1) Як іменник-підмет: *Walking is a good exercise.*
2) Після дієслів *love, like, dislike, hate, enjoy* (для вираження уподобань взагалі): She **hates being** *late.*
3) Після дієслова **go**, якщо ми маємо на меті розповісти про фізичну діяльність: He **went swimming** an hour ago.
4) Після таких дієслів, як start, begin, stop, *finish, avoid, admit, appreciate, consider, continue, delay, deny, discuss, escape, excuse, forgive,* imagine, *involve, keep (= continue), mention, mind, miss, object to, practise, prevent, save, suggest, understand* і т.д.: *They **continued walking** in silence.*
5) Після таких виразів, *як I'm busy, it's no use, it's (not) worth, it's (no) good, what's the use of, can't help, can't stand, look forward to, in addition to, as well as* і т.д.: **What's the use *of buying*** a dishwasher?

> 6) Після прийменників: She left **without taking** her *umbrella. They are interested **in taking** this test.*
> 7) Після дієслів *see, hear, listen, watch*, щоб повідомити про дію, яка ще не завершилась: She **heard** somebody **speaking.**

EXERCISE 1. Circle the correct item.

1) Tom is skilled enough to *do/doing* this job. 2) It started to *rain/raining* an hour ago. 3) Sue prefers to *have/having* lunch in a cafeteria. 4) I hope to *see/seeing* you tomorrow. 5) Mike suggested to *play/playing* bowling in a new club. 6) I don't knowhere *to go/going.* 7) *To sledge/Sledging* in winter is fun. 8) Sam spent hours *to look/looking* for these facts. 9) They offered *to continue/continuing* the experiment in a modern laboratory. 10) Witty succeeded in *to study/studying* Biology. 11) I would like *to talk/talking to you.* 12) My parents refused *to give/giving* me pocket money. 13) Little Johnny is complaining about *to have/having* a toothache. 14) Molly was happy *to see/seeing* her niece again. 15) Jane can't stand *to listen/listening* to loud music.

EXERCISE 2. Write the words into the correct column.

Agree, would love, avoid, deny, can, promise, will, mind, offer, may, decide, prefer, like, hope, would prefer, manage, suggest, let, look forward to, can't help, practise, refuse, must, prevent, admit, it's worth, want, happy, forgive.

Followed by Full Infinitive	Followed by Gerund/ing-form	Followed by Bare Infinitive

EXERCISE 3. Match two parts of the sentences.

1) Reading detective stories	a) learn this poem by heart.
2) The woman was watching children	b) to help you.
3) You must	c) is good for your health.
4) I don't know how	d) to understand it.
5) My brother is keen on	e) is her favourite hobby.
6) Eating lots of fresh fruit	f) to see your friend at our party.
7) I don't know why Peter avoids	g) wash your hands before the meals.
8) My teacher made me	h) collecting car models.
9) I'm sure she is clever enough	i) playing in the sandpit.
10) We'll be happy	j) speaking to me.

EXERCISE 4. Put the verbs in brackets into the correct form.

1) My parents dislike ... *(to spend)* holidays without me. 2) The Thompsons go... *(to ski)* to the mountains every winter. 3) I think you'd better ... *(to phone)* him in the evening. 4) Helen refused ... *(to answer)* my question about her future plans. 5) We saw Greg ... *(to walk)* towards the bus stop. 6) Nick promised ... *(to return)* my MP3 player in a week. 7) Bob is too angry ... *(to listen)* to our explanation. *8)* Sarah started ... (to *learn)* French when she was 7. 9) The doctor

77

advised Kate ... *(to keep)* to a diet. 10) Don't bother me. I'm busy ... (to *write)* an essay about my winter holidays.

EXERCISE 5. Put the verbs in brackets into the correct form.

1) Alison wants ... (to *take)* her little sister with us. 2) Martin is looking forward to ... (to *meet)* his school friends. 3) Margaret couldn't help ... (to *feel)* that she had made a mistake. 4) You couldn't ... (to *swim)* a year ago. 5) It's no use ... (to *talk)* to Tony. He is too obstinate ... (to *change)* his mind. 6) How did they manage ... (to *book)* a room in this hotel? Any room in this hotel is worth ... (to *pay)* a lot of money. 7) I offered ... (to *help)* Ann with the washing-up. 8) My parents let me ... (to *use)* our cottage house for the party. 9) Do you mind ... (to *wait)* outside? 10) I know that your cousin is fond of ... *(to paint)*. I hope ... (to *see)* her pictures at my gallery some day.

EXERCISE 6. Put the verbs in brackets into the correct form.

Dear Sir/Madam,

I am writing ... (to *inquire)* about your advertisement in the May edition of «Around The World» magazine. I am interested in ... (to *visit)* Italy and would be grateful if you could ... (to *send)* me further details.

Your advertisement states that the price includes a return flight from Borispol Airport. Will the flight... (to *leave)* in the morning or in the evening? The advertisement also mentions that the price includes seven nights in a five-star accommodation. Will I ... (to *have)* my own room or will I have ... (to *share)*? In addition, ... (to *regard)* the meals that the price includes, I'd like ... (to *know)* if all meals are included in the full cost or if the price only includes breakfast. Finally, could you ... (to *tell)* me whether the tour includes ... (to *visit)* Vatican and if there will be time to go ... (to *shop)*.

I look forward to ... (to *hear)* from you. Thank you in advance for your help.

Yours faithfully,

Victor Bondarenko

EXERCISE 7. Choose the correct form to complete the sentences.

Millions of people every year visit national parks. 1) ... a national park can 2)... a wonderful way of 3)... a day, but are these parks worthwhile or do they have too many drawbacks?

One major advantage of national parks is that they provide an opportunity for wild animals and other species to be protected and conserved. In addition, national parks make it possible for animals to have more space and freedom than they can 4) ... in zoos and allow children to see animals 5) ... freely instead of 6)... behind bars.

However, some people object to 7) ... animals in national parks. They believe that animals should 8) ... in their natural habitats and shouldn't be used as a form of entertainment for visitors to these parks.

All in all, it would 9) ... that national parks do some advantages, but there are also several drawbacks to 10) ... animals in them. Perhaps it is time we started 11)... to protect animals in their natural environments.

1) a) To visit;   b) Visit;   c) Visiting.
2) a) to be;   b) be;   c) being.
3) a) to spend;   b) spend;   c) spending.
4) a) to have;   b) have;   c) having.
5) a) to wander;   b) wander;   c) wandering.
6) a) to live;   b) live;   c) living.
7) a) to keep;   b) keep;   c) keeping.
8) a) to live;   b) live;   c) living.
9) a) to appear;   b) appear;   c) appearing.
10) a) to keep;   b) keep;   c) keeping.
11) a) worked;   b) work;   c) working.

EXERCISE 8. Complete the sentences writing true information about you.

1) In my free time I like ... . 2) I hate ... . 3) I'm good at ... . 4) I don't mind .... 5) I want ... when I get a degree. 6) My friend is interested in ... . 7) I'm thinking of ... in my future.

✔ Після дієслів *to begin, to start, to continue, to intend* можуть вживатися як інфінітив, так і герундій без різниці у значенні:

*The child **began laughing / to laugh.***

У сполученні з деякими дієсловами вживання інфінітива чи герундія залежить від того, що саме ми хочемо висловити.

Зверніть увагу на відмінності у значенні речень залежно від вживання в них інфінітива чи герундія.

Verb + to-infinitive	Verb + ing-form
Remember/forget + to-infinitive вживається у значенні «не забувати»: *I must remember to take my notes. It's very important.* (Я маю не забути взяти записи).	*Remember/forget + ing-form* вживається, якщо ми висловлюємо спогади про минуле: *I* remember *taking my son to the Zoo for the first time.* (Я пам'ятаю (ніколи не забуду), як повів свого сина до зоопарку вперше).
Regret + to-infinitive вживається, якщо нам шкода про щось говорити (тобто ми маємо повідомити погані новини):	*Regref + ing-form* вживається, якщо ми висловлюємо співчуття з приводу того, що трапилося у минулому:

I regret to tell you that you have a *bad mark in History.* (Мені шкода казати, що в тебе погана оцінка з історії).	*I regret telling you about my plans. Everything has changed by now.* (Шкода, що я розповів про свої плани, тому що все змінилося).
Stop + to-infinitive вживається у значенні *She stopped to pick up the coin she had dropped.*	*Stop + ing-form* *She stopped reading aloud because her mother asked her to keep silent.*
Go on + to-infinitive *He made himself a sandwich and went on to learn the rules.*	*Go on + ing-form* She *asked her son a question, but he went on watching* TV and *didn't hear her.*
Try + to-infinitive *I'm frying to find any mistakes in this work.*	Try + *ing-form* *I tried opening the door, but it was locked from inside.*
Be sorry + to-infinitive *I'm sorry to hear that you've failed the exam.*	*Be sorry for + ing-form* *I'm sorry for being late.*
Mean + to-infinitive *I think you meant to send our friends invitation cards.*	*Mean + -ing form* *You have to feel in this form. It means writing your personal information.*

EXERCISE 9. Circle the correct meaning of the underlined words.

1) We <u>regret to inform</u> you that there are no tickets left for this train.
   a) Sorry to tell such news.
   b) Sorry that it happened in the past.

2) The children <u>stopped writing</u> and looked at the teacher.
   a) Stopped so that they could do something.
   b) Finished doing something.

3) I'll never <u>forget driving</u> the car without my instructor.
   a) Not remember.
   b) Memory of the past.

4) She <u>is trying to send</u> you an e-mail letter.
   a) Is doing her best.
   b) Is doing something which may solve the problem.

5) He didn't <u>mean to hurt</u> you.
   a) Intention to do something.
   b) Involve.

6) I must <u>remember to take</u> my camera.
   a) Not to forget.
   b) Memory of the past.

7) She <u>went on eating</u> without saying a word.
   a) Did the next thing.
   b) Continued doing the same thing.
   EXERCISE 10. Circle the correct item.
   1) Den stopped to *buy /buying* a bottle of water as it was boiling hot. 2) The child stopped *to cry/crying* and looked at a toy with some sign of interest. 3) Unfortunately, I forgot *to take/taking* my umbrella with me. 4) I'll never forget *to visit/visiting* Asterix Park in France. 5) After finishing his computer courses Tim went on *to study/studying* economy. 6) Ella went on *to write/writing* without looking up at me. 7) I regret *to tell/telling* you that we don't have enough money to pay for the medicine. 8) I regret to *buy /buying* this hat. It looks a bit old-fashioned. 9) Jane means to *open/opening* her own designer house. 10) Julia's greatest wish is to get a ticket for their concert even if it means to *pay/paying* a lot of money. 11) Try to *phone/phoning* Jack one more time. Perhaps he doesn't hear his mobile phone. 12) Peter tried to *start/starting* the engine, but it didn't work.

   EXERCISE 11. Put the verbs in brackets into the correct form.
   1) Cindy tried ... (to *catch)* a taxi, but the road was deserted. 2) I'm afraid I forgot ... (to *switch)* off the light in the room. 3) Why don't you try ... (to *exercise)*? It may help you to lose weight. 4) Jack regretted ... (to stay) in that hotel as it was too far from the centre of the city. 5) Pam stopped ... (to buy) some magazines as she wanted to read something during her trip. 6) Mike can remember ... (to *tell)* you about the changes in our timetable. He told you about it two days ago. 7) Can you stop ... (to *play)* music so loudly? I can't hear the news on TV. 8) Nigel made some notes and went on ... (to *read)* the report. 9) I'm sorry for ... (to *be)* unfair to you and your friends. 10) Sarah will never forget... (to *fly)* over the Atlantic Ocean.

   EXERCISE 12. Put the verbs in brackets into the correct form.
1) Ann didn't know what ... *(to do)* at the weekend until her friend phoned her and suggested ... *(to go)* to the cinema to watch a new comedy. 2) Do you remember ... *(to try)* Japanese food for the first time? 3) Henry stopped ... *(to skate)* after he had broken his leg. 4) Pamela isn't slim enough ... *(to become)* a fashion model. She tries ... *(to keep)* to a diet, but it doesn't help. 5) Yesterday Mary was busy ... *(to clean)* her flat. After washing the windows she went on ... *(to vacuum)* the carpets. 6) I'm so sorry for ... *(to miss)* that lecture. I'm sure it's no use ... *(to ask)* if it was interesting. 7) Do you mind ... *(to have)* lunch with me? I hate ... *(to eat)* alone. 8) Is Richard good at... *(to speak)* in public? –
Oh, yes! I heard him ... *(to make)* a speech last week. It was excellent! 9) Amanda prefers ... *(to spend)* her summer holidays at the seaside. She enjoys ... *(to swim)* and ... *(to sunbathe)*. 10) A little boy stopped ... *(to weep)* and said, «I'm so sorry! I didn't mean ... *(to break)* your window.

EXERCISE 13. Put the verbs in brackets into the correct form.

Dear Nelly,

How are you? I'm writing ... *(to tell)* you the news. I'm busy ... *(toprepare)* for my final exams which are in a week. I feel so tired of ... *(to study)* that I decided ... *(to take)* a break and write you a letter. I can't help ... *(to think)* of the day when I'll leave school and become a student of the university! By the way, I want... *(to find)* a job for summer because I would like ... *(to get)* a driving licence and you can't... *(toget)* one without... *(to attend)* driving courses. Our mother decided ... *(to redecorate)* the living room. She is busy ... *(to find)* wallpapers, new furniture and curtains of the right colour. Dad continues ... *(to work)* on his research project. Your friend Molly started her new job last Monday – *(to work)* as a travel agent suits her – she loves ... *(to communicate)* with people. She hopes ... *(to stay)* in this job for a couple of years and then she intends ... *(to start)* her own travel agency.

Oh, I almost forgot... *(to tell)* you that we are going to have a party to celebrate the end of my school life. I hope you will... *(to join)* us.

Write soon and tell all your news, won't you?

Best wishes,

Sheila

EXERCISE 14. Find mistakes and correct them.

1) Tom ran all the way home without to stop. 2) The teacher made us rewriting our compositions. 3) Kate couldn't sleep and I suggested her to drink a cup of tea with honey. 4) I'm sorry for interrupting, but I'd like asking you a question. 5) Nick promised giving me that disc. 6) Mark stopped to eat junk food because it is unhealthy. 7) Henry tried winning the race. 8) The children couldn't help to speak about their journey. 9) This book is worth to read. 10) I'm glad knowing that you're fine.

SECTION II. PROFFESSIONAL VOCABULARY IN USE

1. COMPUTERS AND IT

1.1 Types of Computers

EXERCISE 1. Study the topical vocabulary.

1.	to compute	обчислювати
2.	software	програмне забезпечення
3.	hardware	апаратне забезпечення
4.	data	дані, інформація
5.	hard drive	жорсткий диск
6.	storage unit	пристрій збереження інформації
7.	storage capacity	ємність пам'яті
8.	input unit	пристрій введення
9.	output unit	пристрій виведення
10.	peripherals	периферійні прилади
11.	operating system	операційна система
12.	main memory	основна (оперативна) пам'ять
13.	to communicate	взаємодіяти
14.	GUI (graphical user interface)	графічний інтерфейс користувача
15.	network	мережа
16.	to transmit	передавати
17.	digital	цифровий
18.	laptop	ноутбук
19.	tablet	планшет
20.	to process	обробляти
21.	application	прикладна програма; застосування
22.	artificial intelligence	штучний інтелект
23.	resolution	роздільна здатність
24.	bus	шина
25.	to store	зберігати
26.	to employ	використовувати
27.	number crunching	виконання складних математичних розрахунків
28.	expansion board	плата розширення
29.	wearable, portable	портативний
30.	chassis, case	корпус
31.	CAD (Computer Aided Design)	автоматизований дизайн
32.	CAM (Computer Aided Manufacturing)	автоматизоване проектування

EXERCISE 2. Match a verb with a noun to build word combinations.

A	B
1. to connect	a. the net
2. to perform	b. a button
3. to store	c. the system
4. to transmit	d. a number on your mobile phone
5. to push	e. data
6. to surf	f. signals
7. to calculate	g. the expenses
8. to computerize	h. the battery
	i. specific tasks
9. to recharge	j. two computers together
10. to dial	

EXERCISE 3. Match the words with their definitions.

A	B
1. software	a. system unit
2. operating system	b. exchange information
3. data	c. any socket into which a peripheral device can be connected
4. main memory	d. the system software that allows all the hardware and software components to work together
5. tower	e. RAM (Random Access Memory)
6. communicate	f. a device used to produce sound output
7. speaker	g. an error in a computer program or system
8. port	h. a visual way of interacting with a computer using items such as windows, icons, and menus
9. bug	i. programs and data
10. graphical user interface (GUI)	j. a computer or computer program which manages access to a centralized resource or service in a network
11. server	k. information

EXERCISE 4. Read and translate the text about different types of computers.

Types of Computer

Computer is a programmable electronic machine that processes data and performs calculations and other tasks. Computers can be divided into several main types depending on their size and power.

Supercomputer is a broad term for one of the fastest computers currently available. Supercomputers are very expensive and are employed for specialized applications that require immense amounts of mathematical calculations (number crunching) and huge processing speed. They are often found at places

like atomic research centers, spy agencies, scientific institutes, or weather forecasting stations, where speed is of vital concern. For example, the United States' National Oceanic and Atmospheric Administration, which has some of the world's most advanced weather forecasting capabilities, uses some of the world's fastest computers — capable of more than 8 quadrillion calculations per second.

A **mainframe** is a very large and expensive computer capable of supporting hundreds, or even thousands, of users simultaneously. It is connected to hundreds of terminals over a network. Mainframes are used for large-scale computing purposes in banks, big companies and research and scientific organizations. The chief difference between a supercomputer and a mainframe is that a supercomputer channels all its power into executing a few programs as fast as possible, whereas a mainframe uses its power to execute many programs concurrently. In some ways, mainframes are more powerful than supercomputers because they support more simultaneous programs. But supercomputers can execute a single program faster than a mainframe.

A **server** is a computer designed to provide services to other computers over a network, their main function is to process requests and deliver data to other computers over the internet or a local network. Servers usually have powerful processors, lots of memory and large hard drives. They control access to the hardware, software, and other resources on a network and provide a centralized storage area for programs, data, and information. Servers support from two to several thousand connected computers at the same time. Depending on their function, there are different server types, such as proxy server, mail server, server platforms, Web server, application server, FTP server, etc.

A **workstation** is simply a desktop computer that has a more powerful processor, additional memory, high-end graphics adapters and enhanced capabilities for performing a special group of tasks, such as 3D graphics or game development. It is used for engineering applications (CAD/CAM), desktop publishing, software development, and other types of applications that require computing power and high quality graphics capabilities. Workstations generally come with a large, high-resolution graphics screen, a large amount of RAM, built-in network support, and a graphical user interface. Like desktop computers, they are intended for individual users. But in comparison with desktops, they are much speedier.

Personal computers (PCs) can be generally classified by size and chassis (case). The chassis is the metal frame that serves as the structural support for electronic components. It also contains slots for expansion boards. There are two

85

basic types of case designs – desktop models and tower models, but there are many variations of these two basic types. Tower model refers to a computer in which the power supply, motherboard, and storage devices are stacked on top of each other in a case. The main advantage of tower models is that there are fewer space constraints, which makes installation of additional storage devices easier. A desktop computer is designed to fit comfortably on top of a desk, typically with the monitor sitting on top of the computer. Desktop model computers are broad and low, whereas tower model computers are narrow and tall.

A **laptop computer** is small enough that it can sit on your lap. Nowadays, laptop computers are more frequently called notebook computers. It can work as fast as a desktop PC, with similar processors, memory capacity, and disk drives, but it is portable and has a smaller screen. Modern notebooks have TFT (thin film transistor) or LCD (liquid crystal display) screens that produce very sharp images. Instead of a mouse, they have a touchpad built into the keyboard – a sensitive pad that you can touch to move the pointer on the screen. They offer many connectivity options: USB (Universal Serial Bus) ports for connecting peripherals, slots for memory cards, etc. They come with battery packs, which let you use the computer when there are no electrical outlets available.

