

**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ**

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**РІВНЕНСЬКИЙ ДЕРЖАВНИЙ ГУМАНІТАРНИЙ УНІВЕРСИТЕТ**



## ENGLISH FOR STUDENTS OF NATURAL SCIENCES

***Навчально-методичний посібник з англійської мови для здобувачів  
вищої освіти першого бакалаврського рівня, спеціальності 014  
Середня освіта (Природничі науки)***

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**ENGLISH FOR STUDENTS OF NATURAL SCIENCES:** навчально-методичний посібник з англійської мови для здобувачів вищої освіти першого бакалаврського рівня, спеціальності 014 Середня освіта (Природничі науки) психолого-природничого факультету / уклад. Л.В. Мороз, С.К. Романюк, Л.В. Денисюк, Н.Р. Данілова, В.М. Трофімчук, І.В. Краля, Л.А. Паніна, О.М. Лютко. – Р.: Рівненський інститут ВМУРЛ «Україна», 2025. – 146 с.

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## **ПРОГРАМА НАВЧАЛЬНОЇ ДИСЦИПЛІНИ**

### **Модуль 1.**

#### **MODULE I**

##### **THEME I. NATURAL SCIENCE**

***SELF-STUDY: IS EARTH A LIVING ORGANISM?***

##### **THEME II. ECOLOGY**

***SELF-STUDY: AIR POLLUTION***

##### **THEME III. ECOLOGICAL SITUATION IN UKRAINE**

***SELF-STUDY: RELATIONSHIP BETWEEN ORGANISMS***

##### **THEME IV. BIOLOGY – THE SCIENCE OF LIFE**

***SELF-STUDY: BIOLOGY – THE SCIENCE OF LIFE***

##### **THEME V: BACTERIA AND VIRUSES**

***SELF-STUDY: ORGAN SYSTEMS***

#### **MODULE II**

##### **THEME I. EARTH**

***SELF-STUDY: GLACIERS***

##### **THEME II. LANDFORMS**

***SELF-STUDY: LANDFORMS***

##### **THEME III. LAKES, OCEANS AND SEAS**

***SELF-STUDY: RIVERS***

##### **THEME IV. CHEMISTRY AS A SCIENCE**

***SELF-STUDY: MOLECULES***

##### **THEMA V. PHYSICS IN GENERAL**

***SELF-STUDY: THE SCIENCE OF MECHANICS***

## ПЕРЕДМОВА

Структура навчально-методичного посібника дає можливість викладачеві вибрати оптимальні шляхи організації як аудиторної, так і самостійної роботи здобувачів з урахуванням рівня їх знань. Посібник складається з двох модулів, які складаються з дванадцяти тем; текстів професійного напрямку зі словниками і вправами лексичного та граматичного характеру. Спеціальні тексти для читання, перекладу та переказу сприяють розвитку навичок одержання інформації та її аналітичної обробки. Більшість текстів автентичні та адаптовані. Посібник передбачає повторення граматичного матеріалу та виконання граматичних тестів, системне повторення тем у процесі виконання комунікативно-спрямованих вправ, використання матеріалу в розмовних формулах.

Запропонований навчально-методичний посібник розроблено для здобувачів вищої освіти першого бакалаврського рівня, спеціальності 014 Середня освіта (Природничі науки) психолого-природничого факультету денної та заочної форми навчання. Навчальний посібник можуть використовувати на природничих факультетах здобувачі, аспіранти та науковці відповідного профілю.

## ENTRY TEST

**Time: 45 minutes**

**Instructions:**

**Choose the word or phrase (A, B or C) which is correct in the sentence.**

**EXAMPLE:** I ... tired today.  
a. am    b. is    c. are

Only 'a' is correct, so you write *a* on your answer sheet.

- 1 ..... oranges are very good.  
a. These    b. This    c. That
2. Are ..... people very nice?  
a. that    b. those    c. there
- 3 ..... a dog in the garden.  
a. It has    b. It is    c. There is
4. What's that? ..... is my new car.  
a. They    b. It    c. There
- 5 ..... is a good film at the Odeon.  
a. Their    b. They're    c. There
6. I ..... to go to town tomorrow.  
a. has    b. have    c. had
7. You ought ..... at home.  
a. stay    b. to stay    c. staying
8. He ..... speak English.  
a. knows    b. knows to    c. can
9. He should ..... a letter.  
a. write    b. to write    c. writing
10. Do you want ..... the film?  
a. see    b. to see    c. seeing
11. I hope John's got ..... money.  
a. a    b. any    c. some
12. He is .....  
a. engineer    b. one engineer    c. an engineer
13. I'd like ..... eggs, please.  
a. any    b. an    c. some
14. We've got ..... eggs left.  
a. a few    b. a little    c. a number
15. There aren't ..... people here today.  
a. a lot    b. many    c. much
- 16 ..... she get up early every day?  
a. Is    b. Does    c. Has
17. Were you in London last week? No, I .....  
a. didn't    b. weren't    c. wasn't
18. She often ..... a bath in the morning.  
a. has    b. have    c. is having

19. He.....his hat last week.  
a. loses            b. has lost        c. lost
20. They ..... the 7.30 bus yesterday.  
a. caught        b. catch            c. catches
21. Mary is here, but her parents .....  
a. isn't           b. wasn't           c. aren't
22. He.....because he was late.  
a. hurries        b. hurried          c. hurry
- 23 .....she going to do anything today?  
a. Doesn't       b. Does            c. Isn't
24. They ..... television at the moment.  
a. watch        b. is watching      c. are watching
- 25 .....much work yesterday?  
a. Did you do    b. Do you do       c. Did you
26. Who is she looking ..... ?  
a. on            b. at                c. to
27. This is a nice piece.....cheese.  
a. of            b. off                c. —
28. Our holidays are.....June.  
a. in            b. at                c. on
29. They're listening... ..the news.  
a. at            b. to                c. —
30. We came here..... 1999.  
a. on            b. at                c. in
31. What's the matter.....him?  
a. by            b. with              c. from
32. Your glasses are .....the bathroom.  
a. in            b. of                c. into
33. Stop him! He's going to jump .....the river!  
a. on            b. onto              c. into
34. No large ships can go.....that bridge.  
a. over          b. across            c. under
35. It's time for coffee. All the students  
are coming ..... their lessons.  
a. off            b. out of            c. out
36. This book is .....  
a. my            b. me                c. mine
37. She would like to meet .....  
a. you           b. your              c. to you
38. Give the money .....  
a. to them       b. them              c. theirs
39. Whose is that big house? It's .....  
a. her            b. hers              c. to her
40. We're going to ..... favourite shop.

- a. our            b. us            c. ours

41. It is much ..... here.

- a. warm      b. warmer      c. more warm

42. She is not as old ..... I am.

- a. that          b. tan          c. as

43. He's.....intelligent than I am.

- a. very          b. more          c. plus

44. He drives .....

- a. more careful   b. very careful   c. very carefully

45. Yesterday was the ..... day so far this year.

- a. very hot      b. most hot      c. Hottest

46 ..... wrote that letter?

- a. Where      b. Why          c. Who

47. She went home early.....she had finished her work.

- a. because      b. while          c. without

48 ..... did you put it?

- a. Where      b. Who          c. When

49. '..... is.... Bill?' 'Very well, thanks.'

- a. How          b. Why          c. Where

50. I'm going home to change first.....I'm going out for a meal.

- a. Than          b. Then          c. Therefore



## MODULE I

### THEME I. NATURAL SCIENCE



#### 1. VOCABULARY

1. prediction - прогноз
2. peer review - експертна оцінка
3. reproducibility - відтворюваність
4. validity - достовірність
5. scientific advances - науковий прогрес
6. measurement - вимір
7. to succeed - досягти успіху
8. conjecture - припущення
9. presupposition - припущення
10. to overlook - не помічати

#### 2. Read and translate the text.

**Natural science** is one of the branches of science concerned with the description, understanding and prediction of natural phenomena, based on empirical evidence from observation and experimentation. Mechanisms such as peer review and reproducibility of findings are used to try to ensure the validity of scientific advances.

Natural science can be divided into two main branches: life science and physical science. Life science is alternatively known as biology, and physical science is subdivided into branches: physics, chemistry, earth science, and astronomy. These branches of natural science may be further divided into more specialized branches (also

known as fields). As empirical sciences, natural sciences use tools from the formal sciences, such as mathematics and logic, converting information about nature into measurements that can be explained as clear statements of the "laws of nature".

Modern natural science succeeded more classical approaches to natural philosophy. Galileo, Kepler, Descartes, Bacon, and Newton debated the benefits of using approaches which were more mathematical and more experimental in a methodical way. Still, philosophical perspectives, conjectures, and presuppositions, often overlooked, remain necessary in natural science. Systematic data collection, including discovery science, succeeded natural history, which emerged in the 16th century by describing and classifying plants, animals, minerals, and so on. Today, "natural history" suggests observational descriptions aimed at popular audiences.

### **3. Answer the questions.**

#### **1. What is natural science?**

#### **4. Read the sentences. Then circle T (True) or F (False).**

1. Natural science can be divided into two main branches: life science and psychological science.
2. These branches of natural science may be further divided into one specialized branches.
3. Old natural science succeeded more classical approaches to natural philosophy.
4. Galileo, Kepler, Descartes, Bacon, and Newton debated the benefits of using approaches which were more mathematical and more experimental in a methodical way.

#### **5. Find the Ukrainian equivalent to the following words and phrases.**

- |                        |                  |
|------------------------|------------------|
| 1. prediction          | не помічати      |
| 2. peer review         | припущення       |
| 3. reproducibility     | досягти успіху   |
| 4. validity            | достовірність    |
| 5. scientific advances | вимір            |
| 6. measurement         | науковий прогрес |
| 7. to succeed          | відтворюваність  |
| 8. conjecture          | припущення       |
| 9. presupposition      | експертна оцінка |
| 10. to overlook        | прогноз          |

#### **6. Retell the text: "Natural science".**

## SELF-STUDY

### IS EARTH A LIVING ORGANISM?

#### I. VOCABULARY

**1. Find the Ukrainian equivalent to the following words and phrases.**

a) a community of plants	1. харчовий ланцюг
b) primary producers	2. хижак
c) a prey	3. середовище існування
d) a delicate balance	4. суворі місця
e) detritivores	5. сонячне випромінювання
f) the harsh places	6. вирубка лісів
g) hotspots	7. випаровування
h) to interact with each other	8. енергія, що поглинається
i) to harvest energy	9. жити в безпосередній близькості один від одного
j) habitat	10. здобич
k) a consumer	11. травоядні
l) solar radiation	12. органічні складові
m) biotic	13. хлорофіл
n) a predator	14. взаємодіяти один з одним
o) chlorophyll	15. території з вимираючими видами тварин
p) scavengers	16. група рослин
q) deforestation	17. наявність поживних речовин
r) the food chain	18. мертві тканини

s) biodiversity	19.випаровування вологи рослинами
t) symbiosis	20.біотичні фактори
u) transpiration	21.абіотичні фактори
v) organic constituents	22.детритофаги
w) evaporation	23.біологічна різноманітність
x) carnivores	24.редуценти
y) precipitation	25. симбіоз
z) herbivores	26.природна діяльність
aa) abiotic	27.харчова мережа
bb) to live in close proximity to each other	28.первинні продуценти
cc) decomposers	29.хижаки
dd) the captured energy	30.падальщики
ee) the availability of nutrients	31.поглинати енергію
ff) natural activity	32.споживач
gg) dead tissues	33.крихка рівновага
hh) a food web	34.опад

## 2. Match the terms with their definitions.

- 1.atmosphere**      a. Concept of Earth as a self-regulating living thing.
- 2.biosphere**      b. Rigid outermost shell or layer of a rocky planet; land is part of the lithosphere.
- 3.Gaia hypothesis** c. Layer of gases that surrounds a planet; held in place by gravity.
- 4.homeostasis**      d. Tendency of a system to maintain a stable internal environment.

- 5.hydrosphere** e. Combined mass of water found on, under, and over the surface of a planet.
- 6.lithosphere** f. Part of Earth that supports life, including the crust, water, and atmosphere.

### **3. Read and translate the text.**

#### **Is Earth a living organism?**

Most scientists agree that the Earth itself is not a living thing. However, the Earth does have some aspects of life. Some scientists argue that the Earth maintains homeostasis, a stable state, just like a living organisms.

#### **The Biosphere**

The highest level of ecological organization is the biosphere. It is the part of Earth, including the air, land, surface rocks, and water, where life is found. Parts of the lithosphere, hydrosphere, and atmosphere make up the biosphere. The lithosphere is the outermost layer of the Earth's crust; essentially land is part of the lithosphere. The hydrosphere is composed of all the areas that contain water, which can be found on, under, and over the surface of Earth. The atmosphere is the layer of gas that surrounds the planet. The biosphere includes the area from about 11,000 meters below sea level to 15,000 meters above sea level. It overlaps with the lithosphere, hydrosphere, and atmosphere. Land plants and animals are found on the lithosphere, freshwater and marine plants and animals are found in the hydrosphere, and birds and other flying animals are found in the atmosphere. Of course, there are countless bacteria, protists, and fungi that are also found in the biosphere.

#### **Is the Biosphere Living?**

The Gaia hypothesis states that the biosphere is its own living organism. The hypothesis suggests that the Earth is self-regulating and tends to achieve a stable state, known as homeostasis. For example the composition of our atmosphere stays fairly consistent, providing the ideal conditions for life. When carbon dioxide levels increase in the atmosphere, plants grow more quickly. As their growth continues, they remove more carbon dioxide from the atmosphere. In this way, the amount of carbon dioxide stays fairly constant without human intervention.

For a better understanding of how the biosphere works and various dysfunctions related to human activity, scientists have simulated the biosphere in small-scale models. Biosphere 2 is a laboratory in Arizona that contains 3.15 acres of closed ecosystems. Ecosystems of Biosphere 2 are an ocean ecosystem with a coral reef,

mangrove wetlands, a tropical rainforest, a savannah grassland and a fog desert. Additional biosphere projects include BIOS-3, a closed ecosystem in Siberia, and Biosphere J, located in Japan.

#### **4. Answer the questions.**

1. What is the biosphere?
2. Distinguish between the lithosphere, atmosphere and hydrosphere.
3. Give an example of how Earth is self-regulating.

#### **5. Reading**

##### **a. Read and translate the text.**

##### **What is an Ecosystem?**

An ecosystem, a term very often used in biology, is a community of plants and animals interacting with each other in a given area, and also with their non-living environments. The non-living environments include weather, earth, sun, soil, climate and atmosphere. The ecosystem relates to the way that all these different organisms live in close proximity to each other and how they interact with each other. For instance, in an ecosystem where there are both rabbits and foxes, these two creatures are in a relationship where the fox eats the rabbit in order to survive. This relationship has a knock on effect with the other creatures and plants that live in the same or similar areas. For instance, the more rabbits that foxes eat, the more the plants may start to thrive because there are fewer rabbits to eat them.

Ecosystems can be huge, with many hundreds of different animals and plants all living in a delicate balance, or they could be relatively small. In particularly harsh places in the world, particularly the North and South Poles, the ecosystems are relatively simple because there are only a few types of creatures that can withstand the freezing temperatures and harsh living conditions. Some creatures can be found in multiple different ecosystems all over the world in different relationships with other or similar creatures. Ecosystems also consist of creatures that mutually benefit from each other. For instance, a popular example is that of the clown fish and the anemone – the clown fish cleans the anemone and keeps it safe from parasites as the anemone

stings bigger predators that would otherwise eat clown fish.

At a basic functional level, ecosystem generally contains primary producers (plants) capable of harvesting energy from the sun through the process called photosynthesis. This energy then flows through the food chain. Next come consumers. Consumers could be primary consumers (herbivores) or secondary consumers (carnivores). These consumers feed on the captured energy. Decomposers work at the bottom of the food chain. Dead tissues and waste products are produced at all levels. Scavengers, detritivores and decomposers not only feed on this energy but also break organic matter back into its organic constituents. It is the microbes that finish the job of decomposition and produce organic constituents that can again be used by producers.

Energy that flows through the food chain i.e. from producers to consumers to decomposers is always inefficient. That means less energy is available at secondary consumers level than at primary producers level. Its not surprising but amount of energy produced from place to place varies a lot due to amount of solar radiation and the availability of nutrients and water.

An ecosystem can be destroyed by a stranger. The stranger could be rise in temperature or rise in sea level or climate change. The stranger can affect the natural balance and can harm or destroy the ecosystem. Its a bit unfortunate but ecosystems have been destroyed and vanished by man-made activities like deforestation, urbanization and natural activities like floods, storms, fires or volcanic eruptions.

## **2. Read the sentences. Then circle T (True) or F (False).**

- |  |   |   |
|--|---|---|
| 1. An ecosystem is a community of living organisms interacting as a system.              | T | F |
| 2. Each kind of relationships has a knock on effect with the other creatures and plants. | T | F |
| 3. Ecosystems are always large, they couldn't be small.                                  | T | F |
| 4. Ecosystems consist of creatures that mutually benefit                                 | T | F |

from each other.