Netbooks are ultra-portable computers that are even smaller than traditional laptops. They are cheaper than laptops and their internal components are less powerful. Because they have relatively sluggish processors and little memory, netbooks can't run graphics applications or hardcore games. Instead, they're best for the task that gives them their name: web surfing.

Tablets are thin, flat devices that look like larger versions of smartphones. Tablets can do pretty much all the functions that laptops do, but they usually have low-performing processors. They also have less storage capacity than traditional PCs. Tablets are more portable than PCs, have a longer battery life yet can also do smartphone-like activities such as taking photos, playing games and drawing with a stylus. For those who like the keyboard functionality of a laptop, some tablets come with a keyboard (attached or detachable).

The latest trend in computing is **wearable computers**. Essentially, common computer applications (e-mail, database, multimedia, calendar/scheduler) are integrated into watches, cell phones, glasses and even clothing. Many wearables target outdoors enthusiasts and fitness freaks, allowing them to track their location, altitude, calories burned, steps, speed, and much, much more. But watches are just the beginning. Sewn-in accessories for clothing are growing, as are smart eyeglasses, smart belts, sleep monitors, heart rate trackers and intelligent ear buds. Nowadays devices that can be implemented under the skin are under development. They are supposed to be able to track various biological processes happening in your body.

Wearables are indeed a new horizon in personal computing. Their flexibility and mind-warping potential speak to the idea that the computer revolution isn't over. If anything, the PC era might just be getting underway.

(based on https://computer.howstuffworks.com/10-types-of-computers10.htm)

EXERCISE 5. Reread the text and find English equivalents of the Ukrainian words and word combinations.

Обробляти дані, виконувати обчислення, величезна швидкість обробки, виконувати багато програм одночасно, обробляти запити, доставляти дані, підтримувати декілька тисяч з'єднаних комп'ютерів одночасно, додаткова пам'ять, високоякісна графіка, екран з високою роздільною здатністю, вбудована підтримка мережі, графічний інтерфейс користувача, обраховувати числа, додаткові жорсткі диски, твердотільні накопичувачі, корпус, плата розширення, блок живлення, материнська плата, прилади збереження даних, ноутбук, планшетний комп'ютер, тонкоплівковий транзистор, рідкокристалічний дисплей, чітке зображення, периферійні прилади, мережа, центральний процесор, навушник.

EXERCISE 6. Read the definitions and say which type of computer they refer to.
1. A hand-held computer which can be used as a telephone, a web explorer and a personal organizer.
2. A typical computer found in many businesses and popular for home use.
3. A large computer used for intensive data processing and often linked to many terminals.
4. A small computer that fits into items of clothing.
5. A portable computer that can be closed up like a briefcase, but it can be as powerful as a desktop PC.
6. A small but a full-function PC – you can go to a meeting and write your notes on it, like a paper notepad; its screen mode can be changed from portrait to landscape.

EXERCISE 7. Answer the questions.
1. What types of computers do you know?
2. What type of a computer is the most powerful one? What is its sphere of usage?
3. What is the difference between a supercomputer and a mainframe?
4. What is a server? What types of servers do you know?
5. Where are workstations used? What are their basic characteristics?
6. What is the difference between the desktop PC and the laptop PC?
7. What do you know about wearable computers? What types of wearable computers are there?
8. What type of computer do you prefer to work on?

EXERCISE 8. Translate into English.

1. Як тільки він прибдав комп'ютер, він одразу приєднався до мережі Інтернет.
2. До XX століття всі обчислювальні прилади були механічними, перші електронні комп'ютери з'явилися в середині XX століття.
3. Перший комп'ютер фірми Apple в 1976 році був дерев'яним ящиком з електронними компонентами в середині.
4. Apple – американська транснаціональна корпорація, котра проектує та виробляє комп'ютери й іншу побутову електроніку, а також програмне забезпечення до них.
5. Жодне сучасне підприємство не в змозі успішно виконувати свою роботу без допомоги комп'ютерної системи контролю.
6. Безліч винаходів XX століття стали невід'ємною частиною сучасного життя.
7. Ця компанія знана у світі, тому що вона запроваджує передові технології.
8. Чи не могли б ви детально викласти свою точку зору щодо цього питання?
9. Я гадаю, нам прийдеться повторити цей експеримент.
10. Цій проблемі зараз приділяють велике значення.
11. Останнім часом мій комп'ютер погано функціонував, тому я заніс його в сервісний центр.
12. Щоб детально вивчити цю проблему, було проведено декілька експериментів.
13. Отримана інформація була детально описана в статті.
14. Комп'ютерні технології продовжують ускладнюватися та вдосконалюватися.
15. З моїм комп'ютером щось сталося: здається, він зламався.

EXERCISE 9. Answer the questions. Give the detailed answer.

- You want to buy a new PC. What would you buy a laptop or a desktop? Explain your choice.
- Compare supercomputers, mainframes and servers. What are their key characteristics and where are they applied?
- What do you know about wearable computers? What are their main features?

1.2 Computer Configuration

EXERCISE 1. Study the topical vocabulary.

motherboard	материнська плата
sensitive pad	чутлива панель
influence	вплив
CPU (central processing unit)	центральний процесор
socket	роз'єм
to retrieve	відновлювати, діставати
word processor	текстовий редактор
spreadsheet	електронна таблиця
to supply	постачати
printed circuit board	друкована плата
to measure	вимірювати
RAM (random access memory)	оперативна пам'ять
ROM (read only memory)	постійна пам'ять
speaker	динамік
headphone	навушник
to plug	під'єднувати
inch	дюйм
SSD (solid state drive)	твердотільний накопичувач
HDD (hard disk drive)	жорсткий диск
to rely on	покладатися на
to spin	обертатися
charge	заряд
to erase	витирати
actuator arm	коромисло

EXERCISE 2. Match a computer component with its description.

The System (Mother) Board	a. It is the PC case. Its primary function is to hold all the other components together and protect the sensitive electronic parts from the outer influence. It can also be called "a tower".
The CPU (Central Processing Unit)	b. It is a form of computer data storage that allows information to be stored and retrieved on a computer. It is where the operating system is loaded to when you switch on your computer and also where your applications are copied to when you load an application, such as a word processor or database program. When you create data, (e.g. letters and pictures), these are initially created and held in this memory and then copied to the disk when you save the data.

The Monitor	c. Many computers are now supplied with these items. That means, when you run multi-media programs, you can listen to sounds that are played back via your computer. If you have a microphone and suitable software, you can also record sounds.
The System Unit	d. It is a special chip held on your computer's system board. It contains software that is required to make your computer work with your operating system, for instance it is responsible for copying your operating system into RAM when you switch on your computer.
Serial Port	e. It is the main printed circuit board found in any computer system. It holds crucial electronic components of a system, such as the central processing unit (CPU) and memory and allows communication between computer elements and peripheral devices.
RAM (Random Access Memory)	f. It is the most important element of a computer system where most calculations take place. It is responsible for interpreting and executing most of the commands from the computer's hardware and software. It determines how fast your computer will run and is measured by its MHz speed.
ROM-BIOS (Read Only Memory – Basic Input Output System)	g. You will see one or more such sockets at the back of the system unit, allowing you to plug in devices designed for this type of connection.
Sound cards and speakers	h. It is a socket located at the back of your computer that enables you to connect items to the computer, such as a modem. They are commonly labeled as COM1 or COM2.
Universal Serial Bus (USB)	i. It is the TV type screen that you view your programs on. They are supplied in different sizes, common sizes range from 15" to 21" screens. You should be aware that poor quality or badly maintained items can harm your eyesight.

EXERCISE 3. Read and translate the text.
SSD vs. HDD: Which is Better for You?

What's the difference between SSDs and HDDs? Solid state drives and hard disk drives are similar in their physical specifications, but they store data very differently. There are advantages and disadvantages of each type of drive, and the choice which type is right for you depends on what you use your computer for.

HDD. The technology behind hard disk drives is well-known and well-tested. Hard disk drives have been around for more than 50 years, steadily increasing their storage capacity and decreasing their physical size. HDDs rely on spinning disks, or platters, to read and write data. Hard disk drives consist of one or more magnetically sensitive platters, an actuator arm with a read/write head on it for each platter, and a motor to spin the platters and move the arms. There is also an I/O controller and firmware that tells the hardware what to do and communicates with the rest of the system.

Each platter is organized into concentric circles, called tracks. Tracks are divided into logical units called sectors. Each track and sector number results in a unique address that can be used to organize and locate data. Data is written to the nearest available area. There is an algorithm that processes the data before it's written, allowing the firmware to detect and correct errors. The platters spin at preset speeds (4200 rpm to 10000 rpm for consumer computers), those speeds correlate to read/write rates. The higher the preset speed, the faster a hard drive will be able to read and write data.

Each time you ask your computer to retrieve or update data, the I/O controller tells the actuator arm where that data is located, and the read/write head gathers the data by reading the presence or absence of a charge in each address. If the request was to update the data, the read/write head changes the charge on the affected track and sector. The time it takes for the platter to spin and the actuator arm to find the correct track and sector is known as latency.

The drawbacks to HDDs are a result of the mechanical parts used to read and write data, as physically finding and retrieving data takes more time than electronically finding and retrieving data. The mechanical parts can skip or even fail if they are handled roughly or dropped. This is a concern in laptops, but not as much in desktops. HDDs are also heavier and use more energy than comparable SSDs.

The benefits of a hard disk drive are that they are a proven technology, are frequently less expensive than a solid state drive for the same amount of storage.

SSD. Solid state drives are a newer technology, but have progressed rapidly, adding more storage capacity each year. SSDs rely on electronic storage in non-volatile memory, meaning that data won't disappear when the computer is turned off.

SSDs can be thought of as large USB drives; they use the same base

technology. NAND, the technology in solid state drives is a kind of flash memory. At the lowest level, floating gate transistors record a charge (or lack of a charge) to store data. The gates are organized in a grid pattern, which is further organized into a block. Block size can vary, but each row that makes up the grid is called a page. There is a SSD controller that performs several functions, including keeping track of where data is located. Each time you ask your computer to retrieve or update data, the SSD controller looks at the address of the data requested and reads the charge status.

SSDs are newer technology, and as such, are more expensive than HDDs. Although they are catching up, it can be harder to find very large-capacity solid state drives. HDDs can be as much as 2.5 times larger.

Solid state drives deliver faster load times for games, applications, and movies. Because of the technology they use, SSDs are lighter and more able to withstand being moved and dropped. In addition, solid state drives use less energy, keeping the computer they're used in cooler.

The difference between hard drives and solid state drives is in the technology used to store and retrieve data. HDDs are cheaper and you can get more storage space. SSDs, however, are faster, lighter, more durable, and use less energy. Your needs will dictate which storage drive will work best for you.

(Based on: http://www.crucial.com/usa/en/learn-with-crucial/about-ssd/ssd-vs-hdd)

EXERCISE 4. Reread the text and find English equivalents of the Ukrainian words and word combinations.

Зберігати дані по-різному, добре перевірена технологія, ємність пам'яті, обертові диски, магнітні пластини, голівка зчитування запису, попередньо задана швидкість, отримати інформацію, оновити інформацію, транзистор з плáвним затвóром, енергонезалежна пам'ять, відслідковувати розташування даних, здатний витримати переміщення та падіння.

EXERCISE 5. Answer the questions.
1. What is the difference between HHDs and SSDs?
2. What does HHD consist of?
3. What are platters? What do platters consist of?
4. What speed do the platters spin at?
5. What is the function of the I/O controller?
6. What is latency?
7. What are the advantages of HHDs?
8. What are the disadvantages of HHDs?
9. What technology are SSDs based on?
10. What is the function of floating gate transistors?
11. What is the function of a SSD controller?
12. What are the advantages of SSDs?
13. What are the disadvantages of SSDs?

EXERCISE 6. Arrange the steps of how to install an SSD in your laptop into the proper order.

Laptop SSD installation instructions

A. Gather supplies. Take 2.5-inch Crucial® SSD, a screwdriver, your computer's owner's manual (which will specify the type of screwdriver you need).

B. Reassemble your laptop.

C. Ground yourself by touching an unpainted metal surface. This is an extra safeguard that protects your drive and components from static damage during the installation process.

D. Hold down the power button for 5 seconds to discharge residual electricity. A slashed circle on top of a laptop power cable to indicate that the power cable should be removed prior to installation

E. Open your laptop's case. Refer to your owner's manual for how to do this.

F. Make sure you're working in a static-safe environment. Remove any plastic bags or papers from your work space.

G. Locate the storage bay. Refer to your owner's manual for the exact location and note the size of the bays. Remove the old storage drive. Look closely at the old storage drive for any brackets, adapters, support frames, braces, pull tabs, or screws that might be attached to it. If anything is attached to the old drive, remove it and put it on the SSD in the same manner.

H. Shut down your system. Disconnect the power cable and remove the battery. Refer to your system's owner's manual for how to do this.

I. Power on your computer.

J. Plug the SSD into your system. Don't force the connection – it should plug in easily and fit snugly. If the SSD doesn't fit snugly, use the spacer that comes with your Crucial® SSD and attach it to the SSD by peeling off the adhesive and sticking the spacer onto the drive. Attaching the spacer allows the SSD to achieve the same level of thickness as the existing drive you removed. Note: Many installations don't require the spacer, so you might not need to use it.

(Based on: http://www.crucial.com/usa/en/learn-with-crucial/about-ssd/how-to-install-ssd-in-laptop)

EXERCISE 7. Choose the correct form of the verb and translate the sentences.

1. When one computer system *is set up / sets up / set up* to communicate with another computer system, connectivity *becomes / become* an important system element.

2. People *are the most important component / is the most important component* of the computer system: they *create / creates / are created* the computer software instructions and respond to the procedures that those instructions present.

93

3. Computer *uses / is used / are using* to convert data into information and to store information in the digital form.
4. Nowadays computer development *is rapidly progressing / rapidly progresses* at both the high and the low ends of the computing spectrum.
5. Researchers *are currently developed / are currently developing* microchips called digital signal processors (DSPs).
6. Data *feed / is feeding / is fed* into the computer's memory.
7. The main memory *holds / is holding / is held* the instructions and data which *are being processed / are processed / are processing* by the CPU.
8. Peripherals *include /are including / are included* storage devices and input/output devices.
9. Disk drives *are used / is used / are using* to read and write data on disks.
10. Input devices *enable / are enabled / were enabled* data to go into the computer's memory.

EXERCISE 8. Fill in the gaps with the proper word or word-combination.

chips	upgraded	megabytes	megahertz
	speed	motherboard	processor

The 'brain' of a computer is the 1. _____. Most of these are made by Intel and AMD, and are sometimes referred to as 2. '_____'. The 3. _____ of a processor is measured in 4. _____.

A computer's memory is measured in 5. _____. The processor and memory modules are located on the 6. _____. Changing a computer's processor is not generally practical, but the memory can usually be 7. _____.

data	developed	devices	enabled	signals
	wireless		telecommunications	

Bluetooth® technology enables 1. _____ communication between 2. _____ such as laptop computers, mobile phones and PDAs. Bluetooth® 3. _____ devices use short-range radio 4. _____ to exchange 5. _____ quickly and easily. The technology was 6. _____ by a group of computer and 7. _____ companies including IBM, Intel, Nokia and Ericsson.

EXERCISE 9. Choose the suitable word to complete the sentences.
1. The mouse moves on a _____.
   a. mouse mat   **b.** mouse carpet   **c.** mouse table
2. TV and computer screens are usually measured in _____.
   a. feet   **b.** miles   **c.** inches
3. Before you start work, _____ the height of your chair.

        a. adjust   **b.** change   **c.** rearrange

4. To get sound from your computer, plug in a pair of _____.
   a. loudhailers   **b.** loudspeakers   **c.** loud voices
5. The computer is connected to the telephone line via a _____.
   a. module   **b.** modem   **c.** mode
6. You can increase the functions or performance of a computer with an _____.
   a. extension card   **b.** exploding card   **c.** expansion card
7. There's a spare _____ in the workstation.
   a. electric hole   **b.** power point   **c.** electrical opening
8. You can plug in your mobile phone _____.
   a. charger   **b.** power   **c.** electrification
9. SD cards can be read in a computer's _____.
   a. storage reader   **b.** memory reader   **c.** card reader
10. The computer is cooled by a _____.
    a. fun   **b**. fan   **c**. file
11. The printer has _____ of ink.
    a. finished   **b**. ended   **c**. run out
12. I had only had my computer for three weeks when I had to have the hard drive _____.
13. **a**. replaced   **b**. restored   **c**. revived
14. Windows XP, Macintosh OSX and Linux are _____.
    a. operating systems   **b.** operating tools   **c.** operation systems
15. Microsoft Word, Adobe Acrobat and CorelDraw are programs or _____.
    a. applicators   **b.** appliers   **c.** applications
16. I keep all my digital photos in a _____ called 'Photos'.
    a. folder   **b.** packet   **c.** box
17. Is it possible to open Microsoft Excel _____ in Word?
    a. texts   **b.** files   **c.** pages
18. When you _____ a document, it's sent to the recycle bin.
    a. destroy   **b.** erase   **c.** delete
19. Deleted documents stay in the recycle bin until you _____ it.
    a. wash   **b.** empty   **c.** clean
20. The data and applications on your computer are stored on the _____.
    a. hard drive   **b.** hard driver   **c.** floppy drive
21. My computer's hard drive has a _____ of 120GB.
    a. capacitor   **b.** capacity   **c.** capability
22. The speed with which a modem can process data is measured in _____.
    a. bandwidth   **b**. bits per second (bps) **c.** signals
23. Cables consisting of several copper wires each with a shield are known as _____ cables.

a. twisted pair   **b.** optical fibre   **c.** power cables

24. Computers that are connected together within one building form a _____.
    a. WAN   **b.** ISP   **c.** LAN

25. If you transfer a file from a remote computer to your computer, you _____.
    a. download   **b.** upload   **c.** run

26. To send out information is to _____.
    a. signal   **b.** packet   **c.** transmit

27. A document containing information and graphics that can be accessed on the internet is _____.
    a. a website   **b.** a web page   **c.** the World Wide Web

28. Multitasking means _____.
    a. Can do two or more things at the same time
    b. One at a time
    c. None of the above

EXERCISE 10. Answer the questions. Give the detailed answer.
- You want to buy a new PC. What would you buy a laptop or a desktop? Explain your choice.
- You want to buy a new hard drive. What type of hard drive would you take, HDD or SSD?
- What peripheral devices would you plug in to your PC? What would you use them for?
- What operating system would you like to have on your computer?
- What application programs will you install?

1.3 Programming Languages

EXERCISE 1. Study the topical vocabulary.

1.	to execute	виконати
2.	statement	вираз, програма
3.	to correspond	відповідати
4.	meaningful	той, що має сенс, значимий
5.	beneficial	корисний
6.	to vary	відрізнятись
7.	complexity	складність
8.	assembly language	мова асемблера
9.	property	властивість
10.	attribute	властивість
11.	to contain	містити
12.	to allow	дозволяти, враховувати
13.	to enable	дозволяти
14.	entirely	повністю
15.	to represent	представляти
16.	instead of	замість
17.	improvement	покращення
18.	to inherit	успадковувати
19.	constraint	обмеження
20.	array	масив
21.	binary	двійковий
22.	support	підтримка
23.	management	управління
24.	routine	програма
25.	solution	рішення

EXERCISE 2. Match the synonyms.

1.	to execute	a)	to get
2.	to retrieve	b)	difficulty
3.	beneficial	c)	useful
4.	to vary	d)	to differ
5.	complexity	e)	portable
6.	property	f)	to enable
7.	to contain	g)	to save
8.	to allow	h)	to include
9.	to store	i)	attribute
10.	wearable	j)	to perform

EXERCISE 3. Read and translate the text.
Programming Language Generations
Computer programming languages allow people to give instructions to a computer in a language the computer understands. Just as many human-based languages exist, there are an array of computer programming languages that programmers can use to communicate with a computer. The portion of the language that a computer can understand is called a "binary." Translating programming language into binary is known as "compiling." Each language, from C Language to Python, has its own distinct features, though there are a lot of commonalities between programming languages.

Programming languages have been classified into several programming language generations. The first generation of programming language (1GL) is the machine language. The instructions in 1GL are made of binary numbers, represented by 1s and 0s. Machine language statements are written in a binary code, and each statement corresponds to one machine action. This makes the language suitable for the understanding by the machine but far more difficult to interpret and learn by the human programmer. Currently, programmers almost never write programs directly in machine code, because it requires attention to numerous details that a high-level language handles automatically. Furthermore, it requires memorizing or looking up numerical codes for every instruction, and is extremely difficult to modify.

The second generation programming language, or 2GL, is assembly language. Assembly language is a low-level programming language. Using it, programmers can write human-readable programs that correspond almost exactly to machine language. In general, one line of an assembly program contains a maximum of one instruction for the computer. The disadvantage is that everything the computer does must be described in precise detail. The advantage is that the programmer has maximum control over what the computer is doing. An assembly language programmer writes instructions using symbolic instruction codes that are meaningful abbreviations. Assembly code is converted into executable machine code by an assembler.

In the first and second generation programming languages, the program is written specifically for a certain type of CPU and instruction set. However, a third-generation programming language (3GL) is a programming language that is machine-independent, meaning programs written in that language can be compiled to run on many different devices. 3GLs first appeared in the 1950s with the development of FORTRAN, ALGOL, and COBOL. 3rd generation languages are high-level languages. They use a series of Englishlike words, that are closer to human language, to write instructions. High-level programming languages make complex programming simpler and easier to read, write and maintain. Programs written in a high-level programming language must be translated into machine language by a compiler or interpreter. PASCAL, FORTRAN, BASIC, COBOL, C and C++ are examples of third generation

programming languages. Updated versions of all of these 3GLs are still in general use.

The concept of 4GL was developed from the 1970s through the 1990s. The fourth generation programming languages are closer to human language than other high-level languages and can be accessible to people even without formal training as programmers. They allow multiple common operations to be performed with a single programmer-entered command. They are intended to be easier for users and include support for database management, report generation, mathematical optimization, GUI development, or web development. They are often referred to as goal-oriented programming languages because tthey are usually limited to a very specific application and might use syntax that is never used in other programming languages. SQL, NOMAD and FOCUS are examples of fourth generation programming languages. While 3GLs like C, C++, C#, Java, and JavaScript remain popular for a wide variety of uses, 4GLs as originally defined found narrower uses.

A fifth-generation programming language (5GL) is a programming language based on problem solving using constraints given to the program, rather than using an algorithm written by a programmer. In essence, the programming language is used to denote the properties, or logic, of a solution, rather than how it is reached. While fourth-generation programming languages are designed to build specific programs, fifth-generation languages are designed to make the computer solve a given problem without the programmer. This way, the user only needs to worry about what problems need to be solved and what conditions need to be met, without worrying about how to implement a routine or algorithm to solve them. Fifth-generation languages are used mainly in artificial intelligence research. Prolog, OPS5 and Mercury are examples of fifth-generation languages.

EXERCISE 4. Reread the text and find English equivalents of Ukrainian word combinations.

Двійкові числа, набір інструкцій, кожен вираз відповідає одній дії машини, запустити програму, доступний людям, значимі скорочення, дозволяє людям взаємодіяти з комп'ютерами, візуальне середовище програмування, багаточисельні операції, керування базами даних, орієнтований для досягнення цілей, вирішувати завдання, дослідження штучного інтелекту, використовуючи обмеження, визначати властивості.

EXERCISE 5. Answer the questions.
1. What is the main function of computer programming languages?
2. What kind of language can a computer understand?
3. What is compiling?
4. What are the key characteristics of the machine language statements?
5. Do modern programmers write programs in a machine code? Why?
6. What is an assembly language?

7. What is the function of an assembler?
8. What are the key features of the third-generation programming languages?
9. Are the third-generation programming languages still in general use? Give examples.
10. Why are the fourth-generation languages often referred to as goal-oriented programming languages?
11. What is the principle of work of the fifth-generation programming languages?
12. Where are the fifth-generation languages mainly used?

EXERCISE 6. Read the texts. Fill in the gaps with the proper word. Be ready to tell the difference between structured (procedure-oriented) and object-oriented programming.

employ	uses	broken	known	include	means	drawn

Procedure-oriented programming:
Structured programming often (1) _____ a top-down design model where developers map out the overall program structure into separate subsections from top to bottom. In the top-down design model, programs are (2) _____ as rectangles. A top-down design means that the whole program is (3) _____ down into smaller sections that are (4) _____ as modules. A program may have a module or several modules. Structured programming is beneficial for organising and coding computer programs which (5) _____ a hierarchy of modules. This (6) _____ that control is passed downwards only through the hierarchy. Examples of structured programming languages (7) _____ Ada, Pascal and Fortran.

called	defined	contain	represents	specify	create

Object-oriented programming:
A type of programming where data types representing data structures are (1) _____ by the programmer as well as their properties and the things that can be done with them. With object-oriented programming, programmers can also (2) _____ relationships between data structures and create new data types based on existing ones by having one data type inherit characteristics from another one. In object-oriented programming, data types defined by the programmer are (3) _____ classes. For example, a programmer can create a data type that (4) _____ a car – a car class. This class can (5) _____ the properties of a car (color, model, year, etc.) and functions that (6) _____ what the car does (drive, reverse, stop, etc.) One of the earliest OOP languages is Smalltalk. Java, Visual Basic and C++ are examples of popular OOP languages.

EXERCISE 7. Describe the terms.

e.g. A computer program is a set of instructions that performs a specific task when executed by a computer.

A computer program, programming language, assembler, interpreter, compiler, a high-level language, a low-level language, a machine code.

EXERCISE 8. Translate into English.

1. Системний блок комп'ютера захищає його внутрішні компоненти від зовнішнього впливу та механічних пошкоджень.
2. Двоядерні процесори з'явились в 2005 році.
3. Оперативна пам'ять вміщує всі дані та команди, які обробляються центральним процесором.
4. Драйвер – це невелика програма, що дозволяє комп'ютеру спілкуватися із зовнішніми пристроями.
5. BIOS – це програма, яка тестує апаратне забезпечення комп'ютера та завантажує операційну систему.
6. Традиційна клавіатура має 101 клавішу, але деякі можуть мати і більше.
7. Універсальна послідовна шина (USB) використовується для з'єднання периферійних пристроїв обчислювальної техніки.
8. Хмарні сервіси, що дозволяють перенести обчислювальні ресурси й дані на віддалені інтернет-сервери, в останні роки стали одним з основних напрямів розвитку IT-технологій.
9. Багатозадачність – властивість операційної системи або середовища програмування забезпечувати можливість паралельної обробки декількох процесів.
10. Вірус може знищити не лише важливу інформацію, а й програми.
11. Усі цифрові комп'ютери залежно від їхніх можливостей та конструкції розділяють на декілька поколінь.
12. Кожне наступне покоління комп'ютерів перевершує попереднє своїми новими вдосконаленими характеристиками.

EXERCISE 8. Tell the groupmates.

• what characteristics languages of different generations have;
• what procedure-oriented languages you know and what they are used for;
• what object-oriented languages you know and why they are used.

EXERCISE 9. Prepare a report on one of the topics.

1. Object-oriented programming – pros and cons.
2. Anyone can become a programmer – agree or disagree.
3. What is better – to work on one big project or perform many small ones?

2. ELECTRONICS

2.1 History of Electronics

EXERCISE 1. Study the topical vocabulary.

vacuum tube	вакуумна лампа
circuit	схема, коло
silicon integrated circuit	кремнієва інтегральна схема
printed circuit board	друкована плата
conductor	провідник
conduction	провідність
semiconductor	напівпровідник
radio communication	радіозв'язок
long-distance radio communication	радіозв'язок на довгі дистанції
wireless telegraph	безпровідний телеграф
radio waves	радіохвилі
super-heterodyne receiver	супергетеродинний приймач
radio broadcasting	радіотрансляція
frequency modulation (FM)	частотна модуляція
amplitude modulation (AM)	амплітудна модуляція
cathode-ray tube	катодно-променева трубка, кінескоп
military defense forces	сили військової оборони
resonant cavity magnetrons	багаторезонаторний магнетрон
to measure distances	вимиріювати відстань
to consume power	споживати електроенергію
capacitor	конденсатор
bipolar transistor	біполярний транзистор
to amplify	підсилювати
to generate	генерувати, створювати
to emit	виділяти, випускати
to store	зберігати, накопичувати
to communicate	взаємодіяти, спілкуватися
to transmit	передавати
charge	заряд
current	струм
source of energy	джерело енергії
switch	перемикач
digital	цифровий
to process	обробляти

EXERCISE 2. Look at the word table below and fill in the gaps with the proper word derivative using word formation elements.

Noun	Verb	Adjective
activation	*activate*	*active*
amplification		amplified / amplifying
emission	emit	
	entertain	entertaining
extraction		extracted / extracting
generation	generate	
	integrate	integrated / integrating
reception		receiving / receptive
reliability	rely	
storage		stored / storing
	transmit	transmittable / transmissible
communicate		communicating
	conduction / conductor	conducted / conducting
modulate		modulated / modulating
measure	measurement	
	consumption / consumer	consumed / consuming

EXERCISE 3. Use the proper form of the words in brackets and complete the sentences.

1. The weak audio signal entering a radio is _____ by the _____ thus making it audible. (amplify)
2. Computer games are just one example of electronic systems being used for _____. (entertain)
3. Due to developments in mobile telecommunications systems, a new _____ of mobile phone is now available. (generate)
4. IC stands for _____ circuit. (integrate)
5. Computer software is _____ if it does what the manual says it should. (rely)
6. One area of electronics is concerned with the _____ of information. (store)
7. The _____ of signals to satellites is made by microwaves. (transmit)
8. A computer chip is capable of holding vast amounts of _____ information. (store)
9. _____ of speech was first carried out through _____ of the amplitude of a radio signal. (transmit, modulate)
10. In a laser, energy is released in the form of _____ light. (emit)
11. Copper is a good _____ of electricity. (conduct)

EXERCISE 4. Read the following definitions and say which one is the definition that describes such branch of science as Electronics.

1. It is a form of energy resulting from the existence of charged particles (such as electrons or protons), either statically as an accumulation of charge or dynamically as a current that can be carried by wires.
2. It is a branch of mechanics that deals primarily with energy and its transformations.
3. It is the branch of science that deals with the study of flow and control of electrons and the study of their behavior and effects in vacuums, gases, and semiconductors, and with devices using such electrons.

EXERCISE 5. Read the text about electronics.
What is Electronics?

Electronics is a branch of engineering and physics. It deals with the emission, behaviour, and effects of electrons for the generation, transmission, reception, and storage of information. This information can be audio signals in a radio, images (video signals) on a television screen, or numbers and other data in a computer.

Electronics deals with electronic circuits that involve active electronic components such as vacuum tubes, transistors, diodes and integrated circuits and associated passive electronic components and interconnecting components. Active electronic components are those that can control the flow of electricity. Passive electronic components, unlike their active counterparts, do not depend upon a source of energy in order to perform their required function. Passive electronic components include capacitors, resistors, inductors, transformers and diodes, while interconnecting components primarily encompass connectors and switches. Printed circuit boards (PCB) are referred to as interconnecting components, since they help connect various components into an integrated system.

Electronics is widely used in information processing, telecommunication and signal processing. The ability of electronic devices to act as switches makes digital information processing possible.

Electronics is distinct from electrical and electromechanical engineering that deal with the generation, distribution, switching, storage and conversion of electrical energy to and from other energy forms using wires, motors, generators, batteries, switches, relays, transformers, resistors and other passive components.

EXERCISE 6. Reread the text "What is Electronics?" and complete the following statements.

1. Electronics is _____ .
2. Electronics studies _____ .
3. Electronic circuits involve _____, _____ and _____ .
4. Active electronic components are those that can _____ .

5. The examples of active electronic components are _____.
6. Passive electronic components _____.
7. Passive electronic components include _____ .
8. Interconnecting components help connect various components into an integrated system and they encompass _____.
9. Electrical and electromechanical engineering deal with _____.
10. Electronics is widely used in _____.

EXERCISE 7. Read and translate the text. Find answers to the following questions.
1. Where are electronic devices primarily used nowadays?
2. What discovery did Thomas Alva Edison do? How is it called?
3. What did John Fleming and Lee De Forest invent?
4. Where were the first vacuum tubes applied? What was their primary function?
5. What did you know about the "super-heterodyne receiver"?
6. Who is regarded as the creator of television?
7. What is the acronym RADAR stand for?
8. What is the sphere of radar application? What is its function?
9. What are the key advantages of transistors over vacuum tubes?
10. What is an integrated circuit? What role has it played in the technological history of the mankind?

The History of Electronics

In the 21st century, every day we deal with the electronic circuits and devices in some or the other forms because gadgets, home appliances, computers, transport systems, cell phones, cameras, TVs, etc. contain electronic components. Today's world of electronics has made deep inroads in practically all the areas of our life, including healthcare and medical diagnosis, automobiles and transportation, military and consumer electronics. It has penetrated in all the branches of industries, and convinced everyone that without electronics, it is really impossible to live.

The history of electronics is a story of the twentieth century and three key components – the vacuum tube, the transistor, and the integrated circuit. In 1883, Thomas Alva Edison discovered that electrons flow from one metal conductor to another through a vacuum. This discovery of conduction became known as the Edison effect. In 1904, a British scientist John Fleming applied the Edison effect and invented the two-element electron tube called a diode, and an American inventor Lee De Forest followed in 1906 with the three-element tube, the triode. These vacuum tubes were the devices that made manipulation of electrical energy possible so it could be amplified and transmitted.

The first applications of electron tubes were in radio communications. Marconi pioneered the development of the wireless telegraph in 1896 and long-distance radio communication in 1901. Vacuum tubes strengthened weak audio

signals and allowed these signals to be superimposed on radio waves. In 1918, Edwin Armstrong invented the 'super-heterodyne receiver' that could select among radio signals or stations and could receive distant signals. Radio broadcasting grew astronomically in the 1920s as a direct result. Armstrong also invented frequency modulation (FM) in 1935; only AM or amplitude modulation had been used from 1920 to 1935.

Radio as the primary form of education and entertainment was soon challenged by television. For the first time in history it became possible to transmit images and sound over wire. In 1927, Philo Farnsworth received the patent on the first complete electronic television system, which he called the Image Dissector. But Russian inventor Vladimir Zworykin, an engineer with the Radio Corporation of America (RCA), is considered the 'father of the television' because he demonstrated the first practical electronic system for both the transmission and reception of images using his new cathode-ray tube called the kinescope (1927).

In 1935 radar was invented by Sir Robert Watson-Watt, and was immediately employed as part of military defense forces against sea and air attacks. His invention was further improved by the invention of resonant cavity magnetrons, which were used in microwave radars. An acronym for *R*adio *D*etection *A*nd *R*anging, *radar* measures the distance and direction to an object using echoes of radio microwaves. It is used for aircraft and ship detection, control of weapons firing and navigation.

In 1946 electron tubes were used to develop the first computers, but they were impractical because of the sizes of the electronic components. In 1947, the transistor was invented by a team of engineers from Bell Laboratories. John Bardeen, Walter Brattain, and William Shockley received a Nobel Prize for their creation. The transistor functions like the vacuum tube, but it is tiny by comparison, weighs less, consumes less power, is much more reliable, and is cheaper to manufacture with its combination of metal contacts and semiconductor materials.

The concept of the integrated circuit was proposed in 1952 by Geoffrey W. A. Dummer. The total integrated circuit combined transistors, diodes, capacitors and resistors on a planar chip. By 1961, integrated circuits were in full production at a number of firms, and designs of equipment changed rapidly and in several directions to adapt to the technology. Bipolar transistors and digital integrated circuits were made first, but analog ICs, large-scale integration (LSI), and very-large-scale integration (VLSI) followed by the mid-1970s. VLSI consists of thousands of circuits with on-and-off switches on a single chip. Microcomputers, medical equipment, video cameras, and communication satellites are only examples of devices made possible by integrated circuits.

EXERCISE 8. Fill in the table with the information you have obtained from the text.

Invention	Inventor	Year	How it Functions
Edison effect			
		1904	
	Lee De Forest		
			Vacuum tubes strengthened weak audio signals and allowed these signals to be superimposed on radio waves.
super-heterodyne receiver			
		1927	
	Robert Watson-Watt		
transistor			
		1952	

EXERCISE 9. Complete the following sentences paying attention to the underlined words.

1. In accordance with Edison effect, electrons _____.
2. In 1904, John Fleming applied the Edison effect while_____.
3. Diodes and triodes were the devices that _____.
4. It was Marconi who _____.
5. Due to Edwin Armstrong's invention of the "super-heterodyne receiver" it became possible to select _____.
6. FM stands for _____, while AM means _____.
7. Vladimir Zworykin is considered the "father of the television" because _____.
8. Thanks to radar it became possible to _____.
9. The first computers turned out to be impractical because of _____.
10. Despite it functions like the vacuum tube, the transistor is _____.
11. Thanks to planar techniques transistors, diodes, capacitors and resistors can be placed on a single _____.
12. Large-scale integration (LSI) and very-large-scale integration (VLSI) followed _____.

EXERCISE 10. Name electronic devices that became possible due to the development of electronics. Mention their spheres of usage, advantages, disadvantages and your opinion of them. Write about 60 words.

2.2 Electronic Components

EXERCISE 1. Study the topical vocabulary.

electron (vacuum) tube	вакуумна лампа
amplifier	підсилювач
transmitter	передавач
receiver	приймач
magnetron	магнетрон
microwave tube	низькочастотна лампа
transistor gain	коефіцієнт підсилення транзистора
rectifier	випрямляч
solid-state components	твердотільні компоненти
junction transistor	п-н-п транзистор
photovoltaic cell	фотогальванічний елемент
integrated circuit	інтегрована схема
light-emitting diode	світлодіод
charge-coupled device (CCD)	пристрій із зарядовим зв'язком
capacitor	конденсатор
capacitance	ємність
inductor	індуктор
load	навантаження
conductive trace	провідна доріжка
substrate	основа, підложка
attenuation	затухання
resistance	опір
etch	гравірувати, витравлювати
to compute	рахувати, обчислювати
voltage	напруга
copper	мідь
mica	слюда

EXERCISE 2. Match the synonyms and translate them into Ukrainian.

1.	to reduce	a)	to carry out
2.	to manufacture	b)	speed
3.	electron tube	c)	fast
4.	to store	d)	to assist
5.	rapid	e)	vacuum tube
6.	to help	f)	to save
7.	to perform	g)	to lower
8.	rate	h)	to produce
9.	device	i)	garget
10.	broad	j)	wide

108

EXERCISE 3. Match the devices with their definitions.

Vacuum tube	electronic circuit containing many components on a single silicon chip
Transistor	a small electronic component which contains an integrated circuit on one piece of silicon.
IC (integrated circuit)	IC chip at the center of a computer for controlling the system and processing
Chip	electronic component which was commonly used before the invention of semiconductor devices such as transistors
Microprocessor	semiconductor component with three electrodes (emitter, base and collector) used for switching or amplifying an electronic signal
Diode	radio detection and ranging: electronic system which uses the reflection of microwaves to detect the presence of an object and measure its distance and position relative to the transmitter
Radar	semiconductor component which only allows current to flow in one direction

EXERCISE 4. Read and translate the text.
Electronic Components

Electronic gadgets have become an integral part of our lives. They have made our lives more comfortable and convenient. From aviation to medical and healthcare industries, electronic gadgets have a wide range of applications in the modern world. Any electronic system consists of a number of discrete devices called electronic components such as resistors, transistors, capacitors, inductors, diodes, etc. Electronic components have a number of electrical terminals or leads which connect together to create an electronic circuit performing a particular function. An electronic circuit is a structure that directs and controls electric current to perform various functions including signal amplification, computation, or data transfer. The complexity and the number of components in an electronic circuit may change depending on its application. The simplest circuit consists of three elements, including a conducting path, a voltage source, and a load.