- |   |   |   |
|---|---|---|
| 5. Each creature has just one ecosystem to exist in.                            | T | F |
| 6. Microbes finish the job of decomposition and produce organic constituents.   | T | F |
| 7. The process of harvesting energy from the sun is called photosynthesis.      | T | F |
| 8. Any kind influence on the natural balance can harm or destroy the ecosystem. | T | F |

### 3. Answer the questions.

1. Choose the phrase that correctly finishes this statement: "A species is..."
  - A. A specific part of the abiotic environment
  - B. A way of describing all the living parts of an ecosystem
  - C. A group of organisms that can successfully mate with each other and reproduce
  - D. Part of the natural decomposing materials in soil

2. Ecology is the study of the
  - A. Abiotic parts of the environment, such as climate, air, and soil
  - B. Biotic parts of the environment, such as animals and plants
  - C. Interactions between organisms
  - D. Interactions between organisms as well as the interactions between organisms and their environment

3. What is an ecosystem?
  - A. All the interacting organisms that live in an environment and the abiotic parts of the environment that affect the organisms
  - B. A person who observes and studies the interactions between the biotic and abiotic parts of the environment
  - C. The relationship among the biotic parts of the environment
  - D. The relationship between all the abiotic elements of a pond

4. An organism that creates its own food is called



- A. A producer
- B. A consumer
- C. A scavenger
- D. A decomposer
- E. A carnivore

5. A consumer is

- A. An organism that produces its own food
- B. An organism that does not need food to survive
- C. An abiotic organism
- D. An organism that cannot produce its own food

6. Which of the following two organisms are producers?

- A. Plants and phytoplankton
- B. Plants and consumers
- C. Consumers and phytoplankton
- D. Phytoplankton and chlorophyll
- E. Phytoplankton and herbivores

7. A species of plant or animal that is facing imminent extinction or extirpation is said to be

- A. Extinct
- B. Extirpated
- C. Endangered
- D. Threatened
- E. Special concern

## **6. Reading.**

**a. Read and translate the text.**

### **Types of Ecosystem**

There are very many types of ecosystems out there, but the three major classes of ecosystems, sometimes referred to as ‘biomes’, which are relatively contained, are the following:

- i. Freshwater Ecosystems
- ii. Terrestrial Ecosystems
- iii. Ocean Ecosystems

### **Freshwater Ecosystems**

These can then be broken up into smaller ecosystems. For instance, in the freshwater ecosystems we find:

- iv. **Pond Ecosystems** – These are usually relatively small and contained. Most of the time they include various types of plants, amphibians and insects. Sometimes they include fish, but as these cannot move around as easily as amphibians and insects, it is less likely, and most of the time fish are artificially introduced to these environments by humans.
- v. **River Ecosystems** – Because rivers always link to the sea, they are more likely to contain fish alongside the usual plants, amphibians and insects.

These sorts of ecosystems can also include birds because birds often hunt in and around water for small fish or insects.

Freshwater ecosystems are those that are contained to freshwater environments. This includes, but is not limited to, ponds, rivers and other waterways that are not the sea (which is, of course, saltwater and cannot support freshwater creatures for very long). Freshwater ecosystems are actually the smallest of the three major classes of ecosystems, accounting for just 1.8% of the total of the Earth’s surface. The ecosystems of freshwater systems include relatively small fish (bigger fish are usually found in the sea), amphibians (such as frogs, toads and newts), insects of various sorts and, of course, plants. The absolutely smallest living part of the food web of these sorts of ecosystems is plankton, a small organism that is often eaten by fish and other small creatures.

### **Terrestrial Ecosystems**

Terrestrial ecosystems are many because there are so many different sorts of places on Earth. Some of the most common terrestrial ecosystems that are found are the following:

- vi. **Rainforests** – Rainforests usually have extremely dense ecosystems because there are so many different types of animals all living in a very small area.
- vii. **Tundra** – As mentioned above, tundra usually have relatively simple ecosystems because of the limited amount of life that can be supported in these harsh conditions.
- viii. **Deserts** – Quite the opposite of tundra in many ways, but still harsh, more animals live in the extreme heat than live in the extreme cold of Antarctica, for instance.
- ix. **Savannas** – These differ from deserts because of the amount of rain that they get each year. Whereas deserts get only a tiny amount of precipitation every year, savannas tend to be a bit wetter which is better for supporting more life.
- x. **Forests** – There are many different types of forests all over the world including deciduous forests and coniferous forests. These can support a lot of life and can have very complex ecosystems.
- xi. **Grasslands** – Grasslands support a wide variety of life and can have very complex and involved ecosystems.

Since there are so many different types of terrestrial ecosystems, it can be difficult to make generalizations that cover them all.

Because terrestrial ecosystems are so diverse, it is difficult to make generalizations about them. However, a few things are true almost all of the time. For instance, most contain herbivores that eat plants (that get their sustenance from the sun and the soil) and all have carnivores that eat herbivores and other carnivores. Some places, such the poles, contain mainly carnivores because not plant life grows. A lot of animals and plants that grow and live in terrestrial ecosystems also interact with freshwater and sometimes even ocean ecosystems.

## Ocean Ecosystems

Ocean ecosystems are relatively contained, although they, like freshwater ecosystems, also include certain birds that hunt for fish and insects close to the ocean's surface. There are different sorts of ocean ecosystems:

- xii. **Shallow water** – Some tiny fish and coral only live in the shallow waters close to land.
- xiii. **Deep water** – Big and even gigantic creatures can live deep in the waters of the oceans.
- xiv. **Warm water** – Warmer waters, such as those of the Pacific Ocean, contain some of the most impressive and intricate ecosystems in the world.
- xv. **Cold water** – Less diverse, cold waters still support relatively complex ecosystems. Plankton usually forms the base of the food chain, followed by small fish that are either eaten by bigger fish or by other creatures such as seals or penguins.

Ocean ecosystems are amongst some of the most interesting in the world, especially in warm waters such as those of the Pacific Ocean. This is not least because around 75% of the Earth is covered by the sea, which means that there is lots of space for all sorts of different creatures to live and thrive. There are actually three different types of oceanic ecosystems: shallow waters, deep waters and the deep ocean surface.

These plankton and other plants that grow in the ocean close to the surface are responsible for 40% of all photosynthesis that occurs on Earth. From this there are herbivorous creatures that eat the plankton, such as shrimp, that are then themselves usually eaten by bigger creatures, particularly fish. Interesting, in the deep ocean, plankton cannot exist because photosynthesis cannot occur since light cannot penetrate that far into the ocean's depths. Down in the deepest depths of the ocean, therefore, creatures have adapted very strangely and are amongst some of the most fascinating and the most terrifying and intriguing living creatures on Earth.

**b. Answer the questions.**

1. What makes up an ecosystem?
2. How can change in one part of an ecosystem affect change in other parts of the ecosystem?
3. Why is sunlight essential to life on Earth?
4. How do humans have an impact on the diversity and stability of ecosystems?

## THEME II. ECOLOGY



### 1. VOCABULARY

moisture	волога
nutrient	поживна речовина
predetermine	передв'їщувати
to affect	впливати, уражати
variable	змінний, мінливість
on greater scale	у більшому масштабі
graze	пастися
irrigation	зрошення

### 2. Read and translate the text.

For millennia man had to struggle against nature in order to survive and develop. However, as economy developed and the scientific and technological revolution increased, the correlation of forces between man and nature changed. Man gradually grew so strong that he dared to declare himself the “king of nature” and contemplated conquering and remolding nature to his liking. As a result his economic achievements began to have an increasingly negative effect on nature, on the biosphere.

Here are some figures.

Road and factory construction and industrial development take away to 7 million hectares of land every year. Forests disappear at a rate of some 20 hectares a minute. According to the International Union for Conservation of Nature and Natural Resources, 76 animal species and several hundred plant species of the Earth became extinct in the last 60 years alone.

Each year the world economy ejects into the atmosphere over 200 million of carbon monoxide, more than 50 million tons of diverse hydrocarbons, over 120 million tons of ash and nearly 150 million tons of sulphur dioxide. They fall back upon the Earth in the form of “acid rains”.

The threat of ecological catastrophe approaches simultaneously from different directions: pollution and impoverishment of the seas, oceans, rivers, underground waters, pollution and destruction of woods and agricultural grounds, pollution of the atmosphere, reduction of the protective ozone layer, dramatic changes of climate, rising of the ocean level, accumulation of deadly radioactive substances made by uncountable nuclear power stations, impoverishment of the vegetative and animal world, exhaustion of resources of the planet.

All these ecological problems are caused by disturbing the natural balance in the Earth’s ecosystem. Ecosystem is a community of plants, animals and homo sapiens (as a part of the world ecosystem) within a particular habitat. To study the ecosystem in relation to their environment is the aim of the science called ecology. Nowadays the words “ecology” is on everyone’s lips because our everyday life, our health and, in the end, the survival of the mankind depend on the solution of ecological problems facing the man.

### ***3. Determine whether the statements are correct.***

1. All ecological problems are caused by solar activity.
2. Carbon monoxide is produced only by cars.
3. International Ecological organization is called the International Union for Conservation of Nature and Natural Resources.



4. Man often calls himself a “king of seas”.
5. Ecology is a science studying insects.
6. Economic activity usually has a negative effect on nature.

### **4. Translate the following text.**

Ecology is a study of the relationship

of plants and animals to their physical and biological environment. Life involves all systems—living organisms (biotic factors) or nonliving variables (abiotic factors), such as water, soil, climate, light, and oxygen. All interacting biotic and abiotic factors make up an ecosystem. The physical environment includes light and heat or solar radiation, moisture, wind, oxygen, carbon dioxide, nutrients in soil, water, and atmosphere. The biological environment includes organisms of the same kind as well as other plants and animals.

Ecology originated from natural history in the end of the XIX century and was developing rapidly after the Second World War in connection with the growing rates of the population and negative results of the anthropogenic activity – irrationally high utilization of natural resources and accumulation of tremendous amounts of unutilized wastes polluting air, water and soil.

The present ecological situation has been predetermined by the entire earlier development of the civilization. Now in the whole world great attention is paid to the harmful effects of the human activity on natural environment which have an international importance. All the problems that appear at the age of scientific and technological revolution are ecological, because they are connected with environmental protection and with the future of civilization. For example: the problems of demography and energetics, economics and nutrition, legal, social, political, pedagogical, etc. Environment is all of the external factors affecting an organism.

Like all the other living beings, humans have clearly changed their environment, but they have done so generally on a grander scale than have other species. Some of these changes such as the destruction of the world's tropical rain forests to create grazing land for cattle or the drying up of almost three-quarters of the Aral Sea, once the world's forth- largest freshwater lake, for irrigation purposes have led to altered climate patterns, which in turn have changed the distribution of species of animals and plants.

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### **5. Answer the following questions.**

1. What does the physical environment include?
2. What does the biological environment include?
3. What is attention of the whole world paid to now?
4. All the problems that appear at the age of scientific and technological revolution are ecological, aren't they? Why?
5. How have humans changed their environment?

### **6. Find in the text the English equivalents of the following Ukrainian word combinations.**

взаємозв'язок рослин і тварин, так само, як і; зумовлений розвитком, стати свідомим чогось, шкідливий ефект, людська діяльність, пов'язаний з, природне середовище, міжнародне значення, захист оточуючого середовища, впливати на організм, неповага людини до, піклуватися про, складова частина, велика кількість, мати справу з, робити можливим, у певній місцевості, по відношенню до, концентруватися на, перемінна величина, взаємодія біотичних та абіотичних факторів, руйнування лісів, в більшому масштабі, кліматична модель.

### **7. Retell the text: "Ecology".**

## SELF-STUDY

### AIR POLLUTION

#### Vocabulary

air pollution	забруднення повітря
harmful	шкідливий
appearance	вигляд
supersonic jet airliner	надзвуковий реактивний літак
throw out	викидати
decide	вирішувати
space flight	космічний політ
break through	прориватися крізь
envelope	обгортати
significant	значний
based on burning	заснований на спалюванні
common	звичайний
dangerous way	небезпечний засіб
smog – smoke + fog	чорний туман
cause health problems	викликати проблеми здоров'я
precipitation	осад
form acid rain.	утворювати кислотний дощ
capable of surviving	здатні вижити
acidic conditions	кислотні умови
wind	вітер
fall	падати
support	підтримувати

#### I. Translate the following text.



When something harmful is added to the environment, it causes the pollution. As a result of the antropogenic activity atmospherepollution happens, which results in changes in atmosphere air chemical composition. The appearance of the supersonic jet airliners has presented many

problems. These airliners use up tones of oxygen and throw out over 150,000 tons of water vapor into the stratosphere every day, increasing the temperature. It has to be decided if this is right in ecological terms. Space flights that break through the atmosphere envelope should be studied as to their effects on nature. A significant portion of industry and transportation is based on burning fossil fuels, such as gasoline. As these fuels are burned, chemicals and particulate matter are released into the atmosphere.

The most common substances which pollute the air contain carbon, sulfur and nitrogen. These chemicals interact with one another and with ultraviolet radiation in sunlight in various dangerous ways. Smog, usually found in urban areas with large numbers of automobiles, is formed when nitrogen dioxide is broken down by sunlight, releasing ozone and other harmful substances. Smog can cause serious health problems. When sulfur dioxide and nitrous oxide are transformed into sulfuric acid and nitric acid in the atmosphere and come back on earth in precipitation, they form acid rain.

Air pollutions are classified as organized and nonorganized, heated and cold, principal or supplementary production, unpurified and purified wastes.

**Acid rain.** Acid rain is a serious global problem because few species are capable of surviving in the face of such acidic conditions. It comes from industrial countries, but wind carries it and a lot of falls on these countries' neighbors. Acid rain is a type of pollution which may take the form of snow, fog, or a dry form of precipitation and they can be carried long distances from the source before they are deposited. Acid rain has made numerous lakes so acidic that they no longer support fish populations. Acid rain is also thought to be responsible for the decline of many forest ecosystems worldwide.

---

## **2. Write whether these statements are true or false and give the correct variant.**

1. Atmosphere pollution happens because of hurricanes. 2. Pollution results in changing chemical composition of the air. 3. Transportation is based on

burning fossil fuels, such as hydrogen. 4. Carbon, sulfur and nitrogen. interact in various safe ways. 5. Smog, is rarely found in urban areas 6. Sulfur dioxide and nitrous oxide are transformed into sulfuric acid and nitric acid in the atmosphere. 7. Precipitation may fall on the ground as acid rain or snow. 8. Waste can not be purified.

### **3. Match the synonyms.**

1) contamination, precipitate, set free, solve, ecology, gasoline, remove, split, convert, return.

2) release, decide, environment, transform, pollution, fuel, throw out, come back, throw down, break down.

### **4. Translate the following sentences.**

1. We are to start an urgent campaign in order to preserve environment. 2. We know many pressure and interest groups to be searching for the solution to the problem of pollution. 4. Atmospheric pollution is considered to have been the result of the antropogenic activity. 3. To start a program of emergency conservation measures will decrease pollution. 5. The continental pollution is said to destroy the human habitat. 6. Sulfur dioxide and nitrous oxide in the atmosphere come back on earth in precipitation to form acid rain. 7. Acid rain is also thought to be responsible for the decline of many forest ecosystems worldwide. 8. To have made his discoveries Darwin observed nature.

### **5. Translate the following sentences.**

1. Something harmful being added to the environment, it causes the pollution. 2. Atmosphere pollution is said to result in changes in air chemical composition. 3. The airliners using up tones of oxygen, their appearance has presented many problems. 4. The airliners throwing out over 150,000 tons of water vapor into the stratosphere every day, it increases the temperature. 5. Acid rain is also thought to be responsible for the decline of many forest ecosystems worldwide. 6. When removed the wastes were analysed for toxic substances. 7. Everybody knows smog to

cause serious health problems. 8. For ultraviolet radiation not to be so dangerous the air should not be contaminated with chemicals.

**6. Translate the following sentences into English.**

1. Чому ми повинні дихати забрудненим повітрям? 2. Відомо, що кислотні дощі розносяться вітром до інших країн. 3. Літаки – швидкий вид транспорту, але вони споживають багато кисню і викидають водяну пару. 4. Є причини турбуватися про майбутнє, і вони дуже серйозні. 5. Минулі покоління не дуже думали про те, яку екологію вони нам залишать. 6. Необхідно, щоб діти мали екологічну практику у школі. 7. Оскільки сірка, азот та вуглець є найбільшими забруднювачами повітря, необхідно зменшити їх викиди у атмосферу. 8. Вважають, що кислотні дощі є причиною зубожіння лісових екосистем.