The conducting path is the pass through which electric current flows. Though copper wires can be used in simple circuits, they are often replaced by conductive traces. Conductive traces are nothing but copper sheets laminated onto a non-conductive substrate.

The voltage source is a two-terminal device such as a battery, a generator or a power system that provides a potential difference (voltage) between two points in the circuit so that current can flow through it.

A load is an element in the circuit that consumes power to perform a particular function. A light bulb is the simplest example of load. Complex

circuits, however, have different loads such as resistors, capacitors, diodes, or transistors.

All the electronic devices fall into two categories – active components and passive components. Active components require electricity to work and are able to control the electricity running through them. Passive devices do not generate energy, but can store it or dissipate it. In fact, passive devices consume power within an electrical or electronic circuit as they act like attenuators, unlike active elements that generate or provide power to a circuit. Resistors, capacitors, inductors, transformers, are all considered passive devices. Active devices include diodes, vacuum tubes, transistors, amplifiers, integrated circuits, rectifiers.

Here is a brief description of the most common electronic components.

A **resistor** is a passive two-terminal device that resists the flow of current. It is probably the simplest but one of the most common components in an electronic circuit. Controlling the voltage and the current in your circuit, resistors give you control over the design of your circuit. The amount of resistance that a resistor offers is measured in Ohms. Most resistors have coloured stripes on the outside and this code will tell you its value of resistance.

A **capacitor** is a passive two-terminal electrical component that can temporarily store an electric charge. In simple terms, it works like a small rechargeable battery that stores electricity. However, unlike a battery, it can charge and discharge in the split of a second. It stores electricity and then discharges it back into the circuit when there is a drop in voltage. The value is measured in *F* (Farad), *nano Farad* (nF) or *pico Farad* (pF) range. Capacitors come in al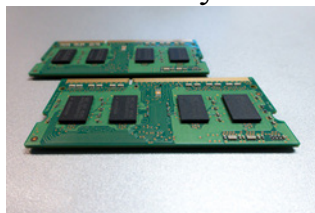l shapes and sizes, but they usually have the same primary components. There are two electrical conductors or plates separated by a dielectric or insulator stacked between them. Plates are composed of conducting material such as thin films of metal or aluminum foil. A dielectric, on the other hand, is a non-conducting material such as glass, ceramic, plastic film, air, paper, or mica. There are two electrical connections protruding from the plates to fix the capacitor in a circuit. When you apply a voltage over the two plates or connect them to a source, an electric field develops across the insulator, causing one plate to accumulate positive charge while negative charge gets collected on the other. The capacitor continues to hold its charge even if you disconnect it from the source. The moment you connect it to a load, the stored energy will flow from the capacitor to the load. Capacitance is the amount of energy stored in a capacitor. The higher the capacitance, the more energy it can store.

A **diode** is a two-terminal device that allows electric current to flow in only one direction and blocks it from flowing the opposite way. It is commonly used to convert an Alternating Current (AC) into a Direct Current (DC). It is made either of a semiconductor material (a semiconductor diode) or a vacuum tube (a vacuum tube diode). A diode has two terminals, called the anode and the cathode. Current will flow through the diode only when positive voltage is applied to the anode and negative voltage to the cathode. If these voltages are reversed, current will not flow. Though diodes are ones of the simplest components in an electronic circuit, they have unique applications across industries. The most common and important application of a diode is the rectification of AC power to DC power. A **light-emitting diode** (or LED) is a special type of diode that emits light when current passes through it. It is like a standard diode in the fact that electrical current only flows in one direction. The main difference is an LED will emit light when electricity flows through it.

A transistor is one of the most crucial components of an electronic circuit. In fact, it has revolutionized the field of electronics and paved the way for smaller in size and cheaper in price electronic devices. It was developed in 1947 and in 1956 its creators John Bardeen, Walter Brattain, and William Shockley won the Nobel Prize in Physics for this invention. The transistor is a three-terminal device in which a voltage applied to one of the terminals (called the base) can control current that flows across the other two terminals (called the collector and the emitter). The essential usefulness of a transistor comes from its ability to use a small signal applied between one pair of its terminals to control a much larger signal at another pair of terminals. This property is called gain. It can produce a stronger output signal, a voltage or current, which is proportional to a weaker input signal; that is, it can act as an amplifier. Alternatively, the transistor can be used to turn current on or off in a circuit as an electrically controlled switch, where the amount of current is determined by other circuit elements. The transistor is the key active component in practically all modern electronics. Its low cost, flexibility, and reliability has made it a ubiquitous device.
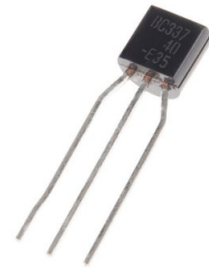
Most electronic appliances require complex electronic circuits. That's why designers have to arrange tiny electronic components on a circuit board. It comprises a plastic board with connecting copper tracks on one side and lots of holes to affix the components. When the layout of a circuit board is printed chemically (that is etched) onto a plastic board, it is called a **printed circuit board** or a PCB.

An integrated circuit is a special component that contains an entire electronic circuit, complete with transistors, diodes, and other elements, all photographically etched onto a tiny piece of silicon.

Integrated circuits are the building blocks of modern electronic devices. They are the tiny electronic circuits that can fit inside a small silicon chip. Jack Kilby invented the first integrated circuit in 1958 at Texas Instruments. The sole purpose of ICs is to increase the efficiency of the electronic devices, while reducing their size and manufacturing cost. Over the years, integrated circuits have become increasingly sophisticated as technology continues to evolve. That's why personal computers, laptops, mobiles phones, and other consumer electronics are getting cheaper and better by the day.

EXERCISE 5. Reread the text and find English equivalents of the Ukrainian words and word combinations.

Електрична жила, електронна схема, контролювати електричний струм, переносити дані, струмопровідна доріжка, джерело напруги, електричний струм, мідний дріт, провідна доріжка, різниця потенціалів, споживати електроенергію, лампочка, потребувати електрики, виробляти електрику, накопичувати та розсіювати електроенергію, значення опору, тимчасово зберігати електричний заряд, накопичувати електроенергію, заряджатися та розряджатися, тонка металева плівка, перетворити змінний струм в постійний, випрямлення струму, коефіцієнт підсилення транзистора, електрично керований перемикач, плата, друкована плата, отвори для кріплення компонентів, витравлені на кремнії, підвищувати ефективність, знижувати розмір та вартість

EXERCISE 6. Read the text and fill in the gaps with a suitable word.

silicon	circuits	reliability	elements	cost	reprogrammed
	controllers		inexpensive	separately	

An integrated circuit, commonly referred to as an IC, is a microscopic array of electronic 1. _____ and components that has been implanted onto the surface of a single crystal, or chip, of semiconducting material such as 2. _____. It is called an integrated circuit because the components, circuits, and base material are all made together, or integrated, out of a single piece of silicon, as opposed to a discrete circuit in which the components are made 3. _____ from different materials and assembled later. ICs range in complexity from simple logic modules and amplifiers to complete microcomputers containing millions of 4. _____.

The impact of integrated circuits on our lives has been enormous. Ics have become the principal components of almost all electronic devices. These miniature circuits have demonstrated low 5. _____, high 6. _____, low power requirements, and high processing speeds compared to the vacuum tubes and transistors which preceded them. Integrated circuit microcomputers are now used as 7. _____ in equipment such as machine tools, vehicle operating systems, and other applications where hydraulic, pneumatic, or mechanical

controls were previously used. They can also be 8. _____ without having to redesign the control circuitry. Integrated circuit microcomputers are so 9. _____ they are even found in children's electronic toys.

EXERCISE 7. Read the text and fill in the table.

Bell Labs is the leading developer of new communications technologies and has been for more than eighty years. It has generated more than 33,000 patents since 1925 and has played a vital role in inventing or perfecting key communications technologies, including transistors, digital networking and signal processing, lasers and fiber-optic communications systems, communications satellites, cellular telephony, electronic switching of calls and modems.

With its headquarters in Murray Hill, NJ, USA it has teams of dedicated researchers working at locations around the world (including: France, Belgium, Germany, Ireland, India, South Korea).

Well-known for inventions that shaped telecommunications networks of the 20th century (the transistor, laser, Digital Subscriber Line (DSL), UNIX, C and C++, Digital Signal Processor (DSP), Solar Cells) Bell Labs continues to deliver innovations and breakthroughs that will define communications in the 21st Century.

Name	
The year of foundation	
Number of patents	
Headquarters	
World offices	
Key developments	

EXERCISE 8. Render the text into English.

Кремнієва долина (Silicon Valley) розташована у штаті Каліфорнія (США). Вона охоплює Долину Санта-Клара, місто Сан-Хосе (San Jose) та його околиці, південну частину півострова Сан-Франциско і південну Східну Затоку (англ. East Bay (San Francisco Bay Area).

Назва долини походить від використання кремнію як напівпровідника при виробництві мікропроцесорів. Саме з цієї індустрії почалася історія долини як технологічного центру. Вперше ця назва була використана 11 січня 1971 року журналістом Доном Гефлером (Don Hoefler), коли він почав публікувати серію статей під назвою «Кремнієва долина США».

Кремнієва долина – це світовий технологічний центр по розробці комп'ютерних технологій, програмного забезпечення, технологій мобільного зв'язку, біотехнологій тощо. Тисячі ІТ-компаній мають штаб-квартири у Кремнієвій долині, серед них Adobe Systems, Advanced Micro Devices (AMD), Apple Inc., eBay, Google, Hewlett-Packard, Intel, Nvidia, Yahoo! та інші.

Значну роль у виникненні та розвитку Кремнієвої долини відіграв Стенфордський університет та його випускники, що заснували перші науково-дослідницькі компанії в цій місцевості.

EXERCISE 9 Build questions to the sentences.
1. A transistor is like a miniature on-off switch that allows a computer to process information.
2. Transistors are used in virtually all electronic devices, including radio receivers, computers, and space vehicles and guided missiles.
3. Almost every piece of equipment that stores, transmits, displays, or manipulates information has at its core silicon chips filled with electronic circuitry.
4. Gordon Moore, a cofounder of Intel, predicted that the number of transistors on a chip would double about every two years. This is known as Moore's Law.
5. Semiconductors fall into one of two general categories: n-type semiconductors and p-type semiconductors.
6. An integrated circuit (IC) is an electronic device that contains thousands or millions of microscopic-sized transistors etched on a single piece (chip) of material.
7. Doping means adding impurities to change semiconductor properties.
8. Traveling-wave tubes are still widely used in microwave and satellite communications systems.because of their high efficiency, long lifetimes and excellent reliability.
9. Klystrons are employed in high-resolution radar systems and can oscillate and amplify signals at frequencies as high as 3 GHz.
10. Every commercial microwave oven contains a magnetron.
11. The field-effect transistor depends on an electric field to control the shape and the conductivity of a channel in a semiconductor material.

EXERCISE 10. Complete the text about electronics by choosing a word from the box.

diodes	semiconductor	resistors	electrons	devices
germanium	transistors	integrated circuits		capacitors
	silicon	integrated		

Electronic circuits are built from basic components. (a) _____ are the most important components. They can be used to amplify the strength of a signal by converting a weak signal into a stronger one or to switch other circuits on or off. (b) _____ reduce the flow of (c) _____ through the circuit, adding resistance to that circuit. (d) _____ function as electronic valves allowing current to flow in only one direction. € _____ store electricity in order to smooth the flow. They can be charged and discharged. The two most common capacitors are ceramic and electrolytic. Most electronic devices use (f) _____ (IC) or microchips. Inside an IC is a very small piece of (g) _____

114

with circuits built in. Today, semiconductors are usually made of (h) _____ which is cheaper and easier to manufacture than (i) _____ . Researchers are constantly trying to reduce the size of transistors in order to reduce the size of (j) _____ .

 (Based on: Technical English: Vocabulary and Grammar by Nick Brieger, Alison Pohl)

EXERCISE 11. Prepare a report about one of the electronic components. Be sure to mention:
- When and by whom it was developed;
- How it is built;
- The principle of its work;
- The sphere of its application.

2.3   Four Generations of Computers

EXERCISE 1. Study the topical vocabulary.

generation	покоління
efficient	ефективний
reliable	надійний
malfunction	неправильна робота
to solve	вирішувати
to display	відображати, показувати
to interact	взаємодіяти
accessible	доступний
powerful	потужний
to link	з'єднувати, зв'язувати
network	мережа
artificial intelligence	штучний інтелект
voice recognition	розпізнавання голосу
computation	обчислення
to replace	замінювати
development	розвиток, розробка, вдосконалення
to refer to	посилатися на
to result in	призвести до
data processing	обробка даних
application programs (apps)	прикладні програми, додатки
to run applications	запустити програму
handheld device	портативний прилад
fuse	плавитися; запобіжник
core	ядро, осердя
storage device	пристрій збереження даних

EXERCISE 2. Match the acronyms with their full forms.

AI	Basic Input/Output System
API	Central Processing Unit
ASP	Disk Operating System
BIOS	Application Program Interface
CAD	International Business Machines
CCD	Computer-Aided Design
COBOL	Input/Output
CPU	Artificial Intelligence
DOS	Integrated Circuit
ENIAC	Electronic Numerical Integrator and Computer
GUI	Ultra Large Scale Integration
IBM	Very Large Scale Integration
IC	COmmon Business Oriented Language
I/O	

VLSI	Application Service Provider
ULSI	Charged Coupled Device
	Graphical User Interface

EXERCISE 3. Read and translate the text.
The Five Generations of Computers

The history of computer development is often referred to the different generations of computing *devices*. Each of the five generations of computers is characterized by a major technological development that fundamentally changed the way computers operate, resulting in increasingly smaller, cheaper, more powerful, more efficient and reliable computing devices.

First Generation (1940-1956) Vacuum Tubes

The computers of the first generation used vacuum tubes as the basic components for circuitry and magnetic drums for memory, and were often enormous, taking up entire rooms. These tubes produced a lot of heat and the installations used to fuse frequently. They were very expensive to operate and consumed a great deal of electricity. The first generation computers relied on machine language, the lowest-level programming language understood by computers, to perform operations, and they could only solve one problem at a time. Input was based on punched cards and paper tape, and output was displayed on printouts. The two notable machines of this era were the UNIVAC and ENIAC machines – the UNIVAC is the first every commercial computer which was purchased in 1951 by a business – the US Census Bureau.

Second Generation (1956-1963) Transistors

Transistors replaced vacuum tubes and ushered in the second generation of computers. The transistor was far superior to the vacuum tube, allowing computers to become smaller, faster, cheaper, more energy-efficient and more reliable than their first-generation predecessors. Second generation computers were able to reduce computational time from milliseconds to microseconds, or millionths of seconds. They still relied on punched cards for input and printouts for output. In this generation, magnetic cores were used as the primary memory and magnetic tape and magnetic disks as secondary storage devices. High-level programming languages were also developed at this time, such as early versions of COBOL and FORTRAN. These were also the first computers that stored their instructions in their memory, which moved from a magnetic drum memory to magnetic core memory.

Third Generation (1964-1971) Integrated Circuits

Microelectronics made it possible to reduce the size of transistors and integrate large numbers of circuit elements into very small chips of silicon. The computers of the third generation used integrated circuits (ICs) in place of transistors. An IC is a small electronic device made out of a semiconductor material. A single IC has many transistors, resistors, and capacitors along with the associated circuitry. The introduction of ICs led to a massive increase in speed and efficiency of these machines. They could perform multiple data

117

processing operations in nanoseconds. Instead of punched cards and printouts, users interacted with third generation computers through keyboards and monitors and interfaced with an operating system, which allowed the device to run many different applications at one time with a central program that monitored the memory. Computers for the first time became accessible to a mass audience because they were smaller and cheaper than their predecessors.

Fourth Generation (1971-2010) Microprocessors

The development of the microprocessor brought the fourth generation of computers; thousands of integrated circuits were built onto a single silicon chip. Computers of the fourth generation used Very Large Scale Integrated (VLSI) circuits having about 5000 transistors and other circuit elements with their associated circuits on a single chip. In 1981 IBM introduced its first computer for the home use, and in 1984 Apple introduced the Macintosh. As computers became more powerful, they could be linked together to form networks, which eventually led to the development of the Internet. Fourth generation computers also saw the development of graphical user interfaces (GUI), the mouse and handheld devices.

Fifth Generation (2010-Present) Artificial Intelligence

In the fifth generation, VLSI technology became ULSI (Ultra Large Scale Integration) technology, resulting in the production of microprocessor chips having ten million electronic components.

This generation is based on parallel processing hardware and AI (Artificial Intelligence) software. The use of parallel processing and superconductors has helped to make AI a reality. Quantum computation, molecular and nanotechnology are radically changing the essence of modern computers. The goal of fifth-generation computing is to develop devices that respond to natural language input and are capable of learning and self-organization.

EXERCISE 4. Reread the text and find English equivalents of the Ukrainian words and word combinations.

Покоління обчислювальних приладів, магнітний барабан, машинна мова, перфокарта, низькорівнева мова програмування, високорівнева мова програмування, виконувати операції, знизити час обрахування, елементи схеми, кремнієвий чіп, інтегральна схема, напівпровідний матеріал, операції по обробці даних, операційна система, запустити багато прикладних програм, графічний інтерфейс користувача, портативні прилади, квантові обчислення.

EXERCISE 5. Answer the questions.
1. What kind of computers are called the first generation of computers? When were they developed?
2. Describe the first generation of computers.
3. What development ushered in the second generation of computers?
4. What are the advantages of transistors over the vacuum tubes?

5. What is an integrated circuit?
6. What are the key characteristics of third generation computers?
7. What development brought the fourth generation computers?
8. What are the fifth generation computing devices based on?
9. What scientific developments make the fifth generation computers possible?
10. How do you think, what kind of computers will be developed in the future? How will they look like? What capabilities will they have?

EXERCISE 6. Choose the correct variant.
1. Being very big and unreliable, the first generation computers used _____ in their construction.
   a. transistors   b. vacuum tubes   c. integrated circuits
2. _____ The replacement of vacuum tubes with transistors made computers more energy-efficient and _____.
   a. reliable   b. enormous   c. beautiful
3. _____ Computers of the second generation used _____which reduced computational time greatly.
   a. transistors   b. integrated circuits   c. vacuum tubes
4. _____ were the earliest form of data coding and storing.
   a. postcards   b. punched cards   c. credit cards
5. An integrated circuit is a small electronic device made out of a _____ material.
   a. superconductor   b. conductor   c. semiconductor
6. Due to_____the development of the fourth generation computers became possible.
   a. microprocessor   b. miniaturization   c. microminiaturization
7. Fifth generation computing devices are based on _____.
   a. artificial intelligence b. miniaturization   c. artificial materials

EXERCISE 7. Match the beginnings and the endings of the following sentences.
1. Hollerith used an idea similar to Jacquard's loom when he combined the use of punched cards ….
2. Modern computational theorists ….
3. The Mark I calculating machine ….
4. Aiken used vacuum tubes and solid state transistors in later machines ….
5. Aiken's computer had to read instructions from punched cards ….

a) …. to manipulate the binary numbers.
b) …. which could be stored away from the computer.
c) …. used relays and electromagnetic components to replace mechanical components.

119

d) …. with devices that created and electronically read the cards.

e) …. still use the Turing machine model.

EXERCISE 8. Replace the italicized words with the equivalents from the box.

modern	plain	invented	kept	productivity	different kinds
	tiny	information	presented	give commands to	

1. Software consists of the programs that *instruct* the hardware to perform tasks.

2. *Varieties of types* of integrated circuitry are used in *contemporary* supercomputers.

3. Embedded computers are *small*, *simple* devices, which are used to control other device.

4. Herman Hollerith, an American inventor, *fabricated* a calculating machine able to count, and arrange information *stored* on punch card.

5. A device called 'tabulator' quickly demonstrated the *efficiency* of mechanical *data* manipulating.

6. IBM *introduced* its Personal Computer in 1981.

EXERCISE 9. Translate the sentences into English.

1. Де використовують комп'ютери?

2. В нашому університеті декілька комп'ютерних центрів.

3. Як тільки він придбав комп'ютер, він одразу приєднався до мережі інтернет.

4. Системний блок – це функціональний елемент, який захищає внутрішні компоненти комп'ютера від зовнішнього впливу та механічних пошкоджень.

5. Найважливішою з периферійних систем є відеосистема, що призначена для виводу текстової та графічної інформації.

6. Перший жорсткий диск випущений в США на початку 70-х років мав об'єм 30 мегабайт.

7. Драйвер – це невелика програма, що дозволяє комп'ютеру взаємодіяти із зовнішніми пристроями.

8. Комп'ютер перекладає будь-які інструкції в бінарний код, який складається з нулів та одиниць.

9. Багато людей користуються Google, тому що ця пошукова система швидко працює та допомагає знайти необхідну інформацію.

10. Люди часто користуються безкоштовним програмним забезпеченням, щоб зменшити грошові витрати.

3. TELECOMMUNICATION

3.1 Major Steps in Telecommunication Development

EXERCISE 1. Study the topical vocabulary.

wire	дріт
communication	зв'язок
to radiate	випромінювати, виділяти
electromagnetic waves	електромагнітні хвилі
to transmit	передавати, переносити
to broadcast	транслювати
to reflect	відбивати, відображати
diode	діод
thermionic valve	електровакуумна лампа
integrated circuit	інтегрована схема
network	мережа
optical fibre cable	оптоволоконний кебель
capacity	ємність, здатність
analogue	аналоговий
digital	цифровий
noise	завади
interference	інтерференція, втручання
to employ	використовувати
receiver	приймач
transmitter	передавач
equipment	обладнання
satellite	супутник
surveillance	нагляд, спостереження, моніторинг

EXERCISE 2. Look at the word table below and fill in the gaps with the proper word derivative using word formation elements.

Noun	Verb	Adjective
activation	*activate*	*active*
generation	generate	
	integrate	integrated / integrating
receiver		receiving / receptive
reliability	rely	
storage		stored / storing
	transmit	transmittable / transmissible
communicate		communicating
	conduction / conductor	conducted / conducting
modulate		modulated / modulating
measure	measurement	

	consumption / consumer	consumed / consuming
radiation	radiate	
broadcast		broadcasted / broadcasting
	interfere	interfering
reflection		
transmitter		

EXERCISE 3. Match the terms with their definitions.

1.	telecommunication	a.	transmitting radio or TV signals
2.	telephone	b.	communications system for the transmission and reception of video images overlond distances
3.	broadcasting	c.	strand of silica for guiding light waves
4.	television	d.	transmission and reception of signals over long distances
5.	optical fiber	e.	device for converting sound waves into electrical signals
6.	circuit	f.	communications device which enables one person to speak to another over longdistances
7.	microphone	g.	how often a pattern is repeated every second
8.	frequency	h.	closed path around which a current can flow.
9.	radio	i.	a device used to issue commands from a distance to televisions or other consumerelectronics
10.	antenna (aerial)	j.	selection between an upper and lower limit
11.	range	k.	device for receiving radio frequency signals
12.	remote control	l.	device for collecting or sending out signals being transmitted through free space

EXERCISE 4. Read and translate the text.
The Development of Telecommunication

The development of the first true telecommunication systems using electrical signals to carry messages started in the 1840s with machine telegraphy. In 1832 an American inventor Samuel Morse developed the telegraph, but only in the mid-1840s the system was put into practical use and it became possible to send coded electrical messages along the wires across long distances. Samuel B. Morse had been working on the idea of a recording telegraph with friends Alfred Vail and Leonard Gale. They discovered that when connecting two model telegraphs together and running electricity through a wire, you could send messages by holding or

releasing the buttons in a series of intervals. The telegraph became a rapid success. The information was transmitted by means of the specially developed code (Morse Code) that consists of a set of dots and dashes representing letters and numbers.

The next major step forward came in 1878 with the invention of the telephone by an American scientist of the Scottish origin Alexander Graham Bell. This enabled speech to be transported as electrical signals along wires and revolutionized personal communications.

In 1886, a German physicist Heinrich Hertz verified experimentally that electrical energy could be radiated and thus proved the existence of electromagnetic waves. This opened the way for the free-space transmission of information without wires and provided the basis for all radio and TV broadcasting.

In 1901, an Italian electrical engineer Marconi established long-distance telegraph communication by transmitting signals between England and Canada. Although he did not realize it at the time, he achieved such long distances by reflecting radio waves in the ionosphere. This overcame the problem of transmitting round the earth from one side of the Atlantic to another.

With the discoveries of the diode and thermionic valve, advances were made in both receiver and transmitter design with an associated impact in telegraphy, telephony, and civil and military communications. Radio broadcasting soon followed, with powerful transmitters serving to communicate over wide areas. Television was first established in 1937. Radar was also developed in the 1930s and played a vital role in aircraft detection and navigation in World War II.

As further advances in technology took place (the invention of the transistor in 1947 and the subsequent development of microelectronic integrated circuit technology), new applications became feasible, and new systems were developed. Data communications – the transmission of coded data (text, graphics, financial information) between terminals and computers – was first established in the early 1950s using modems, equipment which enables the telephone network to convey data as well as speech.

Other improvements in materials and devices also led to the transmission of information via cables. Much of today's long-distance telephone traffic is performed via submarine cable. The space race led to yet another means of long-distance communication, via fixed and mobile earth stations to satellites. Today, several hundred satellites orbit the earth, and satellite links provide all forms of communication and related services such as telephony, data, TV, navigation, meteorology, and surveillance.

One of the very latest developments is the optical fibre cable – a tiny glass fibre which can be used to convey signal information by light pulses. Optical fibre cable with extremely low loss at low cost has now been developed with very high data-carrying capacity.

Perhaps the greatest change which has occurred in the last thirty years is the transfer from analogue to digital methods of information transmission.

Digitalization helps to combat problems of noise and interference which often accompany analogue transmission. The advances in microelectronics and the merging of communications with computers have led to the digital transmission mode with its advantages of computer control, automatic error checking of signals, excellent memory storage facilities for data, and intelligent terminals. The market need for vast quantities of information transmission and processing at very high speed can only be reliably catered for by using digital technics. In fact, the most rapidly growing field is almost certainly in data communications employing high-speed digital techniques.

EXERCISE 5. Reread the text and find English equivalents of the Ukrainian words and word combinations.

Електричні сигнали, кодовані електричні повідомлення, електромагнітні хвилі, передавання інформації через дріт, теле- та радіотрансляція, телеграфний зв'язок на великих відстанях, військовий зв'язок, відбивати радіохвилі, виявлення літаків, розробка мікроелектронних інтегральних схем, передавання інформації через кабель, супутниковий зв'язок, передавати інформацію через світлові імпульси, висока пропускна здатність, подолати проблеми шумів та завад, автоматизована перевірка сигналу на помилки, великі обсяги передачі та обробки інформації.

EXERCISE 6. Put the developments in telecommunications in the order in which they were invented; add the year of the invention and the inventor.

  _e.g._ The telephone was patented by Alexander Graham Bell in 1876.

1.	telex	6.	internet
2.	communication satellites	7.	radio
3.	modems	8.	telephone
4.	telegraph	9.	optical fibres
5.	television	10.	radar

EXERCISE 7. Fill in the gaps in this table with the help of the text. Be ready to tell about the significance of the telecommunication developments.

  _e.g._ Due to the development og telegraphy be Samuel Morse, it became possible to transmit information along long distances.

Development	Significance
19th century Telegraphy (Morse) Telephone (Bell) Existence of electromagnetic waves proved(Hertz)	

1901-1945 Long-distance telegraphy via ionosphere Valves Radar	
1946-1980 Transistor Data communications Communications satellites	
1980s on Optical fibre cable Change to digital systems Digital transmission mode	

EXERCISE 8. Make up questions to the following sentences.
1. Television was first established in 1937.
2. Other improvements in materials and devices led to the transmission of information via cables.
3. This provided the basis for all radio and TV broadcasting.
4. The greatest change which has occurred in the last twenty years is the transfer from analogue to digital methods of information transmission.
5. Optical fibre cables have improved the telephone system immensely.
6. The next major step forward came in 1978 with the invention of the telephone by Bell.
7. This opened the way for the free-space transmission of information without wires.
8. The advances in microelectronics and the merging of communications with computers have led to the digital transmission mode.

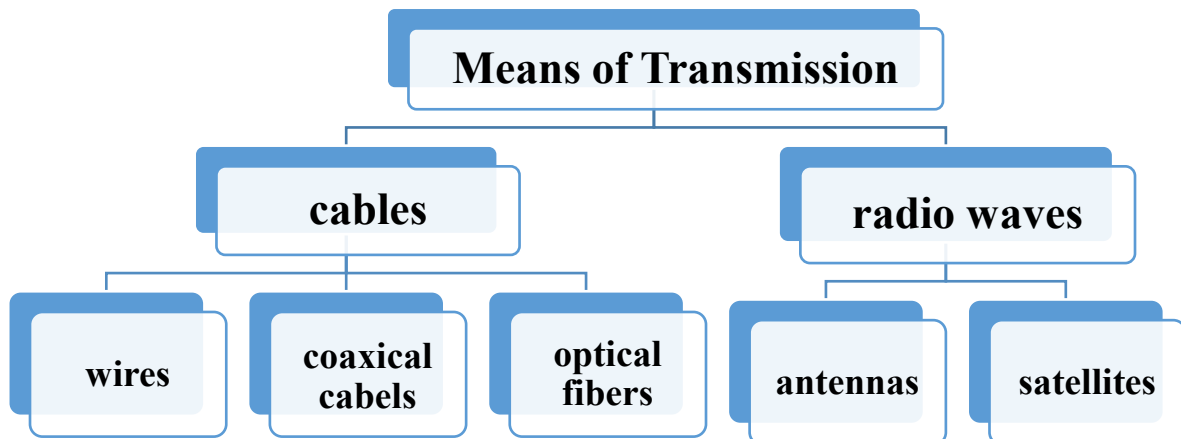**EXERCISE 9. Translate into English.**
1. Індустріальна революція внесла багато змін в наше суспільство.
2. Техніка завжди відігравала значну роль у нашому житті.
3. Цей студент має ґрунтовні знання з електроніки.
4. Багато різноманітних приладів використовується кожним із нас у повсякденному житті.
5. Якщо компанія хоче бути успішною, вона повинна постійно займатися маркетинговими дослідженнями.
6. Вам варто бути уважнішим під час роботи та уникати подібних помилок в майбутньому.

3.2   Means of Transmission

EXERCISE 1. Study the topical vocabulary.

means of transmission	засоби передавання
coaxical cable	коаксіальний кабель
twisted pair cable	кабель вита пара
fiber optic cable	оптоволоконний кабель
copper wire	мідний дріт
insulator	ізолятор
conductor	провідник
semiconductor	напівпровідник
signal loss	втрата сигналу
to capture radio signals	піймати радіосигнал
to convert	перетворювати
frequency	частота
accurate	точний
data	дані, інформація
to protect	захищати
to bend	вигинати
bandwidth	пропускна здатність
maintenance	технічне обслуговування, підтримка
immunity	несприйнятливість, невразливість
attenuation	затухання
shield	щит, екран, кожух
unshielded Twisted Pair (UTP)	неекранована вита пара
shielded Twisted Pair (STP)	екранована вита пара
performance	продуктивність, ККД
data rate	швидкість передавання данних
to eliminate	усунути
crosstalk	перехресні завади
range	діапазон
noise	завади, перешкоди
omnidirectional	що діє в усіх напрямках
unidirectional	однонаправлений
to propagate	передавати, поширювати
frequency	частота
core	серцевина
cladding	оболонка
guided media	проводове середовище передавання
unguided media	безпроводове середовище передавання
repeater	ретранслятор

EXERCISE 2. Look at the diagram and complete the text about telecommunication systems, using the words from the diagram.

```
                    Means of Transmission
                    /                    \
              cables                    radio waves
          /     |      \                 /        \
      wires  coaxical  optical       antennas   satellites
             cabels    fibers
```

Telecommunication systems need means for the 1._____ of any information, which is translated into electromagnetic waves that connect the **transmitter** to the **receiver.**

These means can be physical media, such as 2._____, or radio 3._____, which are transmitted by air. Different kind of cables can be used. The simplest communication cables consist of a single pair of 4._____ **twisted** together. Other types are 5. _____ cables and optical 6. _____. Radio waves need 7. _____ to be transmitted and sometimes 8. _____ are necessary for long-distance transmission.

(Based on: Flash on English for Mechanics, Electronics and Technical Assistance)

EXERCISE 3. Read the text about the different kinds of transmission media.

Types of Transmission Media

In data communication terminology, a transmission medium is a physical path between the transmitter and the receiver i.e it is the channel through which data are sent from one place to another. We use waves or different types of cables to transmit data. Data can be transmitted through electrical or electromagnetic signals. An electrical signal is in the form of current. An electromagnetic signal is presented with a series of electromagnetic energy pulses at various frequencies. These signals can be transmitted through copper wires, optical fibers, atmosphere, water and vacuum. Different media have different properties like bandwidth, delay, cost and ease of installation and maintenance. Transmission media is also called communication channel.

Transmission media are subdivided into two groups.

Guided Media

It is also referred to as wired transmission media. Signals being transmitted are directed and confined in a narrow pathway by using physical links, like cables. This means of media is characterised by high speed and security of data

transmission but is limited to comparatively short distances. There are 3 major types of Guided Media: twisted pair cables, coaxical cables and optical fiber cables.

A **twisted pair cable** consists of 2 separately insulated conductor wires wound about each other. Generally, several such pairs are bundled together in a protective sheath. They are the most widely used Transmission Media. Twisted pair can be of two types: **Unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP).**

A **UTP** cable consists of 2 to 1800 unshielded twisted pairs surrounded by an outer jacket. They have no metallic shield. This makes the cable small in diameter but unprotected against electrical interference. The twist helps to improve its immunity to electrical noise and electro magnetic interference. Its main advantages are low cost and ease of installation. But it is susceptible to external interference and signal attenuation. Unshielded twisted pair (UTP) is a ubiquitous type of copper cabling used in telephone wiring and local area networks (LANs).
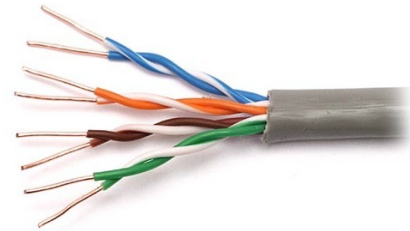
A **Shielded Twisted Pair (STP)** has a metal foil or braided mesh covering that encases each pair of insulated conductors which improves the quality of cable by p reventing the penetration of noise or crosstalk, it is bulkier and more expensive. It gives better performance at a higher data rate in comparison to UTP. It is used in fast-data-rate Ethernet and in voice and data channels of telephone lines.

Coaxial cables carry signals of higher frequency ranges than those in twisted pair cable. They consist of an inner conductor insulated with plastic and surrounded by a copper shield. They are used in television and radio as these cables can support about 60 channels. Coaxial cable can transmit information in **baseband** mode (dedicated cable bandwidth) and in **broadband** mode (cable bandwidth is split into separate ranges). The attenuation is much higher in coaxial cables than in twisted-pair cable. In other words, although coaxial cable has a much higher bandwidth, the signal weakens rapidly and requires the frequent use of repeaters. Coaxial cables provide high bandwidth and have better noise immunity. Besides, they are inexpensive, easy to install and expand. But a single cable failure can disrupt the entire network.
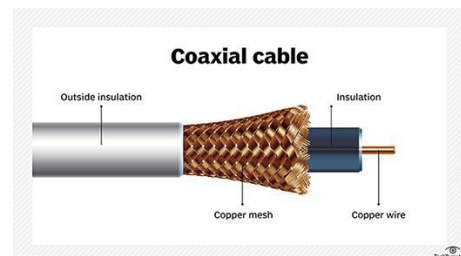
Fiber optic cable uses light pulses to transmit data. Optical fibers are long, thin strands of very pure glass about the diameter of a human hair. They are arranged in bundles called optical cables and used to transmit light signals over long distances. The main part of the cable is called the core. It is a thin glass center of the fiber where the light travels. The core is surrounded with the

cladding. This outer optical material reflects the light back into the core. Optical fibres are used in place of simple copper wires to carry larger amounts of information. Signals travel along fibres with less loss and without any electromagnetic interference. As they permit transmission over longer distances and at a higher speed, they are used in communication systems, in some medical instruments and in a wide variety of sensing devices. Optical fibers are lightweight, have increased capacity and bandwidth, and have low level of signal attenuation. But they are fragile, expensive, difficult to install and maintain.

Unguided media

Unguided media transport electromagnetic waves without using a physical conductor, that is without any cables. This type of transmission is called wireless communication. As signal is broadcast through the air, it can be used for larger distances. But the transmitted data are less secure. Microwaves, radio and infrared waves are examples of unguided transmission media.

Radio waves are the electromagnetic waves ranging in frequencies between 3 kHz and 1 GHz. They are omnidirectional. When an antenna transmits radio waves, they are propagated in all directions. This means that the sending and receiving antennas do not have to be aligned. A sending antenna sends waves that can be received by any receiving antenna. The omnidirectional property has a disadvantage, too. The radio waves transmitted by one antenna are susceptible to interference by another antenna that may send signals using the same frequency or band. Radio waves can travel long distances. This makes radio waves a good candidate for long-distance broadcasting.

Electromagnetic waves having frequencies between 1 GHz and 300 GHz are called **microwaves**. Microwaves are unidirectional. This means that the sending and receiving antennas need to be aligned. The unidirectional property has an obvious advantage. A pair of antennas can be aligned without interfering with another pair of aligned antennas. The distance covered by the signal is directly proportional to the height of the antenna. Electromagnetic waves are majorly used for mobile phone communication and television distribution.

Infrared waves, with frequencies from 300 GHz to 400 THz (wavelengths from 1 mm to 770 nm), can be used for short-range communication. They cannot penetrate through obstacles. Such a wide bandwidth can be used to transmit digital data with a very high data rate. They are widely used in TV remotes, wireless mice, keyboards, printers, etc.

EXERCISE 4. Reread the text and find English equivalents of the Ukrainian words and word combinations.

Передавати інформацію, електромагнітні сигнали, різні частоти, мідний дріт, легкість встановлення та обслуговування, направляти та обмежувати, безпека передавання данних, окремо ізольовані провідники, захисний кожух, стійкість до електричних завад, поширений тип, покриття з

металевої фольги або сітки, пара ізольованих провідників, запобігати появі перехресних завад, однополосний та широкополосний, імпульси світла, відбивати світло, поширюватись у всіх напрямках, проходити крізь перепони.

EXERCISE 5. Reread the text and complete the table.

Means of transmission	Type of signal (guided or unguided)	Construction	Advantages	Disadvantages
unshielded twisted pair cable				
shielded twisted pair cable				
coaxial cable				
optical fibre				

EXERCISE 6. Scan the texts and answer the questions.
1. What is the main function of antennas?
2. Where are antennas used?
3. What is a satellite?
4. What is a communication satellite?
5. What types of satellites are there?