## THEME III. ECOLOGICAL SITUATION IN UKRAINE

### 1. VOCABULARY

pollution	забруднення
reach a level	досягти рівня
heavy industry	важка промисловість
line the banks	стояти на берегах
nuclear power plants	ядерні електростанції
fiendish	недобрий
in the vicinity of	поблизу
poisonous discharges	отруйні викиди
decline, drop	падати
principal consumer	головний споживач
approximately	приблизно
power supplies	постачання запасів енергії
household	побутовий
hasard	ризик, хвороба
mine, pit	шахта
rob	грабувати
violation of the law	порушення закону
evil intention	злий намір

#### I. Translate the following text.



Ecological situation in Ukraine is qualified as a crisis due to the deformed structure of national economy with mining branches of production and energy and resource capacious technologies predominating, without building effective purifying stations.

Industrial pollution has reached a critical level in Ukraine. Heavy industry and chemical plants line the banks of large rivers such as the Dnieper, Siversky Donets, and Buh. Nuclear power plants, following some fiendish logic, are found in the vicinity of major cities, like giant water boilers.

While it is true that poisonous discharges in the atmosphere have dropped due to the economic decline, water and the ground present an altogether different picture.

Among the principal consumers of water are industry, agriculture household, housing and municipal services. Industrial water is indigestible. The Green Party's attempt to draw public attention to the water situation is still in vain.

There are horrible projects that are totally unjustified ecologically, like transferring Dnieper water to the Danube. Fish is killed in the Dnieper with organic waste from nuclear and chemical plants. Hand skin abscess are an occupational hazard for fishermen of the Kakhovka water reservoir. Subterranean salty and dirty seas in place of closed pits, oil and gas boreholes fill drinking wells with salt water.

Cutting out forests businessmen are robbing the country of its valuable natural resource and undermining our ecology and climate. Neglecting fields resulted in half of the crops drying out. Misusing meadows, fields, and green city zones, building cottages there spoil the beauty of Ukraine. Forest fires because of people's carelessness or evil intentions burn out kilometres of our green lungs. Chemicals are spilt on the railways and the adjacent territory poisoning population and causing diseases. Chernobyl disaster took and is taking the lives of people. But even more terrible disaster is the uncontrolled economy brought about by political crisis and violations of the law.

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## **2. Write whether these statements are true or false and give the correct variant.**

1. Effective purifying stations are built. 2. Industrial pollution has reached a critical level in Ukraine. 3. Heavy industry and chemical plants are built far from large rivers. 4. Nuclear power plants are found in the vicinity of major cities, like giant water boilers. 5. Poisonous discharges in water and the ground have not dropped. 6. The Green Party's attempt to draw public attention to the water situation is very effective. 7. There are horrible projects that are totally unjustified

ecologically. 8. Subterranean salty and dirty seas in place of closed pits, oil and gas boreholes fill drinking wells with salt water.

### **3. Match the synonyms.**

1) contamination, atomic, situated, achieve, fall, measure, unclean, mine, construct, illness.

2) pit, pollution, level, disease, dirty, build, drop, found, nuclear, reach.

### **4. Translate the sentences paying attention to the introductory and connective words.**

1. Ecological situation in Ukraine is qualified as a crisis. 2. Due to the deformed structure of national economy mining branches of production and energy and resource capacious technologies are predominating. 3. Ukraine developed industry without building effective purifying stations. 4. Nuclear power plants are like giant water boilers. 5. While poisonous discharges in the atmosphere have dropped with soil it is quite different. 6. Among the principal consumers of water are industry and agriculture 7. The Green Party's attempts to draw public attention to the water situation are but in vain. 8. Hand skin abscess are an occupational hazard for fishermen.

### **5. Translate the following sentences.**

1. Екологічна ситуація в Україні може бути названа критичною. 2. Людям треба, щоб промисловість була нешкідлива для здоров'я. 3. Побудувавши заводи на берегах рік, люди спричиняють шкоду рікам. 4. Вода, використана заводами, непитна. 5. Відомо, що від отруйних викидів гине риба в ріках. 6. Промисловість, яка отрує атмосферу, має бути під контролем. 7. Нам всім слід контролювати чистоту своїх міст. 8. Вирубуючи ліси, будуючи котеджі на полях, люди знищують умови для свого життя.



## SELF-STUDY

### RELATIONSHIP BETWEEN ORGANISMS

#### Vocabulary

herbivore	травоїдний
carnivore	м'ясоїдний
chain	ланцюг
cross linkages	пересічні зв'язки
exceed	пере вищувати
consumer	споживач
decomposer	розкладач
fungi	грибки
omnivorous	всеїдний
mammal	ссавець
reduce	скорочувати
increase	збільшувати
violate	порушувати
diversity	різноманіття
inherent	притаманний
com (community)	спільнота
disease	хвороба

#### 1. Translate the following text.



Ecologists are interested not only in the flow of energy through an ecosystem but also in the complex interrelationships of all organisms within a community. One of the easiest ways to understand the interrelationships of organisms in a community is to study which organisms eat which other organisms. The simplest direct-line relationships from the primary producer – a green plant – to a herbivore to a carnivore is the food chain. There are many food chains within any

single ecosystem, and there are many cross linkages from one food chain to another, so that the entire food web for a community of organism results.

Food chains are usually quite short, seldom exceeding four or five consumers. Organisms at all levels of food web die and decay. The bodies of all dead plants and animals are returned to the soil through the action of decomposers, mainly bacteria, fungi, and microorganisms. Man is in a unique place in the earth's world web. He is omnivorous and operates on several trophic levels, eating plants, insects, mammals, birds, fish and other organisms. Man also often shortens the food chain and reduces the number of organisms in the system in order to achieve increased productivity of a certain organism. One important ecological principle man violates in order to produce food for himself is the principle that diversity in nature appears to produce stability of an ecosystem. The close cooperative interacting structure of the many kinds of plants and animals in an ecosystem produces an inherent stability and inertia to catastrophic change. Neither climate fluctuation, insects invasion, nor virus infection itself will be able to destroy the ecosystem.

Violating this principle, man plants large field of corn and only corn. The virus, fungus, or insect may attack the corn crop. A monoculture is highly unstable to damage by climate, insects, or disease. Man must have monoculture for food, but the cost of maintenance for stability and productivity is very high indeed.

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**2. Find in the text the derivatives of the following words. Define these parts of speech and translate them into Ukrainian.**

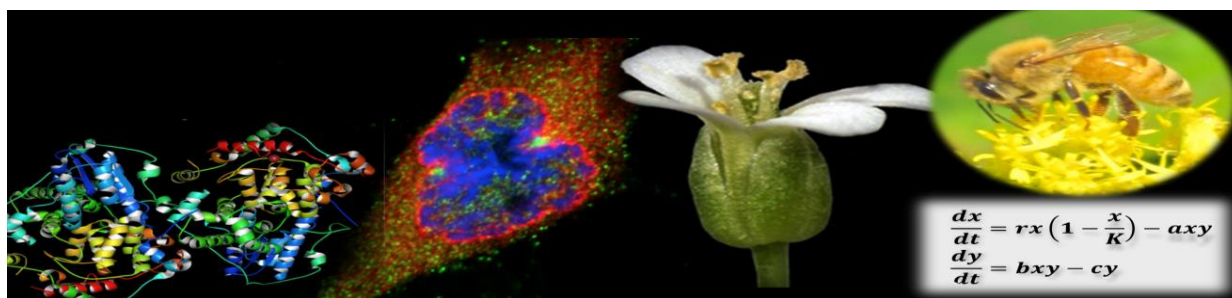
relation, produce, exceed, consume, die, active, decomposed, main, bacterial, operator.

**3. Fill in the gaps. Copy and translate the sentences.**

*violates, diversity, interrelationships, reduces, omnivorous, community, decomposers, web.*

Ecologists are interested also in the complex \_\_\_\_ of all organisms within a community. The entire food web for a \_\_\_\_ of organism results. Organisms at all levels of food \_\_\_\_ die and decay. The bodies of all dead plants and animals are returned to the soil through the action of \_\_\_\_\_. Man is \_\_\_\_\_. Man often shortens the food chain and \_\_\_\_ the number of organisms in the system. Man \_\_\_\_ one important ecological principle in order to produce food for himself. \_\_\_\_ in nature appears to produce stability of an ecosystem.

## THEME IV. BIOLOGY – THE SCIENCE OF LIFE



### 1. Answer the following questions.

1. What is the subject matter of biological science?
2. What branches of modern biology can you name?
3. Why did you choose to study biology?

### 2. Listen to the following words and practice their pronunciation.

*Biology, science, discipline, zoology, botany, molecule, molecular, population, biophysics, biochemistry, nucleic acid, protein, heredity, organismal, cellular, multicellular, developmental, physiology, nervous, neurophysiology, behaviour, ethology, evolutionary, gene, genetics, ecology, natural, habitat, sociobiology, human, biomedicine, anthropology.*

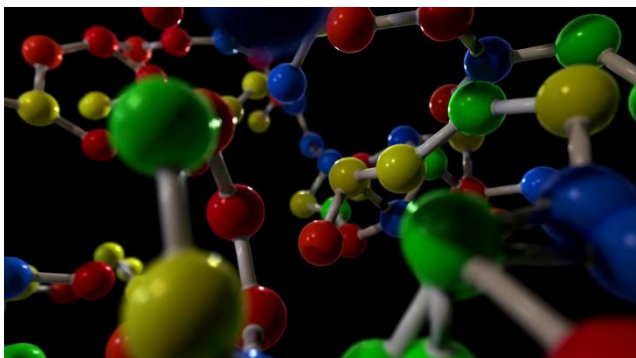
## READING COMPREHENSION AND VOCABULARY DEVELOPMENT

### 1. Match each word on the left to its correct definition on the right.

- |                    |   |
|--------------------|---|
| 1) encompass, v    | a) a mutual or reciprocal action or influence;                          |
| 2) scope, n        | b) to stretch or extend across, over, or around;                        |
| 3) segregation, n  | c) lack of due care or attention; negligence;                           |
| 4) cogent, adj     | d) separation, setting apart;   |
| 5) span, v         | e) the range of things that a subject, activity, book, etc. deals with; |
| 6) breakthrough, n | f) the natural home of a plant or animal;                               |
| 7) interaction, n  | g) forcefully convincing; as of an area;                                |
| 8) neglect, n      | h) something that indicates the farthest limit,                         |

- 9) boundary, n      i) to include entirely or comprehensively;  
 10) habitat, n      j) a significant development or discovery, esp. in science;  
 11) fluid, adj      k) (1) liquid; (2) constantly changing or apt to change.

**2. Read the following text paying attention to the highlighted words. Explain or interpret the contextual meaning of the underlined phrases.**



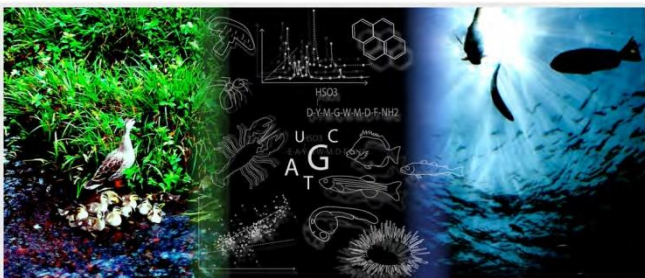
Biology is the science of life. The term biology was introduced in Germany in 1800 and popularized by the French naturalist Jean-Baptiste de Lamarck as a means of encompassing the growing number of disciplines involved with the study of living forms. The scope of biological science is so broad that it has been subdivided into separate branches for convenience of study. Despite apparent differences, all the subdivisions are interrelated by basic principles that underlie all biological manifestations.

It was once the custom to separate the study of plants (botany) from that of animals (zoology), and the study of the structure of organisms (morphology) from that of function (physiology). The English zoologist Thomas Henry Huxley was the first to insist that the conventional segregation of zoology and botany was intellectually meaningless and that all living things should be studied in an integrated way. Huxley's approach to the study of biology is even more cogent today, because scientists now realize that many lower organisms are neither plants nor animals. The limits of the science, however, have always been difficult to determine, and as the scope of biology has shifted over the years, its subject areas have been changed and reorganized.

The current approach to the study of living things is based on the levels of biological organization involved — whether molecules, cells, individuals, or populations — and on the specific subject matter under investigation — for example, structure and function, types and classification, and growth and development.

Molecular biology, which spans biophysics and biochemistry, has made the most fundamental contributions to modern biology. Much is now known about the structure and action of nucleic acids and protein, the key molecules of all living matter. The discovery of the mechanism of heredity was a major breakthrough in modern science. Another important advance was in understanding how molecules conduct metabolism, that is, how they process the energy needed to sustain life.

Cellular biology is closely linked with molecular biology. To understand the functions of the cell — the basic structural unit of living matter — cell biologists study its components on the molecular level. Organismal biology, in turn, is related to cellular biology, because the life functions of multicellular organisms are governed by the activities and interactions of their cellular components. The study of organisms includes their growth and development (developmental biology) and how they function (physiology). Particularly important are investigations of the brain and nervous system (neurophysiology) and animal behaviour (ethology).



Population biology became firmly established as a major subdivision of biological studies in the 1970s. Central to this field is evolutionary biology, in which the contributions of Charles Darwin have been fully appreciated after a long period of neglect. Population genetics, the study of gene changes in populations, and ecology, the study of populations in their natural habitats, have been established subject areas since the 1930s. These two fields were combined in the 1960s to form a rapidly developing new discipline often called, simply, population biology. Closely associated is a new development in animal-behaviour studies called sociobiology, which focuses on the genetic contribution to social interactions among animal populations.

Biology also includes the study of humans at the molecular, cellular, and organismal levels. If the focus of investigation is the application of biological knowledge to human health, the study is often termed biomedicine. Human

populations are by convention not considered within the province of biology; instead, they are the subject of anthropology and the various social sciences. The boundaries and subdivisions of biology, however, are as fluid today as they have always been, and further shifts may be expected.

### **3. USEFUL PHRASES.**

**Study the following phrases and use them in the sentences of your own.**

*as a means of* – як засіб

*under investigation* – що вивчається

*in turn* – у свою чергу; у відповідь

### **4. Decide whether the following statements are true or false according to the text.**

1. Different branches of biology are connected with each other.
2. According to Huxley it is logical to divide biology into zoology and botany.
3. The subject of biological studies has changed for the past years.
4. Biophysics is a part of molecular biology whereas biochemistry can be referred to cellular biology.
5. The principles and mechanisms of heredity were known to scholars in late middle ages.
6. Energy that is necessary for the maintenance of life in a cell is obtained in a process called replication.
7. Developmental biology, physiology, and ethology are the branches of organismal biology.
8. Population biology and sociobiology are concerned with the studies of humans.
9. Biomedicine is a branch of science that deals with animal treatment.

### **5. Find the English equivalents of the following words in the text.**

*Взаємопов'язані; звичайний, традиційний; сучасний, теперішній; внесок; поступ; здійснювати; підтримувати; оцінювати, цінувати; зосереджуватися, концентрувати увагу; застосування.*

### **6. Use the words from exercise 5 to fill in the blanks in the following sentences.**

1. Is it really necessary to \_\_\_\_\_ experiments on animals?
2. He did not fully \_\_\_\_\_ the significance of his invention.
3. All parts of the course are \_\_\_\_\_.
4. He was unable to \_\_\_\_\_ lasting relationships with women.
5. Their aim is to reduce \_\_\_\_\_ pollution levels in the Black Sea.
6. Einstein was awarded the Nobel Prize for his \_\_\_\_\_ to Quantum Theory.
7. \_\_\_\_\_ in medical science may make it possible for people to live for 150 years.
8. Acupuncture may work, but I still believe in a more \_\_\_\_\_ approach to medicine.
9. He felt he needed to \_\_\_\_\_ more on his research.
10. The possible \_\_\_\_\_ of this invention are limitless.

### Questions

#### 1. Read the following questions and identify their type.

1. What is biology?
2. Did life on Earth appear 3 million or 3 billion years ago?
3. Who was the inventor of the first microscope?
4. Is cell considered the basic unit of life?
5. The phenomenon of diversity of life has had a long history of study, hasn't it?
6. Do all living organisms reproduce?
7. I am going to study hard this semester, aren't I?

#### 2. Ask questions to the underlined words.

1. At the present time taxonomy is based on two major assumptions.
2. Metabolism is the most obvious hallmark of life.
3. Science is a uniquely human activity.
4. The history of science shows that generally accepted hypotheses are likely to be overturned by new discoveries.
5. For many centuries Europeans believed that they were superior to people from other regions of the earth.
6. The controlling factors in plant senescence and death are poorly understood.