Antennas were invented to capture radio signals and convert them into electrical signals through the receiver. They can also receive electrical signals from the transmitter and convert them into radio signals. These electric devices, which provide information at a cheap rate, are essential to all equipment that uses radio. They are used in systems such as radio and television broadcasting, radar, mobile phones, and satellite communications, for which they are in form of **dishes.**

Satellites are machines launched into space to move around Earth or another celestial body. A communications satellite is basically a station which receives signals in a given frequency and then retransmits them at a different frequency to avoid interference problems. The first satellite was launched by the Soviet Union in 1957. There are different types of satellites: low-orbit satellites, which travel at about 300 km from the Earth and observe the planet, providing accurate information about agriculture, pollution and weather **forecasting;** medium-altitude satellites, which travel at about 9000-18000 km from the Earth and are used in telecommunications.

(Based on: Flash on English for Mechanics, Electronics and Technical Assistance)

EXERCISE 7. Read the text about mobile phones and complete it with the words in the box.

cell	lines	microprocessor	photos	radio	signals
	emails flash	antenna	movement		

A cellular phone (or mobile phone) is designed to give the user freedom of 1. _____ while using a telephone. It uses 2. _____ signals to communicate between the phone and the 3. _____. The server area is divided into smaller areas called cells and an antenna is placed within each cell and connected by telephone 4. _____. These lines connect cellular phones to one another: a computer selects the antenna closest to the telephone when a call is made. If the phone moves to one serving 5. _____ to another, the radio signal is transferred to the actual cell without interrupting the conversation.

The circuit board is the heart of the system. A chip translates the outgoing and incoming 6. _____ from analogue to digital and back from digital to analogue. The 7. _____ handles all the functions for the keyboard, the display and the loudspeakers, and it controls the signal to the base station.

Other 8. _____ memory chips provide storage for the operating system. A cellular phone is not only a phone but it provides an incredible amount of functions:
• stores information;
• uses a calculator;
• sends and receives 9._____
• surfs the Internet;
• plays simple games;
• plays music, takes 10. _____ and videos.
Can you imagine your life without your mobile phone?

EXERCISE 8 . In pairs, decide if the following statements are true (T) or false (F).
1. Mobile phones use radio signals to communicate.
2. The server area is divided into smaller areas called stations.
3. An antenna is placed every two or three cells.
4. Communication with a mobile within a cell is independent from the base station.
5. There are interruptions when you move to one cell to another.
6. The antenna is the heart of the system .
7. The signal must be translated.
8. The flash memory hand les all the functions.
9. Loudspeakers are controlled by the microprocessor.
10. You can text and send emails with your mobile phone.

EXERCISE 9. Translate the sentences into English.

1. Інфрачервоні промені застосовуються упультах дистанційного керування, системах автоматики, охоронних системах тощо.

2. Електромагнітні хвилі радіодіапазону використовують у сучасному мобільному зв'язку, радіомовленні, телебаченні, радіолокації, системах GPS навігації.

3. Ультрафіолетове випромінення має високу хімічну активність, тому його застосовують для дезінфекції повітря.

4. Усі види електромагнітних хвиль поширюються у вакуумі з однаковою швидкістю.

5. Стільниковий зв'язок – один із видів мобільного радіозв'язку, в основі якого лежить стільникова мережа.

6. Принцип радіолокації ґрунтується на здатності електромагнітних хвиль відбиватися від будь-яких тіл.

7. Радар створює вузький напрямлений пучок радіохвиль і приймає радіохвилі, відбиті від об'єктів.

8. Радіолокація використовується в системах оборони, морській та повітряній навігації, у метеорології, наукових дослідженнях.

9. У великих дозах ультрафіолетове випромінення є шкідливим для людини.

10. Інфрачервоні промені є невидимими.

11. Комунікаці́йна мере́жа – система фізичних каналів зв'язку і комутаційного устаткування, що реалізовує той або інший низькорівневий протокол передачі даних.

12. Існують провідні, безпровідні (використовуючи радіохвилі) і волоконно-оптичні канали зв'язку.

13. За типом сигналу виділяють цифрові і аналогові мережі.

14. Призначенням комунікаційних мереж є передача даних з мінімальною кількістю помилок і спотворень.

15. На основі комунікаційної мережі може будуватися інформаційна мережа, наприклад, на основі мереж Ethernet, як правило, будуються мережі TCP/IP, які у свою чергу утворюють глобальну мережу Інтернет.

4. METROLOGY AND OPTOELECTRONICS

3.1 The Science of Weights and Measures

EXERCISE 1. Match the words with their translations.

1.	measurement	a.	довжина
2.	precision, accuracy	b.	якість
3.	length	c.	збереження
4.	angle	d.	калібрування
5.	width	e.	глибина
6.	depth	f.	кут
7.	quantity	g.	вимірювання
8.	quality	h.	відтворення
9.	establishment	i.	точність
10.	reproduction	j.	кількість
11.	conservation	k.	наслідок
12.	calibration	l.	надійність
13.	instrumentation	m.	провідний
14.	specification	n.	знижувати
15.	cutting edge	o.	ширина
16.	consequence	p.	інструментарій
17.	reliability	q.	оцінити
18.	to evaluate	r.	специфікація
19.	to ensure	s.	впровадження
20.	to reduce	t.	забезпечувати

EXERCISE 2. Read and translate the text, find answers to these questions.
1. What does the word 'metrology' mean?
2. What quantities is metrology related to?
3. Knowledge of which subjects is important for understanding metrology?
4. What is metrology concerned with?
5. What do the elements of the measuring system include?
6. Why are measurements performed in industry?
7. Which type of metrology treats units and methods of measurements?
8. What is the aim of scientific metrology?
9. Why is industrial metrology important?

Metrology is the science of precision measurement. It includes all theoretical and practical aspects of measurement. The word comes from Greek μέτρον (*metron*), 'measure' + 'λόγος' (*logos*), meaning 'study'. The engineer can say it is the science of measurement of lengths and angles and all related quantities like width, depth, diameter and straightness with high accuracy.

Metrology demands pure knowledge of certain basic mathematical and physical principles. The development of industry largely depends on the engineering metrology. Metrology is concerned with the establishment, reproduction, conservation and transfer of units of measurements and their standards. Irrespective of the branch of engineering, all engineers should know about various instruments and techniques.

The elements of the measuring system include the instrumentation, calibration standards, environmental influence, human operator limitations and features of the work-piece. The basic aim of measurement in industries is to check whether a component has been manufactured to the requirement of a specification or no.

Metrology is the basis of all areas of science and can be organized many ways, but is typically made up of three categories: scientific, industrial, legal.

Scientific metrology focuses on developing new systems of measurement and standardizing existing ones. This is the highest level of metrology which involves research and cutting edge technology.

Industrial metrology applies the principles of measurement science to manufacturing. It deals with the adequate functioning of measurement instruments used in industry, supervises production and testing processes, and ensures quality of products.

Legal metrology is the part of metrology which treats units of measurements, methods of measurements and the measuring instruments, in relation to the technical and legal requirements.

Wrong or inaccurate measurements can lead to wrong decisions, which can have serious consequences, costing money and even lives. It is important therefore to have reliable and accurate measurements which are agreed and accepted by the relevant authorities worldwide. Metrologists are therefore continuously involved in the development of new measurement techniques, instrumentation and procedures to satisfy the ever-increasing demand for greater accuracy, increased reliability and rapidity of measurements.

EXERCISE 3. Fill in the gaps with appropriate words and word combinations.

body	cubit	measurement	weight	arm	comprises
	standardization	basis	metric system	length	

The Development of Metrology

The science and application of 1. _____ has been necessary for humanity's progress for thousands of years. It became especially necessary with the development of agriculture and industry.

In ancient times, the 2. _____ ruled when it came to measuring. The length of a foot, the width of a finger, and the distance of a step were all accepted measurements.

One of the oldest units of length used in the ancient world was the 3._____ which was the length of the 4. _____ from the tip of the finger to the elbow. The first attempts to make the 5. _____ of the measurement units took place in the 12th century.

The 6. _____ was adopted in 1795. Meter was stated as a unit of 7. _____ and a kilogram as a unit of 8. _____. The kilogram was the 9. _____ for the determination of a litre as the volume occupied by the mass of a kilogram of pure water. The decimal metric system, as a simple, accessible and universal method, began to spread around the world during the early 19th century.

In 1960, The International System of Units was introduced. Nowadays it is the most widely used system of measurement. It 10._____ a coherent system of units of measurement built on seven base units (metres (m), kilograms (kg), seconds (s), amperes (A), kelvins (K), moles (mol), candelas (cd).

EXERCISE 4. Translate the sentences into English.
1. Метрологія – це наука про вимірювання.
2. Розрізняють законодавчу, теоретичну та практичну метрологію.
3. Законодавча метрологія містить законодавчі акти, правила, вимоги, які гарантують точність вимірювань.
4. Теоретична метрологія – це наука, присвячена вивченню її теоретичних основ.
5. Індустріальна метрологія – це практична наука, яка розглядає питання практичного застосування вимірювальних інструментів у різних сферах людської діяльності.
6. Метрологія має важливе значення для науково-технічного прогресу, оскільки без вимірювань неможливий розвиток жодної з галузей науки і техніки.
7. Завдяки точним вимірюванням стали можливими численні фундаментальні відкриття.
8. Жодне наукове дослідження чи процес виробництва не може обійтися без вимірювань.
9. Немає сумніву, що без розвитку методів і засобів вимірювання прогрес у науці і техніці неможливий.
10. Упровадження нових технологій ґрунтується на нових засобах вимірювань.
11. Науково-технічний прогрес прямо пов'язаний з інтенсивним розвитком метрології і точних вимірювань.

EXERCISE 5. Read and translate the text.

The Application of Metrology

Metrology is necessary for the success of many different industries. Although the basic objective of a measurement is to provide the required accuracy at the minimum cost, metrology has further objectives at a modern engineering plant:

- to evaluate newly developed products;
- to determine the measuring instrument capabilities and to ensure that they are quite sufficient for their respective measurements;
- to minimize the cost of inspection by effective and efficient use of available facilities;
- to standardize the measuring methods;
- to maintain the accuracies of measurement;
- to prepare designs for all gauges and special inspection fixtures;
- calibrate existing devices to keep them in working order;
- to reduce the cost of rejects and rework through application of Statistical Quality Control Techniques.

There are many industries that employ metrologists.

Aerospace. Complex machinery like airplanes requires metrology workers to consider both function and safety. Metrologists in aerospace supervise the manufacture of planes and are responsible for testing their components.

Communications. Without metrology digital networks couldn't exist. In computer network security, for example, metrologists thwart hackers by developing new programs to measure network activity and flag suspicious actions. Cell phone production also benefits from metrology work. Metrologists help test the phones' numerous components, recording under what circumstances the phones can function.

Construction. Metrology aids the construction industry in a number of ways. Metrology tools developed for building managers help them determine the cost-effectiveness of worksite decisions. By researching new methods to automate the construction process, metrologists help reduce labor costs. And the production of cheaper, more resistant building materials relies on measurement science.

Energy. All energy companies rely on the work of metrologists. Every building has a meter that displays its energy consumption, and calibration technicians ensure that these meters provide accurate readings. Metrologists are also involved in «green» energy. They help develop wind turbines and solar panels by testing energy output and construction methods. And metrology is critical for measuring the power consumption of new energy-efficient household appliances.

Healthcare. For many patients, the proper functioning of medical devices is a matter of life and death. And metrologists are required to calibrate and certify medical devices. By fine tuning machinery, metrology workers ensure the accuracy of medical tests to allow for the best possible diagnoses.

EXERCISE 6. Fill in the table. Be ready to discuss where metrology is applied.

Sphere of Usage	Examples

EXERCISE 7. Reread the text 'The Application of Metrology' and answer the questions.

1. In what way is metrology and industry interconnected?
2. What industries is metrology employed in?
3. What are the duties of metrologists?
4. Do you use any metrological tools in your everyday lives? Name some of them.

EXERCISE 8. Prove (in writing) why metrology is really important. Use the phrases:

- I think;
- In my opinion;
- To my mind;
- It seems to me;
- I am sure;
- No doubt.

4.2   Laser and Fiber Optics Technology

EXERCISE 1. Match the words with their translations.

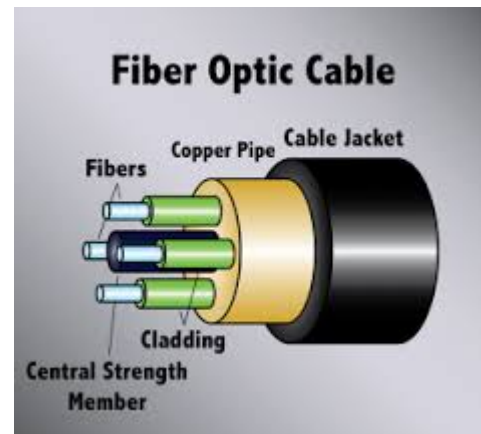|			
1.	fiber-optic cable	a.	мода
2.	core	b.	оптоволоконний кабель
3.	cladding	c.	ядро
4.	total internal reflection	d.	одномодовий
5.	mode	e.	пучок
6.	single-mode	f.	оболонка
7.	multi-mode	g.	волога
8.	reflect	h.	повне внутрішнє відбиття
9.	refract	i.	багатомодовий
10.	refractive index	j.	відображати, відбивати
11.	bundle	k.	показник заломлення
12.	moisture	l.	заломлювати
13.	transmit	m.	передавати
14.	application	n.	дані
15.	communication	o.	зв'язок
16.	measure	p.	тиск
17.	strain	q.	вимірювати
18.	pressure	r.	застосування
19.	intrusion detection security systems	s.	напруга
		t.	крихкий
20.	bandwidth	u.	чутливий, вразливий
21.	data	v.	система виявлення атак (вторгнень)
22.	susceptible	w.	завади
23.	interference	x.	пропускна здатність
24.	digital	y.	цифровий
25.	analogical	z.	аналоговий
26.	fragile		

EXERCISE 2. Read and translate the text. Match the questions (A-F) to the paragraphs (1-6).
   A. What is fiber optics?
   B. What parts does a single optical fiber consist of?
   C. How does fiber optics work?
   D. What are the types of optical fibers?
   E. What advantages and disadvantages does an optical fiber have?
   F. Where are optical fibers used?

1. The light in a **fiber-optic cable** travels through the **core** by constantly bouncing from the **cladding** (mirror-lined walls). This is called **total internal reflection**. Because the cladding does not absorb any light from the core, the light wave can travel great distances.

2. Optical fibers carry light signals down them in what are called **modes**. A mode is simply the path that a light beam follows down the fiber. The simplest type of optical fiber is called **single-mode**. It has a very thin core about 5-10 microns in diameter. In a single-mode fiber, all signals travel straight down the middle without bouncing off the edges. Cable TV, Internet, and telephone signals are generally carried by single-mode fibers, wrapped together into a huge bundle. Cables like this can send information over 100 km. Another type of fiber-optic cable is called **multi-mode**. Each optical fiber in a multi-mode cable is about 10 times bigger than one in a single-mode cable. This means light beams can travel through the core by following a variety of different paths – in other words, in different multiple modes. Multi-mode cables can send information only over relatively short distances and are used (among other things) to link computer **networks** together.

3. The main part of the cable is called the core. It is a thin glass center of the fiber where the light travels. The core is **surrounded** with the cladding. This outer optical material **reflects** the light back into the core. The cladding's job is to keep the light signals inside the core. It can do this because it is made of a different type of glass than the core. (More technically, the cladding has a lower **refractive index**.) Hundreds or thousands of these optical fibers are arranged in **bundles** in optical cables. The bundles are **protected** by the cable's outer covering, called a jacket or a coating. It is made of plastic that protects the fiber from **damage** and **moisture**.

4. Optical fibers are long, thin strands of very **pure** glass about the diameter of a human hair. They are arranged in bundles called optical cables and used to **transmit** light signals over long distances.

5. Optical fibers have many **applications**. They are used for transmitting telephone signals, Internet **communication**, and cable television signals. Optical fibers can be used as **sensors** to **measure strain**, temperature, **pressure** and other **quantities**. Common use for fiber optic sensors includes **intrusion detection security systems**. They have found a broad application in medical and military **equipment**. They can also be used for illumination.

6. Fiber optics has several advantages over traditional metal communications lines:

− Fiber optic cables have a much greater **bandwidth** than metal cables. This means that they can carry more **data**.

− Fiber optic cables are less **susceptible** to **interference** than metal cables.

– Fiber optic cables are much thinner and lighter than metal wires.
– Data can be transmitted **digitally** (the natural form for computer data) rather than **analogically**.

The main disadvantage of fiber optics is that the cables are expensive to **install**. In addition, they are more **fragile** than wire and are difficult to space.

(Based on: http://www.explainthatstuff.com/fiberoptics.html)

EXERCISE 3. Use English terms instead of Ukrainian ones, translate the sentences.

1. *Оптоволокно* is central to the successful operation of a wide variety of highspeed communications applications.
2. Every *оптоволокно* has the same two basic elements: a *серцевину* and a *оболонку*.
3. All *оптоволокна* combine low *втрату сигналу* with very high *пропускною здатністю.*
4. As *оболонка* does not *поглинає* any light from the *серцевини*, the *світлова хвиля* can travel great distances.
5. *Розмір серцевини* is critical to how a *волокно передає дані*.
6. *Світло поширюється* down the *серцевина волокна* in a stable path known as a mode.
7. If multiple *пучки* are *запустити* into the *волокно* and they all suffer *модова дисперсія*.
8. The lower the *коефіцієнт заломлення*, the faster *світло* travels.
9. In practice, *модова дисперсія* can be minimized but not eliminated, and it is the principal *фактор*, що обмежує *пропускну здатність* in multimode fiber.
10. *Багатомодове волокно* is ideal for the *систем локального зв'язку*.

EXERCISE 4. Match the synonyms.
   e.g. *to perform, to exercise, to carry out;*
        a man, a person, a human being.

Verbs: to turn on, to provide, to type, to accept, to help, to learn, to observe, to call, to tell, to keep, to feed, to solve, to relate, to switch off, to communicate, to receive, to supply, to switch on, to assist, to print, to study, to input, to turn off, to decide, to store, to say, to name, to watch.

Nouns: work, machine, fundamentals, display, application, capabilities, job, storage, screen, state, basics, use, concept, specialist, journal, character, memory, idea, expert, magazine, position, symbol, command, data, solution, device, instruction, powers, information, decision.

Adjectives: basic, tiny, common, small, main, significant, routine, general, remarkable, uninterested, intricate, important, wonderful, complex, little.

Adverbs: rapidly, probably, instantaneously, in a moment, quickly, perhaps.

EXERCISE 5. Match the words with their translations.

1. device
2. beam
3. solution
4. strength
5. leather
6. diamond
7. accuracy
8. measurement
9. distance
10. knife
11. means
12. welding

a. рішення
b. прилад
c. сила
d. точність
e. промінь
f. вимірювання
g. шкіра
h. засоби
i. алмаз
j. ніж
k. відстань
l. зварювання

EXERCISE 6. Read and translate the text.

Laser

Lasers are devices which produce pure intense beams of light or radiation. The word "laser" stands for **L**ight **A**mplification by **S**timulated **E**mission of **R**adiation. They are devices which amplify light and produce beams of light which are very intense, directional, and pure in colour. They can be solid state, gas, semiconductor, or liquid.

The beam of a laser can be focused very precisely on a small area which means that it can be used in a variety of tasks that demand high levels of accuracy. In engineering, laser beams can be used for heating, melting, or vaporization of a material. The strength of the laser is such that it can pierce very hard substances such as diamonds and metals. They are applied for spot welding and for surfacing techniques. Laser beams can also be used to measure and align structures.

Lasers are ideal for communications in space. Laser light can carry many more information channels than microwaves because of its high frequency. In addition, it can travel long distances without losing signal strength. Lasers can also be used for information recording and reading. Compact discs are read by lasers.

In medicine laser beams can treat damaged tissue in a fraction of a second without harming healthy tissue. They are so delicate and sensitive that can destroy a single cell of living tissue. Surgeons use the laser as a surgical knife for performing complex operations including operations on eyes.