7. Specialized structures help terrestrial plants reproduce without the assistance of liquid water. (2 questions)

8. Fungi and plants reproduce both sexually and asexually.

9. The Greeks believed that plants derived their nourishment from the soil only.

10. Botany as a pure science began in the 4th century BC with the Greek philosopher Theophrastus.

### ***LISTENING COMPREHENSION***

1. You are going to hear two fragments of a lecture about the history of our planet and life on it. Listen to the first fragment and answer the following questions. Before listening discuss the meaning of the words in the box below with your teacher

<b>big bang</b>	<b>cluster</b>	<b>mountain range</b>
<b>background</b>	<b>compress</b>	<b>plain</b>
<b>radiation permeate</b>	<b>melt</b>	<b>erode</b>
<b>be tuned to</b>	<b>radioactive decay</b>	<b>hydrogen</b>
<b>expand</b>	<b>core</b>	<b>carbon dioxide</b>
<b>collapse</b>	<b>crust</b>	<b>nitrogen</b>
<b>gravitational</b>	<b>mantle</b>	<b>water vapour</b>
<b>attraction</b>	<b>dense</b>	<b>dissolve</b>
<b>solid matter</b>	<b>silicate materials</b>	<b>lightning</b>
<b>aggregation</b>	<b>sea bed</b>	
<b>dust particles</b>		

1. When did the “big bang” occur?
2. Has the universe stopped expanding?
3. How can we “feel” the effects of the original explosion?
4. What do we call our galaxy?
5. When did our solar system shape up?
6. How were most of the planets built?

7. What is the composition of the earth's core and mantle?
  8. How thick is the earth's crust?
  9. Is the atmosphere we have now the same one that used to surround the earth about 5 billion years ago?
- 2. Write a short essay about biology using the vocabulary of Lesson 1. Get ready to present it.**

## THEME V: BACTERIA AND VIRUSES

### Bacteria

#### 1. Read and learn the following words:

- |   |   |
|---|---|
| 1. ancestor n предок                                | 34. petroleum n нафта                         |
| 2. available a доступний, наявний                   | 35. produce v виробляти, продукувати          |
| 3. bacteria n бактерії, бактерія                    | 36. recycle v використовувати повторно        |
| 4. bacterium n бактерія                             | 37. rock n [rOk] гірська порода               |
| 5. breakdown n розпад, розкладатися                 | 38. secrete v [sI'kri:t] виділяти             |
| 6. cause n,v причина, спричиняти                    | 39. sediment n осад, осадок                   |
| 7. chemist n хімік                                  | 40. sewage n ['sju:IG] нечистоти, стічні води |
| 8. convert v перетворювати                          | 41. soil n [soIl] ґрунт                       |
| 9. digest перетравлювати (їжу)                      | 42. solvent n розчин                          |
| 10. disease n хвороба                               | 43. teaspoon n чайна ложка                    |
| 11. environment навколишнє середовище               | 44. toxic a ['toksIk] токсичний               |
| 12. enzyme n ензим, фермент                         | 45. wastes n, pl [weIsts] відходи             |
| 13. exist v існувати                                |   |
| 14. feed v харчуватись, годувати                    |   |
| 15. ferment n фермент                               |   |
| 16. food n [fu:d] їжа                               |   |
| 17. germ n мікроб, бактерія, мікроорганізм, зародок |   |
| 18. include v [In'klu:d] включати, містити в собі   |   |
| 19. intestine n [In'testIn] кишечник                |   |
| 20. invisible a невидимий                           |   |
| 21. leftovers (pl.) n залишки                       |   |
| 22. master n майстер, спеціаліст                    |   |
| 23. matter n речовина, матерія                      |   |
| 24. medicine n ['medsin] ліки, медицина             |   |
| 25. microbe n ['maIkroub] мікроб                    |   |
| 26. microorganism n мікроорганізм, зародок          |   |
| 27. nature n природа                                |   |
| 28. nitrogen n азот                                 |   |
| 29. nutrient n поживна речовина                     |   |
| 30. organism n організм                             |   |
| 31. particle n часточка                             |   |
| 32. pathogen n патоген                              |   |
| 33. pesticides (pl.) n ['pestIsaIdz] пестициди      |   |

## 2. Read and translate the text:

### BACTERIA



Bacterium is the simplest and the smallest form of plant life, existing in air, water and soil, and in living and dead animals and plants, and sometimes it causes a disease.

One teaspoon full of rich soil is home to more than one billion bacteria. These microbes are nature's invisible master chemists recycling leftovers of everything else. For two billion years, bacteria lived alone and now nothing else could live without them. While one in a thousand is a pathogen or germ, the others work to breakdown or convert matter into nutrients that can be used by organisms for food. This includes 100 trillion bacteria in our intestines that help us digest our meals.

Bacteria clean up our environment by feeding on toxic wastes, petroleum, and sewage. Some bacteria make nitrogen more available to plants. Industries can culture microorganisms to produce medicines, pesticides, solvents, and even to separate metals from ore.



For thousands of years our ancestors have known that microorganisms secrete enzymes that are used in fermenting beer, wine, cheeses, breads, and many other foods.

### 3. Answer the questions:

1. What is bacterium?
2. How many bacteria can be in one teaspoon of rich soil?
3. What do these microbes do?
4. What is the role of bacteria in nature?
5. How do bacteria clean up our environment?
6. What do some bacteria make?
7. What kinds of microorganisms can industries culture?

8. What do you know about enzymes?

## VIRUSES

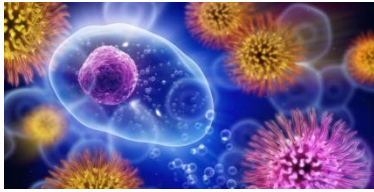
### 1. Read and learn the following words:

1. acid n кислота
2. bacteriophage n бактеріофаг
3. bite v [ baIt] кусати, жалити
4. cell n [ sel] клітина
5. coat n [ kout] оболонка, пліва
6. contain v [ kon'teIn] містити (у собі)
7. destroy v [ dIs'troI] руйнувати
8. DNA (desoxyribonucleic acid) ДНК (дезоксирибонуклеїнова кислота)
9. droplet n [ 'drOplit] крапля
10. host n [ houst] живитель
11. host cell [ˈhoust sel] клітина-живитель (клітина, в якій поселився вірус і живиться за її рахунок)
12. infection n [ In'fekSn] інфекція
13. insect n [ 'Insekt] комаха
14. intracellular внутрішньоклітинний
15. invade v [ in'veid] вторгатися, нападати, уражати (хворобою)
16. leukosis n лейкоз
17. lipid n [ 'lIpId] ліпід, ліпоїд
18. medium n середовище
19. nonliving a неживий
20. nucleic a нуклеїновий
21. poisonous a отруйний, шкідливий
22. poultry n птиця (домашня)
23. protein n протеїн, білок
24. replicate v відтворювати
25. RNA (ribonucleic acid) ['R'en'eI] РНК (рибонуклеїнова кислота)
26. spread v [ spred] поширюватись, розповсюджуватись
27. toxin n [ 'toksin] токсин, отрута
28. virion n віріон (вірусна частка)
29. virus n вірус
30. yellow fever n жовта лихоманка

### 2. Read and translate the text:

## VIRUSES

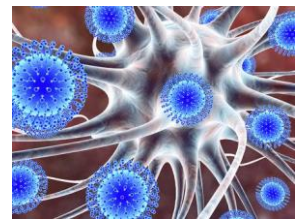
A virus is any of various poisonous elements, smaller than bacteria, causing the spread of infectious diseases.



Viruses consist usually of a central part containing nucleic acid, surrounded by a coat of protein, or of protein and lipid. Nucleic acid is: desoxyribonucleic acid (DNA) or ribonucleic acid (RNA) in viruses attacking animals; RNA in viruses attacking plants; usually DNA in bacteriophages.

Viruses replicate within the host's cells forming new virions which invade further cells of the host. Viruses can only replicate intracellularly, so they can not be cultured in a nonliving medium.

The nucleic acid of the virus takes control of the nucleus in the host cell. During this process the cell may be destroyed or may produce toxins which cause the clinical disease. Examples of viruses are the virus causing leucosis in poultry or mice and the virus causing yellow fever.



Viruses can be spread either by droplet infection, personal contact or biting insects.

### **Answer the questions:**

1. What is a virus?
2. What do viruses usually consist of?
3. What is nucleic acid?
4. How do viruses replicate?
5. Can viruses be cultured in nonliving medium?
6. What does the nucleic acid of the virus do in the host cell?
7. What are examples of viruses?
8. How can viruses be spread?

## **EXERCISES**

**1. Read aloud the following word-combinations and translate them into Ukrainian.**

*Smallest form of plant life, living animals, dead animals and plants, rich soil, invisible master chemists, to convert matter into nutrients, toxic wastes, to digest our meals, to clean up our environment, to culture microorganisms, to produce pesticides, to secrete enzymes, water-dwelling bacteria, food-rich sediment, nucleic acid, to be surrounded by a coat of protein, to replicate within the host's cells, to form new virions, nonliving medium, to take control of the nucleus, to cause the clinical disease, yellow fever, droplet infection, personal contact, biting insects.*

**2. Find the definition of words.**

- |                  |  |
|------------------|--|
| 1. bacteria      | 1. causative agents of disease in plants and animals   |
| 2. microbes      | 2. a mature, single virus; it attacks one cell of its host   |
| 3. viruses       | 3. a collection of unicellular micro-organisms with a primitive cellular structure                               |
| 4. acid          | 4. invisible master chemists recycling leftovers of everything else  |
| 5. lipids        | 5. a virus that is a parasite on bacteria  |
| 6. vector        | 6. substance that contains hydrogen, which may be replaced by a metal to form a salt                             |
| 7. virion        | 7. organic compounds consisting of fats and other similar substances   |
| 8. nucleus       | 8. substance, surroundings, in which something exists or through which something moves                           |
| 9. bacteriophage | 9. poisonous substance, especially one formed by bacteria in plants and animals and causing a particular disease |
| 10. medium       | 10. an animal, as an insect, that transmits a disease-producing organism from one host to another                |
| 11. toxin        | 11. a central part, around which other parts are grouped   |

**3. What word is odd?**

1. microbe, spoon, virion, bacteria, microorganism, pathogen.
2. beer, cheese, bread, wine, fish, ore, meat, butter.
3. host, nucleic acid, RNA, DNA.

4. leucosis, yellow fever, plant, brucellosis, anthrax, glanders, rabies, toxoplasmosis.

**4. Use expressions: “that’s right”, “that’s wrong”.**

*Models: Viruses can be spread by television. – That’s wrong. Viruses can’t be spread by television. Viruses can be spread either by droplet infection, personal contact or biting insects.*

1. Viruses can be spread by television.
2. Yellow fever is caused by virus infection.
3. The nucleic acid of the virus takes control of the nucleus in the host’s cell.
4. Viruses can be cultured both in a nonliving and living medium.
5. One teaspoon full of rich soil is home to several bacteria.
6. Everything can live without bacteria.
7. Bacteria help us digest our meals.
8. Bacteria feed on toxic wastes, petroleum and sewage.
9. Rock particles are used in fermenting beer, cheeses, bread and other foods.

**5. Fill in the blanks in the sentences according to the text**

1. One ...of rich soil is home to more than \_\_\_\_\_ bacteria.
2. Bacteria are \_\_\_\_\_ chemists recycling \_\_\_\_\_ of everything else.
3. Viruses \_\_\_\_\_ usually of a \_\_\_\_\_ part containing \_\_\_\_\_
4. The nucleic acid is \_\_\_\_\_ or \_\_\_\_\_ in viruses attacking animals.
5. Viruses replicate within their \_\_\_\_\_ .
6. Viruses \_\_\_\_\_ only replicate \_\_\_\_\_.
7. The cell may be \_\_\_\_\_ or may produce \_\_\_\_\_ which \_\_\_\_\_ the clinical \_\_\_\_\_ .
8. Some bacteria \_\_\_\_\_ matters into \_\_\_\_\_ that can be used by \_\_\_\_\_ for food.
9. Nowadays nothing can \_\_\_\_\_ live without \_\_\_\_\_ .
10. Bacteria secrete \_\_\_\_\_ used in \_\_\_\_\_ beer, \_\_\_\_\_ and other foods.

**6. Translate sentences in English.**



1. Бактерії існують 2 мільярди років.
2. Життя неможливе без бактерій.
3. У нашому кишечнику 100 трильйонів бактерій. Вони допомагають нам перетравлювати їжу.
4. Бактерії очищають навколишнє середовище, живлячись відходами, нафтою та стічними водами.
5. Мікроорганізми допомагають виготовляти ліки, пестициди, розчинники та ін.
6. Люди використовують бактерії у виробництві пива, вина, сирів, хліба та інших продуктів харчування.
7. Віруси менші, ніж бактерії. Вони спричиняють поширення інфекційних захворювань.
8. Віруси розмножуються у клітинах свого живителя, формуючи нові віріони.
9. Нуклеїнова кислота вірусу контролює ядро клітини-живителя.
10. Віруси можуть викликати лейкоз у домашньої птиці та мишей.
11. Віруси можуть розповсюджуватись комахами.

**7. To pick up a singular nouns in their respective plural form. Read the words and translate them into Ukrainian.**

- |               |             |
|---------------|-------------|
| 1) man        | a) mice     |
| 2) woman      | b) feet     |
| 3) child      | c) women    |
| 4) mouse      | d) geese    |
| 5) tooth      | e) men      |
| 6) foot       | f) children |
| 7) goose      | g) oxen     |
| 8) fish       | h) fish     |
| 9) swine      | i) teeth    |
| 10) deer      | j) bacteria |
| 11) ox        | k) swine    |
| 2) sheep      | l) deer     |
| 13) bacterium | m) sheep    |

**8. Fill in the table using the dictionary.**

Множина	Однина	Переклад
shelves	shelf	полиці-поліція

wives		
wolves		
loaves		
roofs		
knives		
leaves		
halves		
lives		

### 9. Read and translate English words of Latin origin into Ukrainian.

Однина	Множина	Переклад
amoeba	amoebae	<u>амеба-амеби</u>
analysis	analyses	_____
axis	axes	_____
bacterium	bacteria	_____
crisis	crises	_____
criterion	criteria	_____
datum	data	_____
focus	foci	_____
formula	formulae	_____
fungus	fungi	_____
genus	genera	_____
nucleus	nuclei	_____
phenomenon	phenomena	_____
placenta	placentae	_____
radius	radii	_____
stimulus	stimuli	_____
syllabus	syllabi	_____
vertebra	vertebrae	_____

### 10. Determine in which form (singular or plural) the following nouns are given:

Fungi, organisms, tissues, species, animals, fish, land, life, bodies, deer, mice, monkey, milk, supply, sheep, oxen, sources, bacteria, vertebrae, data, analysis, nucleus, phenomena, stimulus, crisis.

### 11. Make the following interrogative and negative questions as in the model.

**Model:** Bacterium is the smallest form of plant life.

**(?) – питальна форма:**

1. Is bacterium the smallest form of plant life? (загальне питання)
2. What is bacterium? (спеціальне питання)
3. Is bacterium the smallest or the largest form of plant life? (альтернативне питання)
4. Bacterium is the largest form of plant life, isn't it? (розділове питання)

**(-) – заперечення:**

Bacterium is not the smallest form of plant life.

**A**

1. One teaspoon full of rich soil is home to more than one billion bacteria.
2. Viruses are poisonous elements.
3. Aquaspirillum is a water-dwelling bacterium.
4. Virus is smaller than bacteria.
5. Bacteria are normally present on the skin, in the mouth, etc.
6. In the colonial days in the United States, higher education was available only at a few institutions.
7. He will be in the office in half an hour.
8. She was absent at the lessons because she was seriously ill.
9. The muscles are the largest organ system in the dog's body.
10. The tongue is one of the most important muscles in the dog's body.

**B**

1. In England there are about 50 species of land mammals.
2. There is one species peculiar to Britain – the red grouse (шотландська куріпка).
3. In Britain there are many migrant species which only visit the country.
4. There are 10 known elements necessary for bacterial nutrition.
5. Now there are 150 member-states of WHO (World Health Organisation).
6. There were only some students from our group at the conference.
7. There are 100 trillion bacteria in our intestines.
8. There are a lot of new words in this text.
9. Within zoology there is entomology, the study of insects.

10. There were many mistakes in my test.

## C

1. Our University has 18 colleges.
2. Smaller dogs have tiny bones.
3. Hunting dogs have more substantial bones.
4. The Borzoi has a narrow head and long face.
5. Primitive people had many enemies among wild animals.
6. Tomorrow I'll have time to travel round the city.
7. Last night he had a sudden heart attack.
8. We often have a bite in this café together.
9. We had a fine time there last summer.
10. I've got money about me.

## 12. Put questions to the italicized words.

1. Tuberculosis occurred in livestock *throughout the world*.
2. Grass provided *food* for millions of cattle and sheep.
3. *Bacteria* existed in air, water, soil etc.
4. Bacteria caused an outbreak of *dangerous* disease.
5. Only *after 1870* veterinary education became a reality in the United States.
6. We enjoy wild animals and plants *because they make the earth a more pleasant place to live*.
7. *Water* helps us digest food.
8. Viruses replicate *within the host's cells*.
9. Biology includes *botany, zoology, microbiology and genetics*.
10. Our intestines contain *100 trillion* bacteria.

## 13. Translate sentences into English.

1. Скільки бактерій міститься у кишечнику людини?
2. Чи є спортзал у вашому університеті?
3. На якому поверсі розташований деканат вашого факультету?
4. В Америці не було домашніх тварин.

5. У сільському господарстві ми залежимо від машин, добрив, знань про тварин і рослин та їх поведінку.
6. Згідно з легендою, протягом Золотого віку не було вбивств тварин.
7. Зараз у Кембріджі існує приблизно 19 факультетів.
8. На міжнародній конференції будуть представники з багатьох країн.
9. Вода допомагає нам перетравлювати їжу.
10. У вашому листі було багато помилок.
11. Чи є у вас вдома які-небудь тварини?
12. У тебе є кішка або собака?
13. У тебе є парасолька?
14. У твого батька гарна робота?
15. Скільки кафедр на вашому факультеті?
16. У вашого друга є домашні тварини?
17. У нашому районі не було спалахів туберкульозу.
18. Вибачте, у мене немає часу. Я зателефоную Вам завтра.
19. У нас не було грошей, тому ми вирішили піти пішки.
20. Після засідання буде обід, а потім невеличкий концерт.

**14. Retell the text in English.**

## **BACTERIA AND VIRUSES**

Bacterium is the simplest and the smallest form of plant life. They exist in air, water and soil, and in living and dead animals and plants. One teaspoon of rich soil is home to more than 100 billion bacteria. These microbes recycle leftovers of everything else.

Bacteria are about two billion years old, and nowadays nothing can live without them. While some of them are pathogens or germs, the others work to breakdown or convert matter into nutrients that can be used by organisms for food. Bacteria in our intestines help us digest our meals. Bacteria clean up our environment by feeding on toxic wastes, petroleum, and sewage. Some bacteria make nitrogen available to plants.

Industries can culture microorganisms to produce medicines, pesticides, solvents, and even to separate metals from ore.

Microorganisms fermenting beer, wine, foods.



secrete enzymes used in cheeses, breads, and many other

A virus is any of various poisonous elements, smaller than bacteria, causing the spread of infectious diseases.

Viruses consist usually of a central part containing nucleic acid, surrounded by a coat of protein, or of protein and lipid. The nucleic acid is: DNA or RNA in viruses attacking animals; RNA in viruses attacking plants; usually DNA in bacteriophages. Viruses replicate within the host's cells forming new virions which invade further cells of the host.

Viruses can only replicate intracellularly, so they can not be cultured in a nonliving medium.

The nucleic acid of the virus takes control of the nucleus in the host cell. During this process the cell may be destroyed or may produce toxins which cause clinical disease.

Viruses can be spread either by droplet infection, personal contact or biting insects.

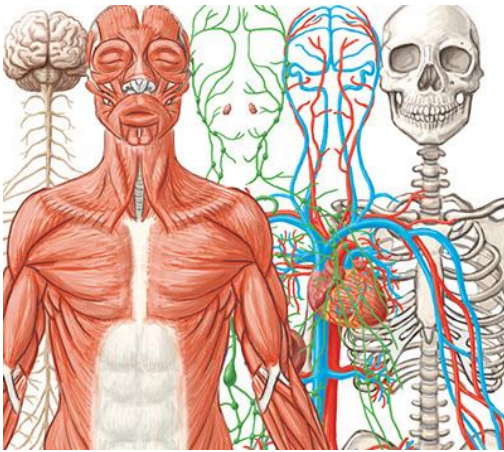
## SELF-STUDY ORGAN SYSTEMS

### 1. Read and learn the following words:

- |   |                                    |
|---|------------------------------------|
| 1. adrenal a наднирковий  | 31. thyroid n щитовидна залоза     |
| 2. asexual a безстатевий  | 32. trachea n трахея               |
| 3. carbon dioxide вуглекислий газ                               | 33. twofold a подвійний, подвоєний |
| 4. digestive system система травлення                           | 34. vessels n (pl.) судини         |
| 5. ductless glands залози внутрішньої секреції                  |                                    |
| 6. enzyme n фермент   |                                    |
| 7. esophagus n стравохід  |                                    |
| 8. excretory a екскреторний                                     |                                    |
| 9. integument n зовнішня оболонка                               |                                    |
| 10. integumentary a покривний                                   |                                    |
| 11. involuntary a мимовільний                                   |                                    |
| 12. large intestine n товста кишка                              |                                    |
| 13. lungs n легені  |                                    |
| 14. lymphatic a, n лімфатичний;<br>лімфатична судина            |                                    |
| 15. nasal cavity носова порожнина                               |                                    |
| 16. pancreas n підшлункова залоза                               |                                    |
| 17. particle n частинка   |                                    |
| 18. passage n проходження, прохід                               |                                    |
| 19. perpetuation n увіковічення,<br>збереження назавжди         |                                    |
| 20. pituitary a, n слизовий; гіпофіз                            |                                    |
| 21. reproduce v відтворюватись                                  |                                    |
| 22. respiratory a респіраторний                                 |                                    |
| 23. respiratory system система<br>дихання, респіраторна система |                                    |
| 24. response v відповідь  |                                    |
| 25. small intestine тонка кишка                                 |                                    |
| 26. spinal a спинний  |                                    |
| 27. spinal cord спинний мозок                                   |                                    |
| 28. stem n стебло, стовбур                                      |                                    |
| 29. scales n луска  |                                    |
| 30. testes n яєчки  |                                    |

## 2. Read and translate the text:

### ORGAN SYSTEMS



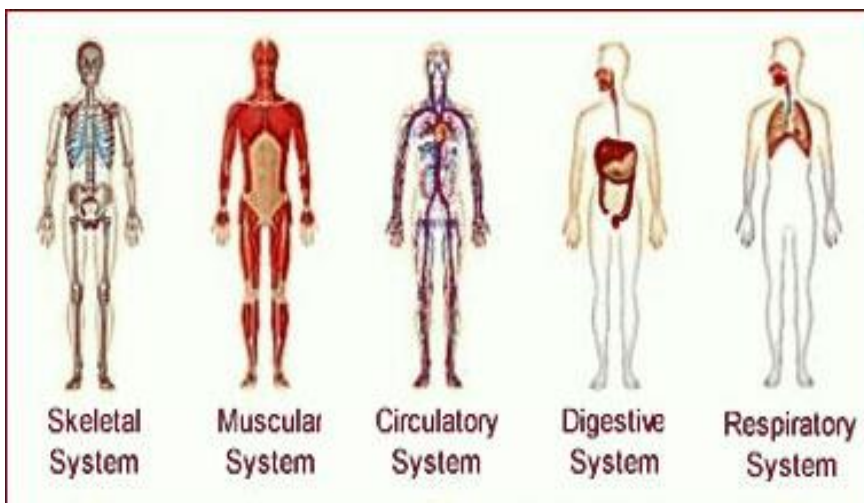
As the various tissues in the plant and animal body differentiate, they become associated with each other to form organs that carry out particular functions. Organs, which are related by function, are grouped into organ systems. The coordinated functioning of all organ systems enables an individual organism to live in its environment and to reproduce.

Ten such systems are commonly recognized in animals.

The digestive system is composed of such organs as the esophagus, stomach, small intestine, large intestine, pancreas and liver. All these organs function together to break down food particles into molecules that are small enough to be absorbed into the blood stream.

The circulatory system is composed of the heart, the blood vessels, blood, the lymphatic vessels, and lymph. This system transports materials from one part of the body to another. The circulatory system also transports hormones and has a role in the

regulation of body temperature and in protecting the body against disease.



The respiratory system is composed of the lungs and the related air passages (the nasal cavity, the pharynx, the trachea,

and the bronchial tubes). The function of this system is twofold: to supply all the cells



within the body with the oxygen they need to carry on respiration; to remove the carbon dioxide and some of the water that is a waste product of respiration. In some animals, other organs of respiration have evolved. For example, fish possess gills, insects have a series of tubules through which air flows, and a number of organisms, particularly the more primitive ones, carry on an oxygen-carbon dioxide exchange through the body surface.

The excretory system provides the body with a means of ridding itself of metabolic waste materials. The primary excretory organs are the kidneys, lungs, skin, and liver.

The skeletal system is composed of varying amounts of bone and cartilage, depending upon the group of animals.

The skeletal system provides a supporting framework for the body, a system of joints, and places of attachment for skeletal muscles. In vertebrates, this system also serves to protect other parts of the body, such as the brain and the spinal cord.

The muscular system involves all of the muscle tissues within the body. The contraction of these tissues, whether voluntary or involuntary, is a response to a nerve impulse.

The nervous system is composed of the brain, the spinal cord, all the peripheral nerves, and the sensory parts of those organs concerned with receiving stimuli from the external or internal environment. The nervous system receives the stimuli and conducts the nerve impulses that cause an organism to respond. It also integrates and coordinates the various body parts in accordance with the information received in the form of stimuli. In higher animals this system permits the processes, which we term intelligence, i.e., thought, reasoning, and memory.

The reproductive system has as its sole function the perpetuation of the species through the production of new organisms. The organs involved include the gonads (the testes and ovaries) with their various associated ducts and glands. The asexual methods of reproduction characteristic of primitive forms do not involve reproductive organs.

The endocrine system consists of the ductless glands, the glands that produce chemical regulators called hormones. Hormones are highly specific in their effects. The thyroid, pituitary, and adrenal glands are examples of organs, which compose this system.

The integumentary system is composed of the skin and the specialized structures, such as hair, scales, feathers, and nails, which develop from it. The primary purpose of this system is protection.

### **3. Answer the questions:**

1. What is organ's system?
2. Where do organs and organ systems exist?
3. How many systems are commonly recognized in animals?
4. What organs is the digestive system composed of?
5. What does the circulatory system consist of?
6. How does this system transport materials?
7. What organs is the respiratory system composed of?
8. What is the function of this system?
9. What does the excretory system provide the body with?
10. What are the primary excretory organs?
11. What does the skeleton system provide?
12. What does the muscular system involve?
13. What do you know about the composition of the nervous system?
14. Does this system permit the process of intelligence?
15. What is the sole function of the reproductive system?
16. What does the endocrine system consist of?
17. What is the primary purpose of the integumentary system?

### **EXERCISES**

**1. Select the English equivalents from the right column to the Ukrainian words in the left column.**

1. esophagus	а) зовнішня оболонка, оболонка
--------------	-----------------------------------

2. particle	b) луска
3. passage	с) функція
4. waste	d) стравохід
5. function	e) частинка
6. specific	f) скорочення
7. include	g) включати
8. contraction	h) специфічний
9. scales	i) зайвий, непотрібний
10. integument	j) проходження, прохід

**2. Select the Ukrainian equivalents from the right column to the English words in the left column.**

1. тіло	a) grouped
2. повітря	b) related
3. мозок	c) primary
4. згруповані	d) body
5. споріднені	e) brain
6. підтримувати	f) intelligence
7. забезпечувати	g) support
8. інтелект	h) receive
9. отримувати	i) provide
10. первинний	j) air

**3. Select the Ukrainian word combinations.**

1. various tissues	a) м'язова система
2. particular functions	b) репродуктивна система
3. coordinated functions	с) нервовий імпульс
4. digestive system	d) різні тканини
5. respiratory system	e) система виділення
6. carbon dioxide	f) система дихання
7. excretory system	g) система травлення
8. muscular system	h) скоординовані функції
9. nerve impulse	i) певні функції
10. reproductive system	j) вуглекислий газ

**4. Select the Ukrainian word combinations from the right column to the English equivalents in the left column.**

1.тонка кишка	a)blood vessels
2.товста кишка	b)lymphatic vessels
3.кров'яні судини	c)ductless glands
4.лімфатичні судини	d)adrenal glands
5.покривна система	e)nasal cavity
6.органи відтворення	f)large intestine
7.бронхіальні трубки	g)integumentary system
8.носова порожнина	h)reproductive organs
9.надниркові залози	i)small intestine
10.залози внутрішньої секреції	j)bronchial tubes

### 5. Group the following words into parts of the language.

Іменник	Дієслово	Прикметник
body	describe	primary

*various, tissue, animal, become, associate, particular, function, exist, level, carry, large, intestine, liver, function action, break, absorb, compose, blood, lymph, lymphatic, transport, disease, twofold, carry, remove, waste, respiration, evolve, posses, flow, exchange, surface, multicellular, contraction, sensory, concern, receive.*

### 6. Fill in the sentences using the words in brackets.

1. Organs, which are related by function, are \_\_\_\_\_ into organ systems.
2. Organs and organ systems exist in all \_\_\_\_\_ forms.
3. Ten systems are commonly \_\_\_\_\_ in animals.
4. The respiratory system is composed of the \_\_\_\_\_.
5. In some \_\_\_\_\_ other organs of respiration have evolved.
6. The skeletal system is composed of varying amounts of \_\_\_\_\_.
7. The primary \_\_\_\_\_ organs are the kidneys, lungs, skin, and liver.

8. The endocrine system \_\_\_\_\_ the ductless glands, the glands that produce chemical regulators called hormones.

9. The asexual methods of reproduction characteristic of \_\_\_\_\_ do not involve reproductive organs.

10. The \_\_\_\_\_ is composed of the skin and the specialized structures, such as hair, scales, feathers, and nails, which develop from it.

*1)bones and cartilage, 2)animals, 3)recognized, 4)grouped, 5)integumentary system, 6)lungs, 7)excretory, 8)primitive forms, 9)consists of, 10)multicellular.*

### 7. Make up sentences.

1. The digestive system	1. is composed of the heart, the blood vessels, blood, the lymphatic vessels and lymph.
2. The circulatory system	2. is composed of the lungs and the related air passages (the nasal cavity, the pharynx, the trachea, and the bronchial tube)
3. Organ systems	3. is the system that provides the body with a means of ridding itself of metabolic waste materials.
4. The respiratory system	4. involves all of the muscle tissues within the body.
5. The excretory system	5. are organs which are related by function.
6. The muscular system	6. is a system that consists of the ductless glands, the thyroid, pituitary, and adrenal glands.
7. The endocrine system	7. is composed of such organs as the esophagus, stomach, small intestine, large intestine, pancreas and liver.

### 8. Find common words.

- a) esophagus, stomach, small intestine, digestive system, large intestine, pancreas, liver.
- b) heart, blood vessels, lymphatic vessels, circulatory system, lymph.
- c) lungs, respiratory system, nasal cavity, pharynx, trachea, bronchial tubes.
- d) brain, nervous system, spinal cord, rib cage.
- e) skin, hair, integumentary system, scales, feathers, nails.

### 9. Retell the text

## MODULE TEST 1

### 1. Find the Ukrainian equivalent to the following words and phrases.

- |  |  |
|--|--|
| a) a community of plants                     | 1. харчовий ланцюг                                 |
| b) primary producers                         | 2. Хижак   |
| c) a prey                                    | 3. середовище існування                            |
| d) a delicate balance                        | 4. суворі місця                                    |
| e) detritivores                              | 5. сонячне випромінювання                          |
| f) the harsh places                          | 6. вирубка лісів                                   |
| g) hotspots                                  | 7. випаровування                                   |
| h) to interact with each other               | 8. енергія, що поглинається                        |
| i) to harvest energy                         | 9. жити в безпосередній близькості один від одного |
| j) habitat                                   | 10. здобич   |
| k) a consumer                                | 11. травоїдні                                      |
| l) solar radiation                           | 12. органічні складові                             |
| m) biotic                                    | 13. хлорофіл                                       |
| n) a predator                                | 14. взаємодіяти один з одним                       |
| o) chlorophyll                               | 15. території з вимираючими видами тварин          |
| p) scavengers                                | 16. група рослин                                   |
| q) deforestation                             | 17. наявність поживних речовин                     |
| r) the food chain                            | 18. мертві тканини                                 |
| s) biodiversity                              | 19. випаровування вологи рослинами                 |
| t) symbiosis                                 | 20. біотичні фактори                               |
| u) transpiration                             | 21. абіотичні фактори                              |
| v) organic constituents                      | 22. детритофаги                                    |
| w) evaporation                               | 23. біологічна різноманітність                     |
| x) carnivores                                | 24. редуценти                                      |
| y) precipitation                             | 25. симбіоз  |
| z) herbivores                                | 26. природна діяльність                            |
| aa) abiotic                                  | 27. харчова мережа                                 |
| bb) to live in close proximity to each other | 28. первинні продуценти                            |
| cc) decomposers                              | 29. хижаки   |
| dd) the captured energy                      | 30. падальщики                                     |
| ee) the availability of nutrients            | 31. поглинати енергію                              |
| ff) natural activity                         | 32. споживач                                       |
| gg) dead tissues                             | 33. крихка рівновага                               |
| hh) a food web                               | 34. опади  |

### 2. Match the terms with their definitions.

- 1. atmosphere**      a. Concept of Earth as a self-regulating living thing.