In military use, lasers can act as a defense against nuclear missiles. They are also used to identify targets.

In art, lasers can provide fantastic displays of light. Different concerts and shows are often accompanied by laser displays.

There are suggestions that laser beams can replace cables in telecommunications.

One of the most interesting uses is in the world of newspapers. The Los Angeles 'Times' is 'written' by a helium/neon laser. Finally, a whole new area of optics is being opened by lasers.

EXERCISE 7. Complete the table of laser applications using information from the text. You may also add any applications you know which are not included in the text.

Military	Engineering	Communications	Medicine	Arts
		information recording and reading		

EXERCISE 8. Choose the correct variant.
1. The laser _____ pierce even diamonds and metals.
   a) was
   b) can
   c) has
   d) were
2. The beam of a laser can also _____ cables in telecommunications.
   a) mean
   b) determine
   c) use
   d) replace
3. Laser _____ a new area of optics.
   a) opens
   b) knows
   c) removes
   d) helps
4. _____ use the laser as a surgical knife.
   a) area
   b) helium
   c) diamonds
   d) surgeons
5. Laser light can carry many more information channels than microwaves because of its high _____.
   a) focus
   b) frequency
   c) strength
   d) spot
6. The word 'laser' stands for Light _____ by Stimulated Emission of Radiation.
   a) application

b) alternation
c) amplification
d) excavation

EXERCISE 9. Translate the sentences into English.
1. Де використовується лазер? – Лазер використовується в науці, техніці та медицині.
2. Слово «лазер» означає підсилення світла за допомогою вимушеного випромінювання.
3. Вчені точно підрахували швидкість світла за допомогою лазера.
4. Лазер може проходити довгі дистанції не втрачаючи сили сигналу.
5. За допомогою лазерів можна виконувати складні операції, в тому числі і на оці людини.
6. Оптоволокно складається із серцевини, оболонки та кожуха (жакета).
7. Оптоволоконна система передавання інформації складається з трьох основних компонентів: передавача, оптоволокна та приймача.
8. Передавач приймає закодований електричний сигнал і перетворює його в імпульси світла.
9. Світлодіод або лазерний діод використовується для створення імпульсів світла.
10. Основна функція оптичного приймача – перетворити світловий сигнал в електричний сигнал.
11. Оптоволоконний кабель має величезну пропускну здатність.
12. Оптоволоконний кабель складається з оптичних волокон, які виконують функцію хвилевода.
13. Оптоволоконний кабель може передати більше інформації, ніж мідний дріт чи коаксіальний кабель.
14. Сигнал, переданий через оптоволоконний кабель, має низький рівень загасання.

EXERCISE 10. Project. Prepare a report about fiber-optic cables. Be sure to mention:
- ☐ their construction;
- ☐ principal of their work;
- ☐ field of their application.

5. ELECTRICAL ENGINEERING

5.1 Electricity. Types of Current

EXERCISE 1. Match the words with their Ukrainian equivalents.

1.	conductor	a.	заряд
2.	semiconductor	b.	деревина
3.	insulator	c.	опір
4.	current	d.	провідник
5.	charge	e.	постійний струм
6.	reduce	f.	частота
7.	resistance	g.	передавати
8.	wire	h.	напруга
9.	silicon	i.	напівпровідник
10.	rubber	j.	споживати
11.	wood	k.	ізолятор
12.	direct current (DC)	l.	запобіжник
13.	alternating current (AC)	m.	кремній
14.	power	n.	струм
15.	frequency	o.	потужність, сила
16.	indicate	p.	вказувати
17.	transmit	q.	перемикач, комутатор
18.	voltage	r.	вимірювати
19.	measure	s.	дріт
20.	consume	t.	електрична схема, коло, контур
21.	circuit	u.	гума
22.	fuse	v.	навантаження
23.	switch	w.	змінний струм
24.	load	x.	зменшувати

EXERCISE 2. Read and translate the text about electricity, translate the underlined words.

What is Electricity?

Electricity is the <u>phenomenon</u> associated with positively and negatively charged <u>particles</u> of <u>matter</u> at rest and in motion, <u>individually</u> or in great numbers. Since every atom contains both positively and negatively charged particles, electricity is connected with the physical <u>properties</u> and structure of matter and is an important factor in physics, chemistry and biology.

EXERCISE 3. Use the words underlined in the previous exercise, either in their singular or plural form, to fill the gaps in the following sentences.

1. Lightning is a naturally occurring electrical _____.
2. Electrical conductivity is an important _____ of metals.

3. Atoms, which were once thought to be the smallest _____, are known to consist of even smaller ones.

4. _____, atoms have only a weak charge, but a very large number together can make a powerful charge.

5. Albert Einstein discovered the relationship between _____ and energy.

EXERCISE 4. Read and translate the text, insert the suitable word.

flow, resistance, conductors, charge, reduce, insulator, plastic, few

Electricity consists of a (1)_____ of free electrons along a conductor. To produce this current flow, a generator is placed at the end of the conductor in order to move the (2) _____.

Conductors

Electricity needs a material which allows a current to pass through easily, which offers little (3) _____ to the flow and is full of free electrons. This material is called a conductor. The most commonly used (4) _____ are wires, available in many sizes and thicknesses. They are coated with insulating materials such as plastic. In solid conductors the electric current is carried by the movement of electrons; in solutions and gases, the electric current is carried by ions.

Semiconductors

Semiconductors such as silicon and germanium are used in transistors and their conductivity is halfway in between a conductor and an (5) _____. Small quantities of other substances, called impurities, are introduced in the material to (6) _____ the conductivity.

Insulators

A material which contains very (7) _____ electrons is called an insulator. Glass, rubber, dry wood and (8) _____ resist the flow of electric charge, and as such they are good insulating materials.

EXERCISE 5. Read the text again and decide if the following statements are true (T) or false (F), then correct the false ones.
1. A flow of electrons moving inside a conductor creates an electric current.
2. A generator is used to move the charges.
3. Electrons can easily pass through any material.
4. Any material is a good conductor.
5. Conductors are coated with insulators.
6. Silicon and germanium are conductors.
7. The presence of free electrons affects the conductivity of materials.
8. Impurities are introduced to increase conductivity.
9. Insulating materials resist the flow of electrons.

EXERCISE 6. Read and translate the text.
DC versus AC
There are two types of current: Direct current (DC) and Alternating current (AC). Direct current is a continuous flow of electrons in one direction and it never changes its direction until the power is stopped or switched off.

Alternating current constantly changes its direction because of the way it is generated. The term 'frequency' is used to indicate how many times the current changes its direction in one second. Alternating current has a great advantage over direct current because it can be transmitted over very long distances through small wires, by making energy high voltage and low current.

An electric circuit or network is a pathway through which the electric current can flow. A simple circuit consists of a power source, two conducting wires, each one attached to a terminal of the source and a device through which electricity can flow. This device is called a load and it's attached to the wires. If all the parts are properly connected, the current flows and the lamp lights up. This kind of circuit is called 'closed'.

On the contrary, if the wires are disconnected the circuit is called 'open' or 'broken'. The circuit can be opened and closed by a device called a switch.

When an abnormally high amount of current passes through a network, you get a short circuit. This may occur when there is a drop in the resistance or a broken insulation. In order to prevent short circuits, it is best to use fuses, which melt when too much current flows through them, interrupting in this way the circuit.

There are several quantities that are important when we are talking about electric current. Volts (V) – so named after the Italian physicist Alessandro Volta – measure the difference of electric potential between two points on a conducting wire. Amperes (A) measure the amount of current flowing through a conductor, that is to say the number of electrons passing a point in a conductor in one second.

Coulombs (C) measure the quantity of charge transferred in one second by a steady current of one ampere. Power is the rate at which work is performed and it is measured in watts (W). A Kilowatt (kW), which is equal to one thousand watts, is used to measure the amount of used or available energy. The amount of electrical energy consumed in one hour at the constant rate of one kilowatt is called kilowatt-hour.

EXERCISE 7. Reread the text and find English equivalents of the Ukrainian words and word combinations.

Безперервний потік електронів, змінювати напрямок, передаватися на далеку відстань, висока напруга, джерело живлення, коротке замикання, падіння напруги, запобігти короткому замиканню, різниця потенціалів, кількість елекричного заряду, дорівнює тисячі ват, спожитий за одну годину.

EXERCISE 8. Answer the questions.
1. What does a simple circuit consist of?
2. What happens to the lamp in a closed circuit?
3. Can you name some examples of loads?
4. What is a generator?
5. What is the function of a switch?
6. When does a short circuit occur?
7. What can we use to prevent short circuits?
8. How does a fuse work?

EXERCISE 9. Reread the text 'DC versus AC' and complete the table with the missing information.

Units of measurement	What does it measure
	the number of electrons passing a given point in a conductor in one second;
	the quantity of electricity transferred by a steady current of one ampere;
	the amount of electric energy used;
	the difference of potential between two points on a conductor;
	the amount of electrical energy consumed in one hour at the constant rate of one kilowatt.

5.2　Power Engineering and its Basic Components

EXERCISE 1. Study the topical vocabulary.

power engineering	електроенергетика
network	мережа
electric power	електроенергія
power (electric) grid	електромережа
substation	підстанція
induction coil	індукційна котушка
primary and secondary windings	первинна і вторинна обмотки
loop, turn	виток
coil	котушка
iron core	залізне осердя
round	круглий
rectangular	прямокутний
wire	дріт
silicon steel	вуглецева сталь
copper	мідь
frequency	частота
steam engines	паровий двигун
permanent	постійний
armature	якір
drum	барабан
rotate	обертати
capacity	об'єм, ємність
welding	зварювання

EXERCISE 2. Look at the word table below and fill in the gaps with the proper word derivative using word formation elements.

Noun	Verb	Adjective
activation	*activate*	*active*
distributer		distributed / distributing
	relate	relating / related
convertor		
	entertain	entertaining
use	user / usage	
generation	generate	
	integrate	integrated / integrating
reception		receiving / receptive
reliability	rely	
storage		stored / storing

	transmit	transmittable / transmissible
	transform	
	conduction / conductor	conducted / conducting
modulate		modulated / modulating
measure	measurement	
	consumption / consumer	consumed / consuming

EXERCISE 3. Read and translate the text.
Power Engineering
Power Engineering deals with the generation, transmission and distribution of electricity as well as the design of a range of related devices. These include transformers, electric generators, electric motors and power electronics.

The power grid is an electrical network that connects a variety of electric generators to the users of electric power. Users purchase electricity from the grid avoiding the costly exercise of having to generate their own. Power engineers may work on the design and maintenance of the power grid as well as the power systems that connect to it.

For these reasons, electrical substations exist throughout power grids to convert power to higher voltages before transmission and to lower voltages suitable for appliances after transmission.

A transformer is a kind of induction coil. Its primary function is to transform electrical energy from one alternating voltage to another.

The principal parts of a transformer are two windings that is coils, and an iron core. The coils are called high-voltage and low-voltage windings, or primary and secondary windings. Each coil consists of a number of loops of round or rectangular wire. The primary winding is connected to the source of energy, and the secondary is connected to the load. The high-voltage winding is designed for the higher voltage, and has the greater number of turns. The core consists of thin sheets of high-grade silicon steel. The thickness depends somewhat on the frequency at which the transformer is to operate.

Transformers play an important role in power transmission because they allow power to be converted to and from higher voltages. This is important because higher voltages suffer less power loss during transmission.

A device for converting mechanical energy into electric energy is called a generator. The function of a motor is just the reverse, that is, it transforms electric energy into mechanical energy. The enormous energy of steam engines, gas engines, and water turbines can now be transformed into electricity and transmitted many miles. The essential parts of a generator are: a) the magnetic field, which is produced by permanent magnets or electromagnets; and b) a moving coil of copper wire, called the armature, wound on a drum. The electromagnet of a D.C. generator is called a stator for it is in a static condition while the armature (the rotor) is rotating.

Large d. c. generators are used in certain manufacturing processes, such as steel making. Generators of small capacities are used for various special purposes, such as welding, automobile generators, train lighting, communication systems, etc.

EXERCISE 4. Reread the text and find English equivalents of the Ukrainian words and word combinations.

Розподіл енергоенергії, проектування та обслуговування електромережі, перетворювати електроенергію зі змінної напруги на постійну, обмотка високої напруги, обмотка низької напруги, джерело енергії, високоякісна вуглецева сталь, втрати електроенергії, магнітне поле, постійний магніт, рухома котушка, мідний дріт, виробництво сталі.

EXERCISE 5. Form sentences combining suitable parts of the sentences given in columns.

1. The generator	a) transforms heat into work
2. The electric current	b) transforms mechanical energy into electrical energy.
3. The electric motor	c) is a path along which the current flows.
4. Steam engine	d) transmit power across the grid.
5. Transmission lines	e) is a device which transforms mechanical energy into electrical one.

EXERCISE 6. Answer the following questions in writing.
1. What does power engineering deal with?
2. What are basic components of power engineering?
3. What is power grid? What is it needed for?
4. Why should electrical substations be installed throughout power grids?
5. What is the function of a transformer?
6. What are the principal parts of a transformer?
7. What is the difference between the generator and the motor?
8. What does the generator consist of?
9. What is the difference between the stator and the rotor?
10. Where are generators used?

EXERCISE 7. Translate the sentences into English.
1. Добре відомо, що електричний струм у провіднику створює магнітне поле.
2. Явище електромагнітної індукції було відкрите Фарадеєм у 1831 році.
3. Провівши понад 16 тисяч дослідів, англійський фізик і хімік М. Фарадей 29 серпня 1831 р. одержав електричний струм за допомогою магнітного поля постійного магніту.

4. Змінне магнітне поле завжди супроводжується появою у навколишньому просторі електричного поля.
5. Відкриття явища електромагнітної індукції відіграло важливу роль для прогресу людства.
6. Явище електромагнітної індукції широко застосовується в техніці, зокрема на електростанціях в генераторах великої потужності, які перетворюють механічну та електричну енергії.
7. Електричний струм надходить до споживача від електростанції по лініях електропередач.
8. Електрони мають негативний електричний заряд.
9. Електричним струмом називається впорядкований рух заряджених частинок.
10. Електричне поле в провідниках створюється і може довгий час підтримуватися джерелами електричного струму.
11. На електростанціях електричний струм отримують за допомогою генераторів.

EXERCISE 8. Choose the suitable word to complete the sentences.

1. _____ quantitative measurement is necessary for studying electric circuits.
    a. small
    b. potential
    c. accurate
    d. similar

2. A galvanometer should be used if the currents _____ are small.
    a. to be designed
    b. to be measured
    c. to be seen
    d. to be sent

3. The action of _____ is similar to the action of an ammeter.
    a. resistance
    b. armature
    c. current
    d. voltmeter

4. The number of cycles in one second is the _____ of the current.
    a. frequency
    b. magnitude
    c. quantity
    d. direction

5. Direct current flows _____one direction only.
    a. in
    b. on
    c. by
    d. with

6.CIVIL ENGINEERING

6.1 Planning and Building a House

EXERCISE 1. Study the topical vocabulary.

dwelling	житло
building	будинок
construction	споруда, спорудження
urban	міський
rural	сільський
terraced house	таунхаус, будинок стрічкової забудови
detached house	особняк
semi-detached house	двоквартирний будинок
apartment blocks	багатоквартирний будинок
to measure	вимірювати
site	будівельний майданчик
fittings	комунікації
to manage	керувати
to hire	наймати на роботу
crew	бригада
dead load	постійне навантаження
live load	динамічне навантаження
weight	вага
frame	рама, каркас
equipment	обладнання
scaffold	риштування
pipe	труба
sewer	сток, каналізація
wire	дріт
socket	розетка

EXERCISE 2. Match the synonyms.

1. to build	a) building
2. structure	b) house
3. apartment blocks	c) framework
4. dwelling	d) to use
5. to employ	e) joist
6. frame	f) to construct
7. beam	g) blocks of flats

EXERCISE 3. Subdivide the words into three columns.
Surveyor, designer, stone, contractor, concrete, foundation, ceiling, floor, roof, wall, bricklayer, brick, carpenter, beam, decorator, joist, plasterer, timber,

stairways, reinforced concrete, steel, ridge, rafter, sheet metal, slate, tile, board, plumber, electrician, plasterer, painter, paper-hanger.

Professions	Building Materials	Parts of a House

EXERCISE 4. Match words and their definitions. After that put them into the sentences below.

1.	house	a) a multi-unit dwelling made up of apartments (US) or flats (UK);
2.	residential building	b) a small modest house often old or old-fashioned building found typically in a rural or semi-rural location;
3.	industrial building	c) a structure used for habitation by people that generally has walls and a roof to shelter its enclosed space from precipitation, wind, heat, cold, and other nature factors;
4.	detached house	d) is a dwelling space where dwellers may rent or own their residences;
5.	semi-detached house	e) a building designed to house industrial operations and provide the necessary conditions for workers and the operation of industrial equipment;
6.	terraced house	f) house that is attached to another similar house on only one side via a party wall;
7.	apartment blocks	g) one of a row of houses that are joined together in a row, each separated by a party wall (are also called townhouses);
8.	cottage	h) a stand alone single family house.

1. _____ one of several houses that are joined together.
2. _____ a house that is not joined to another house.
3. _____ a house that is attached to another house on one side.
4. _____ a small house in the country.
5. _____ a set of rooms where someone lives, which is part of a larger building.
6. _____ a building used for living.
7. _____ a building used for production of various goods.

EXERCISE 5. Answer the following questions.
1. What kinds of houses are there in Ukraine?
2. Characterise each of them.
3. What types of dwellings are the most expensive / the cheapest? Prove your idea.

4. What types of dwellings are the most comfortable for living / the least comfortable for living? Prove your idea.

EXERCISE 6. Read and translate the text.
Planning and Building a House

Almost everybody saw the construction of a building and followed its progress with interest. The procedure of building a house is quite a complex one and employs people of different professions. Investors usually have an idea about the kind of house they want to build to meet their customers' needs.

First of all it is necessary to choose a plot of land. A surveyor will measure the site and make plan of it. Then you should contact an architect who will design the house. The architect, in cooperation with designers, will draw preliminary plans to show the size of the house, the arrangement of the rooms and where all the fittings must go in the house. The architect can also give the client a rough estimate of the cost. The investor should then apply for a planning permit to the local building authority. After receiving a permit for the construction the architect or the client himself should find a building contractor. The client will choose the contractor offering the best quality for a reasonable price.

The building contractor is the one who manages the whole process of the house construction. He has to hire independent crews known as subcontractors to perform various types of work, and he regularly submits their bills to the client.

The workmen on the building site mark the shape of the house. Everything is then ready for laying the foundation. The function of a foundation is to transfer the loads of a building into the soil. A foundation may support different kinds of loads. Among them there are dead loads and live loads. The dead load of building includes the weights of the ceilings, the frame, the floor, the roof and the walls. As to the live load, it includes the sum of the weights of the people and other living beings, the furnishings, and the equipment they use. Foundations keep the walls and the floors of buildings from direct contact with the soil. They also guard buildings against sinking that may cause cracks in the walls.

After the foundation is laid and set, the bricklayers can start building the walls. Walls are divided into two categories: external and internal construction. They possess different functions. The function of external walls is to support the upper floors and the roof. The units employed for construction of walls are brick, stone, concrete and other natural or artificial materials. As to interior walls, they are mostly self-supporting. Their main function is dividing the space of the house. They divide the gross floor area of a building into separate rooms.

When the vertical walls are built, the carpenters can begin their work. A carpenter is a man who does the woodwork on a house, e.g., he installs the beams and joists that hold the ceiling up. He fixes the doors, windows and other woodwork. In most cases the walls of the house are too high for the bricklayers,

carpenters and plasterers to reach, so a scaffold has to be made. A scaffold is a platform of planks for the workmen to stand on. It is held up by a framework of steel tubes.

One of the most important functional components of a building are floors. Floors divide the building into stories. They can be constructed of timber, concrete or some fire-resisting materials.