- 2.biosphere** b. Rigid outermost shell or layer of a rocky planet; land is part of the lithosphere.
- 3.Gaia hypothesis** c. Layer of gases that surrounds a planet; held in place by gravity.
- 4.homeostasis** d. Tendency of a system to maintain a stable internal environment.
- 5.hydrosphere** e. Combined mass of water found on, under, and over the surface of a planet.
- 6.lithosphere** f. Part of Earth that supports life, including the crust, water, and atmosphere.

### 3. Answer the questions.

1. Choose the phrase that correctly finishes this statement: "A species is..."
2. A specific part of the abiotic environment
  - B. A way of describing all the living parts of an ecosystem
  - C. A group of organisms that can successfully mate with each other and reproduce
  - D. Part of the natural decomposing materials in soil
3. Ecology is the study of the
  - A. Abiotic parts of the environment, such as climate, air, and soil
  - B. Biotic parts of the environment, such as animals and plants
  - C. Interactions between organisms
  - D. Interactions between organisms as well as the interactions between organisms and their environment
4. What is an ecosystem?
  - A. All the interacting organisms that live in an environment and the abiotic parts of the environment that affect the organisms
  - B. A person who observes and studies the interactions between the biotic and abiotic parts of the environment
  - C. The relationship among the biotic parts of the environment
  - D. The relationship between all the abiotic elements of a pond
5. An organism that creates its own food is called
  - A. A producer
  - B. A consumer
  - C. A scavenger
  - D. A decomposer
  - E. A carnivore
6. A consumer is
  - A. An organism that produces its own food
  - B. An organism that does not need food to survive
  - C. An abiotic organism
  - D. An organism that cannot produce its own food

7. Which of the following two organisms are producers?

- A. Plants and phytoplankton
- B. Plants and consumers
- C. Consumers and phytoplankton
- D. Phytoplankton and chlorophyll
- E. Phytoplankton and herbivores

8. A species of plant or animal that is facing imminent extinction or extirpation is said to be

- A. Extinct
- B. Extirpated
- C. Endangered
- D. Threatened
- E. Special concern

**4. Make up sentences.**

1. The digestive system	1. is composed of the heart, the blood vessels, blood, the lymphatic vessels and lymph.
2. The circulatory system	2. is composed of the lungs and the related air passages (the nasal cavity, the pharynx, the trachea, and the bronchial tube)
3. Organ systems	3. is the system that provides the body with a means of ridding itself of metabolic waste materials.
4. The respiratory system	4. involves all of the muscle tissues within the body.
5. The excretory system	5. are organs which are related by function.
6. The muscular system	6. is a system that consists of the ductless glands, the thyroid, pituitary, and adrenal glands.
7. The endocrine system	7. is composed of such organs as the esophagus, stomach, small intestine, large intestine, pancreas and liver.

**5. Select the Ukrainian word combinations.**

1.various tissues	a)м'язова система
2.particular functions	b)репродуктивна система
3.coordinated functions	c)нервовий імпульс
4.digestive system	d)різні тканини
5.respiratory system	e)система виділення
6.carbon dioxide	f)система дихання
7.excretory system	g)система травлення



8.muscular system	h)скоординовані функції
9.nerve impulse	i)певні функції
10.reproductive system	j)вуглекислий газ

### 6. Put questions to the italicized words.

1. Tuberculosis occurred in livestock *throughout the world*.
2. Grass provided *food* for millions of cattle and sheep.
3. *Bacteria* existed in air, water, soil etc.
4. Bacteria caused an outbreak of *dangerous* disease.
5. Only *after 1870* veterinary education became a reality in the United States.
6. We enjoy wild animals and plants *because they make the earth a more pleasant place to live*.
7. *Water* helps us digest food.
8. Viruses replicate *within the host's cells*.
9. Biology includes *botany, zoology, microbiology and genetics*.
10. Our intestines contain *100 trillion* bacteria.

### GRAMMAR TEST

#### Modal Verbs

#### I. Choose the correct item.

1. Under no circumstances \_\_\_\_\_ leave home after dusk.  
a) you mayn't b) you can't c) you mustn't
2. You \_\_\_\_\_ repair the car. It's already been repaired.  
a) can't b) mustn't c) needn't
3. When Mr. Lee was younger, he \_\_\_\_\_ work in the garden for hours, but now he has to take frequent rests.  
a) must b) should c) could
4. Isn't Peter Reeves a banker? – Yes. Why don't you talk to him? He \_\_\_\_\_ to help you with your loan.  
a) is able to b) could c) may
5. Do you hear that squeak? What is it? – I don't know. It \_\_\_\_\_ a mouse. Isn't that what a mouse sounds like?  
a) may be b) must be c) should be
6. It \_\_\_\_\_ rain this evening. Why don't you take an umbrella? – That's a good idea. \_\_\_\_\_ I borrow yours?  
a) will / can b) must / could c) might / may
7. Soldiers \_\_\_\_\_ disobey a superior officers.  
a) must/have to b) must not c) don't have to
8. To stay alive, people \_\_\_\_\_ breathe oxygen.  
a) must/have to b) must not c) may
9. Look at all the children waiting for the bus. What time is it? – It \_\_\_\_\_ be after 3:00. That's when school is cut.  
a) must b) might c) can

10. I heard that Jose has received a scholarship and \_\_\_\_\_ to attend the university in the fall. – Wonderful! He \_\_\_\_\_ be very happy to have the matter finally settled.

a) will be able / must b) can / may c) could / might

11. Excuse me. Could you tell me which bus I \_\_\_\_\_ take to get to City Hall? – Bus number 63 \_\_\_\_\_ go there. But maybe you'd better ask the driver.

a) should / might b) may / will c) must / is able to

12. What does Mr. Griffin do for a living? – Nothing. He's very rich. He \_\_\_\_\_ work for a living.

a) must not b) shouldn't c) doesn't have to

13. Why are you so late? – I \_\_\_\_\_ my aunt to the airport. The traffic was terrible.

a) could take b) must have taken c) had to take

14. I need some help with this table. \_\_\_\_\_ you lift the other end, please? – Sure, just a second.

a) may b) should c) could

15. Last year I \_\_\_\_\_ read this fine print in these contracts, but now I can't. – You'd better go to the eye doctor.

a) could b) had to c) must

16. You \_\_\_\_\_ see a dentist.

a) ought to b) will c) have to

17. They \_\_\_\_\_ not tell me about it.

a) ought to b) need c) may

18. She \_\_\_\_\_ try to get to work on time.

a) need b) must c) may

19. Within five days from the delivery date the seller \_\_\_\_\_ send two sets of technical documents to the address of the buyers.

a) must b) will be able to c) shall

20. \_\_\_\_\_ you be so kind to shut the window? It's cold in here.

a) Can b) Might c) Would

21. \_\_\_\_\_ I see your driver licence, please?

a) should b) must c) need

22. \_\_\_\_\_ I carry this bag for you?

a) May b) Will c) Could

23. Many years ago you \_\_\_\_\_ smoke in cinemas, but now it's banned.

a) could b) might c) may

24. We had to wear a tie at school, but we \_\_\_\_\_ to take it off in hot weather.

a) were able b) were allowed c) could

25. You \_\_\_\_\_ bring a friend to the party if you want.

a) will b) can c) should

26. You \_\_\_\_\_ borrow my phone if your battery is dead.

a) can b) must c) would

27. Passengers \_\_\_\_\_ take one small bag on board the plane.

a) can b) must c) may

28. When I was young, we \_\_\_\_\_ wear whatever we liked to school.  
a) might b) were allowed c) could
29. Are you going to the party? – No, I \_\_\_\_\_ do my homework so I can't go.  
a) have to b) ought to c) need
30. Harry's new jacket doesn't seem to fit him very well. – He \_\_\_\_\_ have tried it on before he bought it.  
a) must b) may c) should

### Using the Passives

#### I. Choose the correct item.

1. Harry Potter and the Goblet of Fire \_\_\_\_\_ by J K Rowling  
a) was written b) has been written c) wrote
2. Over a million dollars in cash \_\_\_\_\_ from a bank in Los Angeles.  
a) has stolen b) has been stolen c) was stolen
3. Thieves \_\_\_\_\_ over a million dollars in cash from a bank in Los Angeles.  
a) stolen b) were stolen c) have been stolen
4. I'll have to come by bus as my car \_\_\_\_\_.  
a) is being repaired b) has been repaired c) was repaired
5. The gold \_\_\_\_\_ in a cave near the top of the mountain.  
a) was discovered b) has been repaired c) had been repaired
6. Archaeologists \_\_\_\_\_ the gold in a cave near the top of the mountain.  
a) had been discovered b) were discovered c) are being discovered
7. The meeting \_\_\_\_\_ until the end of the month.  
a) has postponed b) is being postponed c) has been postponed
8. VW cars \_\_\_\_\_ in Germany and the Czech Republic.  
a) are being made b) had been made c) are made
9. Your letter \_\_\_\_\_ yesterday morning.  
a) was arrived b) has been arrived c) is arrived
10. Helmets must \_\_\_\_\_ on the site.  
a) wore b) are worn c) be worn
11. Vehicles parked in front of these gates will \_\_\_\_\_.  
a) being removed b) has been removed c) be removed
12. A number of people \_\_\_\_\_ following a demonstration in central London.  
a) have arrested b) have been arrested c) are being arrested
13. It \_\_\_\_\_ that the painting is a fake.  
a) is now believed b) believed now c) is believing
14. It \_\_\_\_\_ if you could reply as soon as possible.  
a) has been appreciated b) is appreciated c) would be appreciated
15. All bills must \_\_\_\_\_ promptly.  
a) be settled b) was being settling c) settled
16. Two men \_\_\_\_\_ following a robbery in the city centre this afternoon.

a) are questioning b) are being questioned c) had been questioned

17. In the summer, most streets around the town square \_\_\_\_\_ to vehicles.

a) are closed b) have been closed c) are being closed

18. A plane carrying 15 members of the government to a conference in Brussels \_\_\_\_\_ a small scale fire earlier this morning.

a) is known to have experienced b) is believed to have been experienced c) was said to have experienced

**II. The first sentence is in the ACTIVE VOICE. Choose the most correct way of saying the same thing in the PASSIVE VOICE:**

19. *They were interviewing her for the job.* She \_\_\_\_\_ for the job.

a) was being interviewed b) was interviewed c) has been interviewed

20. *Tom is writing the letter.* The letter \_\_\_\_\_ by Tom.

a) was written b) is being written c) has been written

21. *Everyone understands English.* English \_\_\_\_\_ by everyone.

a) is understood b) has been understood c) was understood

22. *The employees brought up this issue during the meeting.*

This issue \_\_\_\_\_ by the employees during the meeting.

a) has been brought up b) is brought up c) was brought up

23. *The professor told him not to talk in class.*

He \_\_\_\_\_ by the professor not to talk in class.

a) has been told b) was told c) was being told

24. *They say that women are smarter than men.*

Women \_\_\_\_\_ to be smarter than men.

a) were being said b) were said c) are said

25. *The fire has destroyed the house.*

The house \_\_\_\_\_ by the fire.

a) has been destroyed b) was being destroyed c) is destroyed

26. *She would have told you.*

You \_\_\_\_\_ by her.

a) would have been told b) would be told c) were being told

27. *She would reject the offer.* The offer \_\_\_\_\_ by her.

a) will have been rejected b) would be rejected c) will be rejected

28. *This surprises me.* I \_\_\_\_\_ by this.

a) would have been surprised b) will be surprised c) am surprised

**Sequence of Tenses.**

**I. Choose the correct item.**

1. They noticed they \_\_\_\_\_ for three hours already.

a. had been flying b) flew c) was flying

2. Tom said that it \_\_\_\_\_ him an hour to get to the station.

a) had taken b) took c) was taking

3. She asked them if they \_\_\_\_\_ tennis in the afternoon.

a) played b) had played c) play

4. Mary asked her brother if he \_\_\_\_\_ tell her the way to the shop.

- a) could b) can c) is able to
5. Peter and John told me they \_\_\_\_\_ to the Kremlin the day before yesterday.  
a) were going b) went c) had gone
6. Mother said she \_\_\_\_\_ a bad headache. Don't bother her.  
a) have had b) had had c) had
7. Dorothy asked Margaret if she \_\_\_\_\_ buy a new dress in the nearest future.  
a) was going to b) had gone c) am going to
8. They told us they \_\_\_\_\_ the Tretyakov gallery next Sunday.  
a) will visit b) would visit c) will have visited
9. Jack said that he already \_\_\_\_\_ the letter.  
a) had written b) was writing c) wrote
10. They asked if the work \_\_\_\_\_ by tomorrow.  
a) will be finished b) would be finished c) finishes
11. The teacher asked the boys if they \_\_\_\_\_ the sums.  
a) solved b) had solved c) solve
12. Although they \_\_\_\_\_, they did not lose heart.  
a) defeated b) had defeated c) were defeated
13. Our teacher taught us that virtue \_\_\_\_\_ its own reward.  
a) is b) was c) were
14. Our holy books tell us that man \_\_\_\_\_ mortal.  
a) is b) was c) were
15. He spoke so fast that I \_\_\_\_\_ understand anything.  
a) could b) could not c) had not
16. This is the house where John \_\_\_\_\_ .  
a) lives b) living c) is lived
17. He kept quiet that he \_\_\_\_\_ please me.  
a) may b) can c) might
18. Just as I \_\_\_\_\_ the room, the bell rang.  
a) entered b) enter c) will enter
19. Who told you that cows \_\_\_\_\_ on grass?  
a) feed b) was feeding c) has fed
20. His health has improved since he \_\_\_\_\_ from the hills.  
a) return b) would return c) Returned
21. He declared that he \_\_\_\_\_ it even if he saw it with his own eyes.  
a) would not believe b) believe c) did not believe
22. If that man smoked less he \_\_\_\_\_ develop cancer.  
a) will not b) had not c) would not
23. Tim was very upset yesterday because he \_\_\_\_\_ that he \_\_\_\_\_ his wallet.  
a) realised / will lose b) had realised / lost c) realised / had lost

24. While mum \_\_\_\_\_ the VCD I hired, I \_\_\_\_\_ my assignment.

- a) is watching / had finished b) was going to watch / finish  
c) was watching / finished

25. She \_\_\_\_\_ the house when I \_\_\_\_\_ to her after a long time.

- a) has been cleaning / have gone b) had been cleaning / went c) is cleaning / am going

26. Some time ago, an interesting discovery \_\_\_\_\_ by archaeologists on the Aegean Island of Kec.

- a) is made b) was made c) used to be made

27. For the time being we \_\_\_\_\_ for the exam, but this time tomorrow we \_\_\_\_\_ the best movie of this year.

- a) are studying / will be watching b) study / will watch c) have been studying / are watching

28. James Bond always drank champagne in the novels, although he \_\_\_\_\_ to wine by the time he \_\_\_\_\_ it to the silver screen.

- a) had switched / made b) has switched / has made c) switched / was making

29. By the end of tomorrow Dortmund \_\_\_\_\_ Chelsea Champions League Cup.

- a) is eliminated b) will have eliminated c) has been eliminated

30. These days, people who \_\_\_\_\_ manual work, often receive far more money than clerks who \_\_\_\_\_ in offices.

- a) have done / have worked b) are doing / are working c) do / work

## MODULE II

### THEME I. EARTH



#### 1. Read and learn the following words:

contain - містити в собі  
exist - існувати  
spin - обертатися  
axis - вісь  
coastline - берегова лінія  
crack - тріщина  
liquid - рідина  
layer - шар

#### 2. Read aloud the following word combinations and translate them:

*once every year, compared with, work out, the inner core of the earth, earth looked very different, molten rock is forced up, two halves are pushed apart, come into existence, turn into solid rock.*

#### 3. Read and translate the text:

### Earth

The Earth is different from the other planets in the Solar System because it has water and an atmosphere containing oxygen, so life can exist here. The earth goes around the Sun in a great orbit once every year. This causes the seasons. The earth also spins round on its own axis once every 24 hours, and this causes day (when one side

faces the Sun) and night (when the same side faces away). The earth is tiny when compared with many other planets, or with the Sun. The planets Mercury, Venus, Mars and Pluto are smaller: Jupiter and Saturn are hundreds of times bigger. The Sun is over a million times bigger than the Earth.

In the distant past the earth looked very different. The continents and the oceans have changed tremendously. For example, 200 million years ago there was no Atlantic Ocean. North America, Europe and part of Asia were joined as one continent which we call Laurasia. South America, Africa, India, Australia and Antarctica formed a large southern continent called Gondwanaland. We can work out when the Atlantic began to open up, and how wide it was at different times.

This continental drift seems evident when we see how well the coastlines match up. For example, Africa and South America fit nearly together. Also, the sands and muds on the bottom of the ocean can be dated accurately, and they become younger and younger as you get nearer to the centre of the ocean.

What is happening is that there is a deep crack right up the middle of the Atlantic which is like a line of small volcanoes. Molten rock is forced up the crack and the two halves of the Atlantic are pushed apart. A new ocean floor is created in the middle with Africa westwards. This movement is only 1 to 10 cm per year. The surface of the Earth is divided up into several large plates, and these are all moving in different directions. North America will eventually reach Russia to the west. California may drift away from the rest of north America.

Scientists do not know exactly what the Earth is like inside. We live on the outer part which is made from hard rocks and covered with water in places. This is the crust. The inside of the earth is very hot, and below about 70 km the rocks are all in the form of molten liquid. We know this because miners have found that the rocks become warmer and warmer down deep mines, and molten rock often comes to the surface through volcanoes. The main inner layer, the mantle, is made of molten rock, and the inner core of the earth is made from solid and liquid metal.



The Universe is said to have come into existence as much as 20,000 million years ago. We shall never really know how this happened. The most popular explanation is the "big bang" theory. According to this, there was an enormous explosion which sent gases and particles hurtling out in all directions. Gradually, galaxies and solar systems began to form from this swirling mass, and the Sun might have eventually formed about 5,000 million years ago.

The Earth is thought to have formed 4,600 million years ago as a ball of molten rock. It was probably as hot as 4,000°C. It took many millions of years for the Earth to cool down enough for a crust to form, and the crust must have been very much like this at first. Molten rock turns into solid rock at temperatures of 800-1,500°C, so the early Earth's crust would have been too hot to stand on.

The early Earth probably had no atmosphere, just like most of the other planets now. However, gases were ejected from volcanoes all over the surface, and a primitive atmosphere developed. This atmosphere had no oxygen. The first forms of life are believed to date from 3,500 million years ago, and they lived without oxygen. Oxygen came much later, since it is produced mainly by plants.

#### **4. Answer the questions:**

1. Why is the Earth different from other planets?
2. How often does the earth go around the Sun?
3. What causes the seasons?
4. What causes day and night?
5. What planets are smaller/bigger than the Earth?
6. Did the Earth look the same in the past?
7. Do we know what is the Earth like inside?
8. How old is the Earth?

#### **5. Are the following statements true or false?**

1. The Earth is the same as the other planets in the Solar System.
2. There are 15 planets in the Solar System.
3. The Earth goes around the Sun and this causes the seasons.

4. The earth is the largest planet. 5.

We all know what the earth is like inside.

**6. Read aloud the following pairs of words. Name synonyms, and then antonyms:**

1. different – various; 2. complete – full; 3. complicated – easy; 4. useful –useless; 5. usual – unusual; 6. to assist – to aid; 7. to include – to involve; 8. to include – to exclude; 9. high – low; 10. to provide – to supply; 11. to alter – to change.

**7. Match the verbs with explanations:**

to provide -	data for the determination of Earth's age
to assist -	the relative density of the ore
to measure -	equipment necessary for prospecting
to detect -	radioactive anomalies
to depend on -	geologists in searching for mineral deposits
to emit -	different amount of radiation

## SELF-STUDY GLACIERS



### 1. Read and learn the following words:

*glacier* - льодовик  
*sheet of ice, ice layer* - шар льоду  
*downhill* - униз о  
*bstruction* - перепона  
*moraine* - морена  
*iceberg* - айсберг  
*fits and starts* - поштовхи та струси  
*thaw* - танути  
*pack ice* - наковий лід

### 2. Read aloud the following word combinations and translate them:

*Glacier moves in fits and starts, break away and float, dumped in untidy heaps, carves out narrow streams.*

### 3. Read and translate the text.

#### Glaciers

A glacier is a moving sheet of ice. Glaciers usually form when enough snow builds up an ice layer on the land. They can be 100 m high. If it is on a slope, the great weight of the ice causes the whole sheet to move downhill. This is because the layers of ice at the bottom of the pile where it rests on the ground become softened and slippery, and the glacier begins to move like a very slow river.

The glacier usually begins high in a mountainous region, and it moves downhill in fits and starts. The ice may move smoothly for a while, until it comes up against an obstruction. This may be a bend in the valley, or a mound of broken rocks which have been pushed ahead by the glacier itself. Glaciers move at different speeds, usually between 1 cm and 1 m per day. The middle part of the glacier moves faster, and the edges, which rub against the sides of the valley, may be much slower. Glaciers may move downhill and pass right into the sea. When they enter the sea, large pieces break away and float off as jagged icebergs.

Glaciers that flow in valleys make their valleys wider and deeper. The bottom of a glacier carves out a U-shape. The ice simply cuts away the soil and boulders, and pushes them ahead. At the front edge (the "snout"), rocks and soil may be dumped in untidy heaps called moraines. The melt-water in summer carves out narrow streams that run downhill in front of the glacier. These streams can carry waste material worn away by the ice for many kilometres. Evidence of past glaciers can be found over a very large area. Most of the British Isles and northern Europe, for example, lay under ice during the last ice age. Here, most of the upland valleys were widened by glaciers while the lowlands were covered by sands, clay and boulders.

Glaciers can be seen today in the European Alps and other high mountain ranges, in Alaska and northern Canada, New Zealand, Greenland and Antarctica. Over 10 percent of the Earth's land surface is permanently covered by ice. The largest glacier in the world is 514 km long. It is the Lambert Glacier in Antarctica. The fastest glacier in the world is the Quarayas Glacier in Greenland, flowing at a rate of 20 m per day.

### ***Frozen seas***

Near the poles, parts of the Arctic and Southern oceans form permanently frozen ice shelves stretching out from the coast. In slightly warmer parts, the sea freezes in winter, forming pack ice up to 2 m thick. In summer it thaws, and the pack ice breaks up into flat-topped icebergs.

*Arctic icebergs* are typically tall and uneven. They may drift hundreds of kilometres and are often shrouded in fog.

*Antarctic icebergs* tend to be flatter-topped and larger than those in the Arctic.

*Largest iceberg.* More than 31,000 sq km (335 km long and 97 km wide, bigger than Belgium), seen in the South Pacific Ocean in November 1956.

*Tallest iceberg.* 167 m high, seen off west Greenland in 1958.

Icebergs are huge lumps of ice which have broken away from icesheets and glaciers and are floating in the sea. Only about a ninth of an iceberg shows above the surface. The part that is hidden under the water may be wider than the part that shows. This is a great danger to shipping. The liner Titanic sank after hitting an iceberg in the North Atlantic in 1912. The largest icebergs break away from the edge of Antarctica, such as from the Ross Ice Shelf. This area of floating ice is as large as France. The front of this shelf is 650 km long, with ice-cliffs 50 m high.

In the arctic, icebergs break off from the Greenland ice-sheet. They are not as large as the Antarctic ones, but are often taller. Glaciers reach the sea around Greenland, and as the ice begins to float, huge lumps break off. This is called "calving". Icebergs begin to melt as they drift away from the polar regions. Cold currents carry icebergs on great distances. When the cold Labrador Current continues further south than usual, it carries Arctic icebergs into the busy North Atlantic shipping routes. The International Ice Patrol looks out for drifting bergs. Ships can be warned, and sometimes the bergs themselves can be towed away by powerful tugs.

### ***Ice-caps and ice-sheets***

Ice-caps and ice-sheets are large areas of ice and snow which permanently cover the land. Ice-sheets are larger than ice-caps. Today, the main ice-sheets of the world are found in Greenland and Antarctica.

Here, temperatures stay at or below freezing all the year round. Snow accumulates throughout the long winter, but very little melts in the short summer. As the snow builds up, it turns to ice under its own weight. This great weight makes the ice spread out and flow downhill. It moves down valleys to form glaciers. If the ice reaches the sea, it may spread out to form an ice-shelf, or it may break up into icebergs.

The weight also weighs down the land on which it rests. If all the ice on Greenland and Antarctica melted, the land would rise. But if all the world ice melted, the sea-level everywhere would rise at least 65 m. Huge areas of lowland would be drowned, and the shape of the continents would change.

### *Ice ages*

The present-day ice-caps and ice-sheets are all that remain of much larger areas of ice which spread out over much of Europe, Russia and North America in the ice ages. As the ice-sheets moved over the land, they changed it. Huge areas of rock were scraped bare and the fragments of rock scraped off were dumped at the edge of the ice-sheet. These deposits are called moraines. During periods of warmer weather, the ice melted and the edge of the icesheets retreated. Moraines were dumped on the land and spread by water flowing from the melting ice. The hills and hollows left by the ice created many lakes and new river courses. Some rivers were dammed by moraines, while others followed new courses which had been cut by the ice.

#### **4. Answer the questions:**

1. What is a glacier?
2. Where do glaciers usually begin?
3. How does a glacier move downhill?
4. How do glaciers affect the valleys?
5. Where can we find evidence of past glaciers?
6. Where can we see glaciers today?
7. What are icebergs?
8. Are there any organisations monitoring icebergs?
9. What are ice caps?
10. What are moraines?

#### **5. Are the following statements true or false?**

1. A glacier is a moving sheet of ice.
2. Glaciers can be 100 m high.
3. Glaciers move uphill.

4. Glaciers which flow in valleys make them wider and deeper.

5. We cannot see glaciers anywhere nowadays.

**6. Translate into English.**

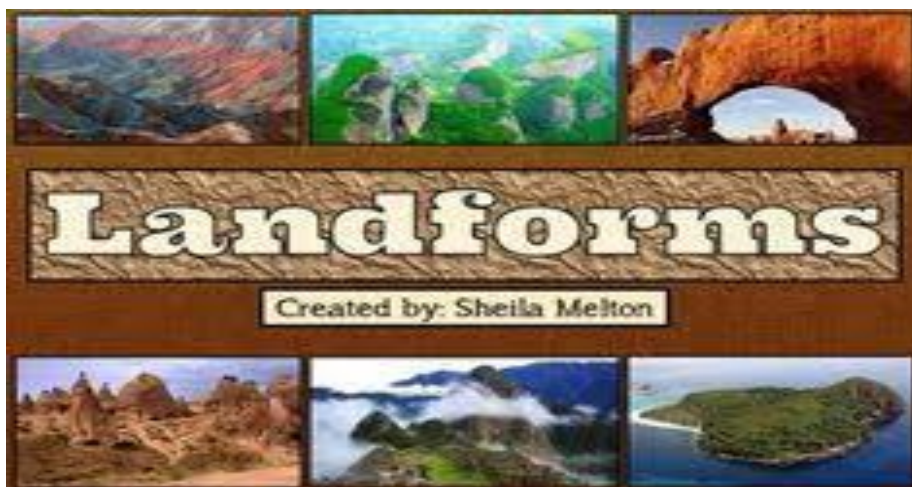
Тихий океан – найбільший океан Земної кулі. Біля східних берегів Росії він утворює моря, відділені одне від одного групою островів. Що північніше море, то воно холодніше.

Найхолоднішим є Берингове море. Його покриває крига протягом десяти місяців на рік. Береги моря замерзають приблизно на сім місяців. Найтепліше зі всіх трьох морів – Японське море. Вода замерзає тільки в його північній частині та в бухтах. Моря Тихого океану багаті на рибу.

**7. Speak about some glaciers using the following:**

to be located, to border, to extend, coast, to bear, rocky, marshy, to be indented, due to, average, depth, to reach, to be noted for, a number of, to be characterised, as a result of, throughout the year.

## THEME II. LANDFORMS



### 1. Read and learn the following words:

landscape - ландшафт  
 waterfall - водоспад  
 cliff - круте урвище  
 sand dune - піщана дюна  
 demolish - руйнувати  
 pebble - галька  
 artificial - штучний  
 marsh - болото

### 2. Read aloud the following word combinations and translate them:

*change through time, the angle and shape of slopes, clue to the past, during the ice ages, the debris of broken rock, the force of gravity, earthmoving machinery.*

### 3. Read and translate the text.

#### Landforms

Landscapes are made up of landforms such as mountain peaks, lakes, volcanoes, waterfalls, cliffs and sand dunes. The science that studies landforms is called geomorphology. Geomorphologists are interested in the shape of landforms, the processes that make them the shape they are, and how their shape has changed through time.

Very few landscapes are flat. Most land slopes. Studying the angle and shape of slopes can give clues to the past. River valleys are one of the most common landforms.



A large straight valley with steep sides and a flat floor may be a sign that it contained a glacier during the ice ages.

Landforms usually change slowly. It may take millions of years for rain, wind, frost and sunshine to demolish a mountain. The debris of broken rock or grains of sand is carried away by water, wind or the force of gravity to pile up somewhere else as new landforms.

At the coast, however, landforms can change relatively quickly. Waves erode the cliffs to form narrow beaches of pebbles and sand, and the wind blows the sand into lines of dunes that slowly move inland. The greatest changes occur during rare but fierce storms. Whole beaches may suddenly appear or disappear during a storm.

People make landforms too, especially with the help of powerful earthmoving machinery. Surface mines and gravel excavations leave behind huge holes, which may later fill with water. Mining also produces heaps of waste. These artificial hills have sometimes been unstable. A wet spoil heap collapsed at Aberfan in Wales in 1966, burying a school and killing many children. People have created dry land from marshes. The Dutch polders were built by constructing embankments or dikes around marshland and then pumping out the water. Good farmland is left, protected from flooding by the dike.

Other landforms made by people include straightened river channels and drainage ditches. At Hallsands in Devon the removal of shingle from the beach left the coast with no protection and the sea demolished a village.

On the Mississippi delta in the southern USA, walls have been built along the river channels to protect nearby towns and farms against flooding. But this also prevents the floods dropping sediment to build up the delta. Buildings that were once on the coast are left stranded on newly formed islands way out to sea.

### ***Erosion***

All around us, the Earth's surface is being worn away by water and by wind. This process is called erosion. Moving water includes mighty rivers and little streams, the sea and also ice which moves over the land as glaciers and ice-sheets. Water, ice and wind

not only wear away the land, they also carry away eroded material and deposit it in other places, especially in seas and lakes.

The action of snow and frost, sun and rain on rocks is called weathering. When rocks are exposed to the atmosphere, they are affected by the weather. Constant heating and cooling can split some rocks. When water in the rocks freezes it expands and cracks them. Rain water is a weak acid and can dissolve or change the chemicals in rocks. Weathering is also speeded up by plant roots and burrowing animals. Rock pieces that have been broken up by weathering are moved away by water, ice and wind. When wind, water and ice are armed with pieces of rock, however small, they can erode even more powerfully.

Erosion is usually a slow process. But during storms, water and wind are much more powerful. They carry bigger fragments of rock and erode the land more quickly. A river in flood can erode the land faster in a few hours than it would normally do in years. The floodwater is armed with pieces of rock and fallen trees. It can roll great boulders along the river bed, and alter its course to cut new channels. During storms, the great waves hurling water and stones at a cliff can be an awesome sight. After a storm, you can spot lots of signs of erosion along the coast. A sandstorm in the desert flings millions of hard sand grains against the rocks, helping to erode them into strange shapes.

The rocks of the Earth's surface also affect the speed of erosion. Faults and folds make weaknesses that can be attacked. Soft rocks are eroded more quickly than hard ones. Hard rocks may make a waterfall along a river or headlands at the seaside.

The pattern of erosion is part of a cycle. Eventually, the great mountain ranges will be worn down to become plains. The small particles of rocks carried by rivers and glaciers end up in the sea, building up sediments on the sea bed. After millions of years, they become sedimentary rocks such as sandstone and clay. Eventually, those rocks may be pushed up to make new land and new mountain ranges. This land in its turn will be worn down by water, ice and wind.

#### **4. Answer the questions:**

1. What are landscapes made up of?
2. What is geomorphology?
3. What can give a clue to the past?
4. Do people make landforms?
5. What are the agents of erosion?
6. What is weathering?
7. What can split rocks?
8. Is erosion part of a cycle?

**5. Are the following statements true or false?**

1. The science that studies landforms is called geomorphology.
2. Very many landscapes are flat.
3. Landforms usually change very fast.
4. People can make landforms.
5. The Earth's surface never wears away.

**6. Define the meaning of the words in italics by similarity of their roots with the roots in Ukrainian language:**

ocean floor; mineral reserves; mineral resources; potential ores; ore deposits of hydrothermal origin; wide oceanic ridge system; concentration of minerals probably derived from sea water; experts; common salt; central place; metal-bearing sands and gravel; high temperature mineral solutions; traditional land mining; sea transportation.

**7. Translate into English:**

1. На земну кору впливають повітря та вода.
2. На формування ландшафту України впливають холодні вітри з Льодовитого океану.
3. За теплою зимою прийшло прохолодне літо.
4. На температуру повітря дуже впливає висота.
5. За поясом степів йде зона пустель.

### THEME III. LAKES, OCEANS AND SEAS



#### 1. Read and learn the following words:

hollow - западина

desert - пустеля

current - течія

meteorite - метеорит

artificial dam - штучна дамба

concrete - цемент

clockwise - за годинниковою стрілкою

counterclockwise - проти годинникової стрілки

hemisphere - півкуля

chalk - крейда

#### 2. Read aloud the following word combinations and translate them:

*man-made barriers, sooner or later, sediments left behind, extinct craters, a ridge of mountains, trade winds.*

#### 3. Read and translate the text:

##### *Lakes, oceans and seas*

Lakes are areas of water surrounded by land. They occur where water collects in hollows in the Earth's surface, or behind natural or man-made barriers.