Practically every modern building is supplied with stairways of some kind. A stairway is designed to provide a means of access between different floor levels of a building. Nowadays stairways are produced of various construction materials but the most popular among them are timber, metal and reinforced concrete.

Roofs cover the building and protect it from exposure to the weather. They tie the walls and give strength and firmness to the structure. The shape of roofs differs greatly from region to region. The main factors which influence the shape of roofs are the climate and the materials available for roof structure and the outer covering. The supporting structure of a roof usually comprises beams that are long and made with strong, fairly rigid material such as timber, cast iron or steel. The highest roof beam is called the ridge. The sloping beams are called rafters. Sheet metal, slate, tiles, wooden shingles and boards can be used as roofing material.

Once the house is covered with the roof and the windows are installed, many different workmen come and finish the house. Plumbers install water pipes to carry clean water into the house. They also lay pipes to carry wastewater away to sewers. At the same time, electricians fasten wires and put in all the lights and plug sockets according to a special plan made by the draftsman. They have to observe special safety precautions. When all the wires and pipes are in place, the house is ready for the plasterers. They cover the walls and ceilings with plaster to form a hard and smooth surface and leave it to the painters, paper-hangers and decorators to give the interior of the house its final appearance.

When the house is completed, the client can occupy it.

EXERCISE 7. Enumerate the stages of the house construction process.

e.g. 1. Choosing a plot of land
      2. _____

EXERCISE 8. Match the jobs with the job descriptions.

1.	architect	a)	does physical work such as building, repairing things, etc.
2.	carpenter	b)	covers a roof, floor, etc. with tiles
3.	electrician	c)	installs and repairs pipes and water systems
4.	builder	d)	paints interior and exterior components of buildings
5.	tiler	e)	measures and records the details of an area of land

6.	plasterer	f)	deals with or repairs electrical equipment
7.	surveyor	g)	makes and repairs wooden objects, does rough woodwork
8.	painter	h)	erects structures
9.	workman	i)	covers walls and ceiling with plaster
10.	plumber	j)	designs buildings

EXERCISE 9. Answer the questions in writing.

1. People of what professions are employed in a house construction process? What are their duties?
2. Which of the jobs are skilled manual jobs and which are unskilled manual jobs? Which jobs require a university education?
3. Would you like to do any of the above-mentioned jobs? Which one?
4. Do you think it is difficult to be an architect? Why?
5. Is building houses an interesting job? Why? Why not?

EXERCISE 10. Translate into English.

1. Скло прозоре, але крихке, тому його легко розбити.
2. Цегла – це один з найстаріших будівельних матеріалів.
3. Розчин – це суміш піску, цементу та води, взятих у відповідних пропорціях.
4. Бетон широко використовується для будівництва будинків, хмарочосів, дамб, мостів та інших споруд.
5. Цегла, камінь, бетон та інші натуральні й штучні матеріали використовуються при спорудженні будинку.
6. Основні елементи будівлі включають в себе: фундамент, зовнішні стіни, внутрішні перегородки, підлогу, стелю та дах.
7. Сьогодні будинки часто будують зі збірних елементів.
8. Велика кількість як природних так і штучних будівельних матеріалів використовується в будівництві.
9. Будівельники будують будинки, дамби, дороги, електростанції та інші споруди.
10. Цивільне будівництво займається проектуванням і будівництвом об'єктів, які є стаціонарними, наприклад, будинки, будівлі, дамби, тунелі, мости, канали.
11. Цегла – це штучний будівельний матеріал, виготовлений з глини.
12. Бетон – це найбільш часто вживаний будівельний матеріал.
13. Вогнетривкі будівлі легко протидіють високим температурам.
14. Мулярі, теслярі, каменярі, сантехніки, електрики, штукатури беруть участь у будівництві будинків.

6.2   Building Materials

EXERCISE 1. Match the words and word combinations with their Ukrainian equivalents.

1. natural building materials	a) гіпс
2. artificial building materials	b) цегла
3. lime	c) міцність на
4. gypsum	d) розчин
5. stone	e) висока міцність
6. sandstone	f) щебінь
7. marble	g) вапно
8. copper	h) мармур
9. clay	i) теплопровідність
10. timber, wood	j) жорсткий
11. brick	k) природні будівельні матеріали
12. cement	l) мідь
13. concrete	m) збірні залізобетонні елементи
14. prefabricated concrete elements	n) глина
15. reinforced concrete	o) бетон
16. crushed stone	p) штучні будівельні матеріали
17. mortar	q) кольорові метали
18. ferrous metals	r) об'ємна вага
19. nonferrous metals	s) пісковик
20. high rate of strength	t) деревина
21. resistance to	u) чорні метали
22. volume weight	v) цемент
23. thermal conductivity	w) залізобетон
24. rigid	x) опір

EXERCISE 2. Read and translate the text.
Building Materials

A civil engineer must be able to select and adapt such materials of construction that will give the most effective result by the most economical means. Choosing materials for any structure a civil engineer has to consider many factors including availability, costs and physical properties. The most widely used building materials throughout the world are bricks and stone, mortar and concrete, wood, metal, glass and plastics.

Wood is the most ancient structural material. Perhaps one of the biggest advantages of using wood as a building material is that it is a natural resource, making it readily available and economically feasible. It is remarkably strong in relation to its weight, and it provides good insulation properties. Wood is highly machinable, and can be fabricated into all kinds of shapes and sizes to fit practically any construction need. It is an environmentally sustainable product; it is biodegradable and renewable. It is light, cheap and easy to work. But wood

has certain disadvantages: it burns and decays. Bulky pieces of wood are referred to as timber. As timber pieces are large in dimension, they are often used to construct the frames of large structures such as buildings and bridges. Timber is also commonly utilized in large quantities for railroad ties, mine shaft supports, etc.

Stone is a naturally available building material which has been used from the early age of civilization. It is available in the form of rocks, which are cut to the required size and shape and used as building blocks. It has long been recognised as a material of great durability, mechanical strength, sound and heat insulation and fire-resistance. It is versatile, available in many shapes, sizes, colours and textures, and can be used for many building purposes, for instance, for floors, walls, arches and roofs. Stone blends well with the natural landscape, and can easily be recycled for other building purposes. There are huge variations of rock types, the most popular being granite, sandstone, limestone, marble.

Brick is an artificial stone made by forming clay into rectangular blocks that are then burned to harden. The colour of the finished bricks depends on the mineral content of the clay and the temperature at which they are burned. There exists variety of bricks for different purposes: ordinary, hollow, perforated, lightweight, multicolor bricks, and others. Bricks are usually laid in place with the help of mortar. Mortar is a material used in masonry to fill the gaps between blocks in construction. Mortar is a mixture of sand, cement and water, and is applied as a paste, which then sets hard.

Lime, gypsum and cement are the three materials most widely used in building construction for the purpose of binding together masonry units, such as stone or brick and as constituents of wall plaster. Cement is the most important component of concrete.

Concrete is made by mixing together small crushed stones (gravel), sand, cement, and water in rotating drums. The mixture is then poured into forms of the shape required. The coarse stones used in the mix give the concrete its strength; the sand is needed to fill the gaps between the stones; and the cement covers the surfaces of all solids and binds the entire mixture into a single mass. The less water is used in mixing the concrete, the denser and stronger it is when it has set.

Reinforced concrete is concrete into which steel rods or bars are embedded. It is the building material in which the joint functions of concrete and steel are advantageously utilized. Being brittle, concrete cannot withstand tensile and shear stresses caused by wind, earthquakes, vibrations, and other forces and is therefore unsuitable in most structural applications. But if steel is introduced into concrete it changes the property of the monolith allowing to sustain these stresses over considerable spans. The invention of reinforced concrete in the 19th century revolutionized the construction industry, and concrete became one of the world's most common building materials.

It is difficult to imagine construction industry without metals. All metals are divided into ferrous metals and non-ferrous metals. Ferrous metals and alloys

contain iron; non-ferrous materials do not. Ferrous metals include mild steel, carbon steel, stainless steel, cast iron, and wrought iron. These metals are highly appreciated for their tensile strength and durability. They possess magnetic properties and are vulnerable to rust. Non-ferrous metals include aluminum, brass, copper, nickel, tin, lead, and zinc, as well as precious metals like gold and silver. Non-ferrous metals are light, non-magnetic and corrosion resistant.

Plastics have appeared comparatively recently but, owing to their inherent valuable and diverse properties, have found a wide application in many industrial fields. Plastic products have many advantages over the materials they replace, such as easiness of production, lower maintenance costs and rapidity of assembly. They are lightweight, strong, versatile, cheap, durable and recyclable.

EXERCISE 3. Complete the table.

Material	Characteristics		Sphere of Usage
	positive	negative	

EXERCISE 4. Answer the questions.
1. What should a civil engineer consider when choosing materials for construction?
2. What are the most widely used building materials?
3. What are the advantages of wood as a building material?
4. What is timber?
5. What are the most valuable properties of stone?
6. How is mortar made?
7. Of what elements does concrete consist and what is each element needed for?
8. If we want to make the concrete stronger, should we use little or much water?
9. Describe the process of the concrete production.
10. What is used as reinforcement in reinforced concrete?
11. What properties do metals possess?
12. How do metals differ from one another?
13. Where can plastics be applied? What advantages do they have?
14. What materials can a fireproof door be made of?
15. Why do we need a special drill to make holes in a concrete wall?
16. Why is copper suitable for electrical wiring? What properties does it have?

EXERCISE 5. Translate into English.
1. Цивільний будівельник повинен уміти підібрати такі будівельні матеріали, що дадуть найкращий ефект і будуть найекономічнішими.
2. Дерево – найстаріший будівельний матеріал.
3. Конструкційна сталь і бетон вважаються найбільш важливими будівельними матеріалами.
4. Суміш піску, щебеню, цементу і води, що має здатність тверднути, називається будівельним розчином
5. Залізобетон – це будівельний матеріал, що має ознаки бетону і сталі.
6. Подібно до інших кам'яних матеріалів, бетон дуже стійкий до навантажень, що його стискають.
7. Звичайну цеглу не завжди можна використовувати в будівельній практиці через високу об'ємну вагу.
8. Використання синтетичних матеріалів і пластмаси є дуже важливим питанням для сучасного будівництва.
9. Пластмасу зараз вже можна використовувати у будь-якій галузі будівництва.

EXERCISE 6. Translate into Ukrainian.
1. Mortar is a mixture of sand, a binder such as cement or lime, and water, and is applied as a paste, which then sets hard.
2. Mortar is a material used in masonry to fill the gaps between blocks in construction.
3. Concrete has a high compressive strength, but a rather low tensile strength; therefore, it is strengthened using steel rods or bars and is then called reinforced concrete.
4. Brick is an artificial stone made by forming clay into rectangular blocks which are hardened, either by burning in a kiln or, in warm countries, by sun-drying.
5. Modern blocks of flats and detached houses are mainly built of concrete panels or bricks.
6. The strength and properties of concrete depend on the quality of the binding material and aggregates; the size and proportioning of the ingredients, the water-cement ratio, the method of mixing and placing, the site's condition, the temperature, and the method of curing.
7. Concrete is extensively used in the construction of buildings, skyscrapers, bridges, dams and other water structures, road pavements and runways, and other structures.

6.3   Thermo-Power Engineering

EXERCISE 1. Match the words and word combinations with their Ukrainian equivalents.

1.	plumber	a)	клапан
2.	potable water	b)	коліно
3.	lead	c)	трійник
4.	call for	d)	муфта
5.	copper	e)	мідь
6.	pump	f)	питна вода
7.	welding	g)	ремонтувати
8.	valve	h)	закликати
9.	expansion tank	i)	лічильник
10.	heat exchanger	j)	розширювальний бачок
11.	meter	k)	теплообмінник
12.	to install	l)	водопровідник, сантехнік
13.	to repair	m)	свинець
14.	pressure	n)	встановлювати
15.	elbow	o)	насос
16.	tee	p)	тиск
17.	union	q)	зварювання

EXERCISE 2. Read and translate the text, fill in the gaps with the suitable word.

pipelines	pipes	drains	mains	hoses	fittings	ducts

1. _____ are rigid tubes, made from materials such as steel and plastic. They carry fluids (liquids or gases). They can be fitted together with different 2. _____. Assemblies of pipes are often referred to as pipework.

3. _____ are underground pipes for water and natural gas. They usually run beneath the streets of cities to supply buildings.

4. _____ are long-distance pipes, often above ground, for crude oil or natural gas.

5. _____ are underground pipes that carry waste water. Large drains, as found below the streets in cities, are called sewers. Drains and sewers rely on gravity to allow them to flow. They therefore have a downward slope, called a fall.

6. _____ are pipes used for moving air that is not under pressure – usually for heating or air-conditioning.

7._____ are flexible tubes, often made from plastic, for liquids and gases. They are fitted together using hose fittings.

EXERCISE 3. Read and translate the text.

Plumbing is the system of pipes, fitting, valves and devices installed in a building for the distribution of water for drinking and washing. The main function of plumbing is providing potable water and drainage of wastes. A person who installs or repairs piping systems and plumbing equipment is called a plumber. The word 'plumbing' comes from the Latin 'plumbum' which means 'lead', as pipes used to be made from lead.

Plumbing originated at the times of ancient civilization such as the Greek and Roman that had built first water supply systems. Improvement in plumbing systems was very slow, with virtually no progress made from the time of the Roman aqueducts and lead pipes. Plumbing was extremely rare until the growth of modern densely-populated cities in the 1800s. During this period, public health authorities began calling for better waste disposal systems to be installed, to prevent and control epidemics of diseases.

Ancient water system relied on gravity for the supply of water, using pipes or channels usually made of clay, lead, bamboo, wood, or stone.

Present-day water-supply system use a network of high-pressure pumps, and pipes in buildings are now made of copper, brass, cast iron, plastic, or other nontoxic material. By the way, lead is not used in modern water-supply piping systems any more due to its toxicity.

The straight sections of plumbing systems are called 'pipes' or 'tubes'. In common usage the words 'pipes' and 'tubes' are usually interchangeable, but still there are some differences among them. Pipe normally has thicker walls and can be welded, while tubes are thinner-walled and require special joining techniques such as brazing, compression or crimping. The term 'tube' is also commonly applied to non-cylindrical sections that are square or rectangular forms.

A number of pipe fittings are used in plumbing systems. They are valves, elbows, tees, unions, etc. Plumbing equipment consists of devices often hidden behind walls or in spaces, which are not seen by the general public. It includes water meters, pumps, expansion tanks, water filters, water heaters, heat exchangers and control systems.

A lot of instruments are used while constructing pipelines and water mains. The most common tools are pipe wrenches, pliers, tongs, welding sets ant other. New tools have been developed to help plumbers fix problems more efficiently. For example, plumbers use video cameras for inspections of hidden leaks or problems. They also use high pressure hydraulic pumps connected to steel cables for trenchless sewer line replacement.

EXERCISE 4. Answer the questions in writing.
1. What does a typical plumbing system consist of?
2. What is the main function of plumbing?
3. Where did plumbing originate?
4. Was there a quick progress at plumbing systems?

5. What did ancient plumbing systems rely on?
6. What were the ancient pipes made of?
7. What can modern pipes be made of?
8. What is the difference between pipes and tubes?
9. What plumbing equipment do you know?
10. What instrument do plumbers use while constructing pipelines?

EXERCISE 5. Study the illustration and match the terms with their definitions.

	conduction	a. is the process in which energy is emitted as particles or waves.
	convection	b. is the movement of heat or electricity through a material without any perceptible motion of the material.
	radiation	c. occurs when heat is transferred through a gas or liquid by the hotter material moving into a cooler area.

EXERCISE 6. Read and translate the text, fill in the gaps with the suitable word.

circulate	temperature	heat exchangers	joules	convection
electromagnetic waves	dissipates	radiation	conduction	

Heat and Temperature

As you know, temperature is measured in _____ Celsius. But heat is energy, so it is measured in _____.

To help understand heat transfer, homes provide everyday examples. The heating systems in homes often have electric convector heaters. These heat the air and make it _____, so that it moves in a circle – first rising, then cooling and sinking before rising again. This is called _____ , where warm gas or liquid moves around and _____ heat, transferring it to the rest of the gas or liquid.

Alternatively, the heating system in a home may circulate hot water through radiators. The radiators act as _____ _____ – devices that transfer heat – in this case, from the hot water inside to the cooler air outside. This happens by _____ – heat transfer through solid material. After the heat has been conducted through the metal of the radiator, the heat is dissipated by convection.

The third way that heat is transferred is by _____. This is heat that travels as _____ _____. An example is the heat from the Sun. so the radiators that circulate water have a misleading name, as they don't really function by radiation.

EXERCISE 7. Read and translate the text.
The History of Central Heating

The history of home heating began many thousands years ago. The earliest method of providing interior heating was an open fire. Wood was the earliest fuel used, though in places with moderate climate, such as China, Japan and the Mediterranean, charcoal (made from wood) was used because it produced much less smoke.

Central heating has been invented in ancient Greece, but it were Romans who became the supreme heating engineers of the ancient world. The Roman central heating, called the hypocaust, consisted of hollow channels built into walls and floors that allowed warm air to circulate around the house. At a place central to all the rooms to be heated, wood, charcoal, brushwood or coal was burned, and the hot air traveled beneath the floors and rose up through the channels warming the house. The hypocaust system disappeared with the decline of the Roman Empire, however, and central heating was not reintroduced until some 1,500 years later.

In the early medieval times, a simpler central heating system where heat travelled through underfloor channels from the furnace room replaced the Roman hypocaust at some European places. In Reichenau Abbey a network of interconnected underfloor channels heated the 300 m² large assembly room of the monks during the winter months. The degree of efficiency of the system has been calculated at 90%.

In the 13th century, monks revived central heating in Christian Europe using river diversions combined with indoor wood-fired furnaces. The well-preserved Royal Monastery of Our Lady of the Wheel (founded 1202) on the Ebro River in the Aragon region of Spain provides an excellent example of such an application. The systems can still be seen today.

By about 1700 Russian engineers had started designing hydrologically based systems for central heating. The Summer Palace (1710-1714) of Peter the Great in Saint Petersburg provides the best example. Slightly later, in 1716, came the first use of water in Sweden to distribute heat in buildings. Martin Triewald, a Swedish engineer, used this method for a greenhouse at Newcastle upon Tyne. Jean Simon Bonnemain, a French architect, introduced this technique into industry.

Angier March Perkins developed and installed some of the earliest steam-heating systems in the 1830s. The use of steam as a source of power offered a new way to heat factories and mills, with the steam conveyed in pipes. Coal-fired boilers delivered hot steam to rooms by means of standing radiators.

The advantages of hot water, which has a lower surface temperature and milder general effect than steam, began to be recognized about 1830. Twentieth-century central-heating systems generally use warm air or hot water for heat conveyance.

Franz San Galli, a Polish-born Russian businessman living in St. Petersburg, invented the radiator between 1855–1857, which was a major step in the final shaping of modern central heating.

EXERCISE 8. Find in the text the English equivalents of the following Ukrainian words and word combinations.

Котельня; батарея; парове опалення; вогнище; переваги гарячої води; нижча поверхнева температура; передача тепла; деревне вугілля; джерело енергії; котли опалювані вугіллям; порожні канали; циркулювати по будинку; розподіляти тепло по будинках; взаємопов'язані канали, прокладені під підлогою; ступінь ефективності; пара, що передається трубами.

EXERCISE 9. Answer the questions.

1. What was the earliest method of heating the houses?
2. What kinds of fuel can be used for heating?
3. What is the hypocaust?
4. When was the central heating invented?
5. How did the Roman central heating look like?
6. What was the degree of efficiency of the heating system used in Reichenau Abbey?
7. What did Russian engineers start to design in about 1700?
8. What kind of heating system was developed and installed by A.M. Perkins in the 1830s?
9. Why did hot water begin to be widely used in central heating systems in 1850s?
10. What became a major step in the shaping of modern central heating?

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