Lakes don't last forever. The water may cut through the barrier, so the lake drains away. Sooner or later most lakes fill up with sand and mud. As a river enters a lake, the water flows slower and drops its load of sediment. Plants grow in the sediment, trapping more sand and mud.

Lakes also disappear if more water flows out of them or evaporates than the rivers bring in. When a desert lake evaporates, the dissolved salts and sediments are left

behind and gradually fill up the lake, which becomes very salty. The Caspian Sea is like this. It has shrunk drastically as more and more irrigation water has been taken from the Volga and Ural rivers which feed it.

A **crater lake** is one which lies in the natural hollow of an old volcano. The Eifel district of north-west Germany has hundreds of lakes lying in extinct craters. One of the rarest crater lakes is Lake Bosumtwi in the Ashanti Crater in Ghana. The crater was probably made by a meteorite.

**Glacial lakes** form where ice-sheets and glaciers have left the ground very uneven. They scraped and hollowed out hard rock or dumped sand, gravel and clay in uneven layers. Finland is a country of such lakes. Northern Canada and north-west England have similar lake districts.

**Rift valley lakes** are long thin lakes such as Lake Malawi, Lake Turkana and Lake Tanganyika in East Africa, the Sea of Galilee in Israel and the Dead Sea between Israel and Jordan. When the Earth's crust slipped down between long lines of faults, the water filled part of the valley floor.

**Artificial dams** have created lakes. People have built earth, stone and huge concrete dams to hold back rivers for water supply, irrigation or hydroelectric power. Lakes may form in disused gravel pits and mines. Often they are used for leisure and water sports, or to attract wild birds. Probably the most famous of all lakes in volcanoes is the Crater Lake in Oregon, USA, which is 9 km across. *Largest lake.*

Caspian Sea, 371,000 sq km

*Largest freshwater lake.*

Lake Superior, 83, 270 sq km (border of Canada and USA)

*Deepest lake.*

Lake Baykal, 1,741 m deep

*Highest navigable lake.*

Lake Titicaca, 3,811 m above sea-level (in the Andes of Peru and Bolivia)

*Largest temporary lake.*

Australia's lake Eyre, a desert lake 9,300 sq km in area. It disappears completely after a few dry years.

### ***Oceans and seas.***

The five major oceans are the Arctic, Atlantic, Pacific, Indian and Southern Oceans. They are connected to each other by open water. Water slowly circulates between them in currents at the surface and deeper down. The oceans contain about 1,370 million cubic km of water altogether. The average depth of this water is 4,000 m, but in some ocean trenches it may be 11,000 m deep.

The ocean floor has a landscape of its own. Much of the deep sea-bed is a flat plain. But in places, mountains rise thousands of metres from the seabed, sometimes pushing through the sea's surface as islands. Many of these are active or extinct volcanoes. Running down the centre of the ocean floor in several of the oceans is a ridge of mountains which is continually being built up by outpourings of lava. As the rock is forced outwards from the ridge by the new lava, the ocean floor spreads until it reaches the boundaries of the continents. At the edge of each continent is a shallow shelf which slopes gently down to about 200 m, then dips steeply down, in some cases to a deep trench which marks the point where the ocean floor is being forced under the continent.

Much of the ocean floor is covered in sand or mud brought in by rivers. In places, hot springs bubble up, depositing sulphur and other minerals. Millions of microscopic plants and animals live in the surface waters. When they die, their glassy or chalky shells sink down to the bottom to form a sediment. Here, the pressure of other sediment layers slowly turn the sediments into rocks. Future upheavals of the Earth's crust may one day fold these rocks into new mountain ranges and new land.

The water in the oceans is constantly moving, driven by winds, waves, tides and currents. It may be moving in different directions and at different speeds at different depths. Where the wind blows from the same direction for most of the year, it is able to move large volumes of water, forming surface currents. But the spinning of the earth on its axis makes these currents turn to the right in the northern hemisphere, and to the left

in the southern hemisphere. So, the surface currents move in giant circles called gyres. If you mix oil and water, the oil floats on the top because it is less dense than the water. Warm water is less dense than cold water, and salty water is denser than fresh water. In the oceans, cold or salty water sinks, and this sets up deep currents.

In the tropics, the warm surface waters are pushed into two great westflowing currents by the north-east and south-east trade winds. Between them, the equatorial counter current flows in the opposite direction to compensate. Where these currents reach the continents, the rotation of the earth forces them into clockwise circles in the northern hemisphere, and anticlockwise circles in the southern hemisphere.

Nearer the poles, these circular currents meet cold water flowing from the melting ice, and return to the equator as cold currents. Where cold water wells up from the deep ocean, it brings nutrients which support large stocks of fish. Warm and cold currents also affect the climate of coastal countries.

Waves are caused by wind blowing over the surface of the water, pushing against ripples and making them bigger. The water in a wave does not move from place to place. Each water particle moves in a circle, up and forward on the wave crest, then down and back as the wave passes. The longer and stronger the wind blows, and the greater the distance over which it blows, the higher will be the waves. Big waves are further apart than small waves and move faster.

#### **4. Answer the questions:**

1. What is a lake?
2. Do lakes last forever?
3. What happens when a desert lake evaporates?
4. What country is an example of glacial lakes?
5. What are the largest lakes?
6. Name the major oceans.
7. What is the average depth of the oceans?
8. What is the ocean floor covered in?
9. Is the water in the oceans moving?

10. What are waves caused by?

**5. Are the following statements true or false?**

1. Lakes are areas of water surrounded by land.
2. Lakes last forever.
3. Lakes disappear if more water flows out of them than the rivers bring in.
4. The Caspian Sea has not changed.
5. Artificial dams have created lakes.

**6. Translate paying attention to the translation of "some" and "same".**

1. All the planets revolve about the sun in the same direction.
2. In time some cracks increase in size and the rock breaks up into small pieces.
3. The line joining on a map all places with the same atmospheric pressure we call an isobar.
4. All the lower atmosphere contains some water vapour.
5. The earth's axis is always inclined in the same direction.
6. Scientists believe that there is some air at the height of 200 miles.

**7. Translate into English:**

Африка – другий за величиною материк після Євразії. Його площа разом з островами дорівнює 30,3 млн кв. км. Біля берегів Африки мало островів, тільки один острів – Мадагаскар – займає значну територію. Береги Африки порівняно з іншими материками слабо порізані. Тут є тільки одна велика затока – Гвінейська, яка мало врізається в сушу, і лише один великий півострів – Сомалі, який виступає в Індійський океан. В Африці мало бухт, зручних для будівництва портів.



## SELF-STUDY RIVERS



### 1. Read and learn the following words:

mouth - гирло  
 estuary - дельта  
 rivulet - струмок  
 trickle - струмочок, цівка  
 tributary - притока  
 spring - джерело  
 source - верхів'я  
 meander - коліно  
 wadis - висохлі русла рік  
 rapids - пороги

### 2. Read aloud the following word combinations and translate them:

*clearly defined banks, merge together to form, drainage basin, well above sea level, winds among the hills, fan shaped delta, unproductive land, a vital source of water.*

### 3. Read and translate the text.

#### NOTE!

##### ***Longest rivers***

*Nile, Africa – 6,695 km*

*Amazon, South America – 6,440 km*

*Chang Jiang (Yangtze), China – 6,380 km*

*Mississippi-Missouri, USA – 6,019 km*

*Ob-Irtysh, Russia – 5,570 km*

*Zaire, Africa – 4,670 km*

#### **Rivers**

A river is formed when water flows naturally between clearly defined banks. The water comes from rain or snow. When rain falls or snow melts, some of the water runs off the land down the steepest slope, forming trickles of water in folds of the land. These trickles eventually merge together to form streams, which join up to form rivers. The streams which join the main river are called tributaries. Some of the rain-water also sinks into the ground, and seeps down through the rocks until it meets a layer of rock which cannot hold any more water. Then the water runs out at the surface to form a spring.

A river gets bigger and bigger as it flows towards the sea, because more and more tributaries join it. The area of land which supplies a river with water is called its drainage basin.

Rivers cut into the land and create valleys and gorges. Rushing water has tremendous force. A cubic metre of water weighs a tonne. Water can split rocks just by pounding them. But more important is the load of sediment (stones and sands) the river carries. Rocks and soil are swept along by fastflowing water, scouring the river bed and banks. Large boulders are bounced along the river bed, scouring out a deeper and deeper channel.

The rate at which the water wears away the land depends partly on how hard the rock is, and partly on the slope of the river. The steeper it is, the greater its power to erode (wear away). Where the land is rising or the sealevel is falling, rivers can cut down through the rocks very fast. The mountains of the Grand Canyon in the United States were rising as the Colorado River cut down through it. Today, the river has cut a gorge 1,5 km deep.

The faster a river flows, the larger the rocks and the greater the load of sediment it can carry. When the river's flow is slowed down, it drops some of the sediment it is carrying, the largest pebbles first, then the sand, and finally the fine silt. This happens when the river enters the still waters of a lake or the sea, or when the valley floor becomes less steep as it leaves the mountains.

Near its source the river is well above sea-level and is flowing very fast, so it has its greatest cutting power. The water sweeps along boulders and pebbles. The boulders grind against each other, gradually breaking down into smaller pieces of gravel, sand and mud. The river is still small, and quite shallow. Its bed is full of boulders. In the middle course the river is not flowing so fast. It contains more water, so its bed is wider, and is lined with sand, small pebbles and water weeds. The river is not powerful enough to rush over large obstacles, so it flows round them, and its course winds among the hills. Where the water swings around a bend, the water on the outside of the bend has to flow further than the water on the inside, so it flows faster. It cuts away the bank on the outside of the bend, widening the valley.

As the river nears the sea, it becomes wide and sluggish, making huge curves (called meanders) around the slightest obstacles. As it spreads out and slows down, it sheds its load of sediment. It wears away tiny cliffs on the outside of the meanders and deposits little beaches of sand on the inside of the bends. When the river floods, it flows over its banks, spreading mud and sand over the surrounding land. As it enters the sea, it builds out a fan-shaped delta of mud.

Many rivers have very different flows in summer and winter. In cold regions, the upper part of the river may be frozen in winter, so flow decreases. Melting snow and ice may cause spring floods. Rainfall may be seasonal, so there are annual floods. In arid lands, some rivers exist only for a brief period after heavy rain, when water rushes off the bare, baked soil, carrying huge boulders and cutting deep gorges called wadis. Other desert rivers vanish long before they reach the sea, as the water simply evaporates or sinks into the sand.

A river's life has three stages from its beginnings in high ground to its joining with the sea: the fast-flowing upper course of a river; in its middle course a river flows more smoothly, often through a wide valley. The sluggish final stage in a river's life as it meanders towards the sea. The wide mouth of the river where it joins the sea is its estuary.

Rivers carry about 8 thousand million tonnes of sediment into the oceans every year.

### *Nile*

The River Nile is the longest river in the world – 6,695 km from source to sea. It drains one tenth of the continent of Africa. The Nile flows out of Lake Victoria and through a series of spectacular gorges before spreading out across the great papyrus swamp called the Sudd in Sudan. It then becomes the White Nile, and is joined by the Blue Nile and the Atbara River, which both start in the Ethiopian highlands. The Nile then wanders across its flood-plain to Cairo, where it forms a huge delta, 250 km wide, before reaching the Mediterranean Sea. Soil carried down by the river during the annual floods keeps the Nile delta fertile.

In 1979, the Aswan High Dam was completed, damming the Nile to form Lake Nasser. The dam regulates the flood waters, generates hydroelectric power, and irrigates thousands of acres of formerly unproductive land. But it has reduced the supply of minerals to the Nile delta, and so the farmland is less productive and coastal fisheries have been harmed.

The Nile is navigable for most of its course through Sudan and Egypt, except where the water is very low and there are rapids, the Cataracts.

The papyrus beds of the Sudd swamp are home to a rich variety of wildlife, including the shoe bill heron and sacred ibis, crocodiles and hippos, and hundreds of thousands of antelopes.

The Sudd is threatened by the Jonglei Canal, which will take water from the Nile and link up important towns. At present, work on the canal is held up by civil war. If it is ever complete, the Sudd may dry up. Local people will lose a vital source of water and grazing land, and the rich wildlife will disappear.

### *Mississippi River*

The Mississippi River together with its main tributary, the Missouri, is the largest river system in North America. The Mississippi-Missouri flows a total 6,019 km and

drains an area of 3,221,000 sq km. Every day it discharges 1,600 million tonnes of water into the Gulf of Mexico.

The Mississippi rises in Lake Itasca, west of the Great Lakes, and is itself 3,779 km long. As well as the Missouri, which rises in the Rocky Mountains, other large tributaries are the Ohio River, which starts in the Appalachian mountains, and the Arkansas River. As it flows towards the sea, the Mississippi grows from a clear stream winding its way through lakes and marshes, to a huge muddy river over 2,5 km wide, which wanders in huge sweeping curves across its flood-plain. The huge amount of sediment carried by the river has built up a wide delta pushing out into the Gulf of Mexico near New Orleans, and the river splits into hundreds of tiny rivulets as it meanders over the delta.

In the first half of the 19th century the Mississippi was very important to the economy of the South and Middle West of the USA. Steamboats carried cargo and passengers, and showboats brought theatre to the waterfront towns. It was a colourful and glamorous period. But after the American Civil War and the coming of the railways the Mississippi never quite regained its former glory.

It is still an important highway for transporting cargoes of iron, steel, coal, petroleum, chemicals and other raw materials and industrial products. In places, the river has been straightened and its banks have been raised to improve the passage of river traffic and hold back flood water. The huge Mississippi flood-plain is over 125 miles wide in places, and covers about 77,720 sq km. The fertile silt brought down by the floods has given rise to valuable farmland.

### ***Amazon River***

The Amazon River is 6,440 km long, the second-longest river in the world. It contains more water than any other river in the world – about 25 percent of all the water that runs off the Earth's surface.

The Amazon rises high up in the Andes mountains in Peru, and is fed by about 15,000 tributaries on its way to the sea on the coast of Brazil. The land slopes gently, and the Amazon wanders in great curves called meanders, frequently changing its

course as the river bed becomes silted up, leaving behind little horseshoe-shaped lakes and swampy areas rich in birds and other wildlife.

The river contains over 2,000 different kinds of fish, including piranhas, catfish, electric eels and the giant arapaima. The nutrient-rich silt deposited by the river supports vast tropical forests which line its banks, home to millions of different animals and plants.

Thousands of small villages along its banks live off the fish and small plots of land which they clear in the surrounding rainforest. Large ships can travel far inland to cities such as Manaus in Brazil.

#### **4. Answer the questions:**

1. When is a river formed?
2. How does a river form?
3. What can water do?
4. What happens when the river enters the still waters of a lake or the sea?
5. Are the flows the same in summer and winter?
6. What causes spring floods?
7. What are the three stages in river's life?
8. What is the length of the River Nile?
9. Is the Nile navigable?
10. What is the largest river system in North America?
11. What do you know about the Amazon River?

#### **5. Are the following statements true or false?**

1. A river is formed when water flows naturally between clearly defined banks.
2. The streams which join the main river are called tributaries.
3. A river gets smaller as it flows towards the sea.
4. Rivers do not cut into the land and they do not create valleys and gorges.
5. All the rivers have the same flow in summer and winter.

#### **6. Define to what part of speech the italicised words belong:**

1. Water falls upon the earth as rain, snow and hail.

2. One can find many waterfalls in the reaches of the Dnieper.
3. High mountains bar access to the cold blasts from the north.
4. "Limans" are flooded river mouths which now constitute shallow lagoons nearly closed off by sand bars.
5. The molten matter solidifies before it reaches the earth's surface.
6. Frequent storms prevent the formation of pack ice in the upper reaches of the river.
7. **Speak about some river using:**

to rise in, to attain, to be marked by, gentle (steep) slopes, slow flow, to freeze, to drain, depth, width, upper (lower) reaches, middle course, mouth, as a rule, because of, volume of water, to carry, to supply, to feed, melting snow, hydroelectric development.

## THEME IV. CHEMISTRY AS A SCIENCE



### 1. Work in pairs and discuss the following questions:

1. How would you define chemistry?
2. What branches of chemistry do you know?
3. What is the purpose of studying chemistry?
4. Think of the word *chemistry*. What comes to your mind?

### 2. Pronounce the following words.

- 1) Chemistry, chemical, chemist.
- 2) Science, scientific, scientist.

### 3. Make sure that you know the pronunciation and translation of the following words and expressions from the text (use a dictionary):

deal with -	basic concept -
be concerned with -	in existence -
branch -	involved in -
compound -	be flavored by -
obtain -	be preserved by -
include -	be manufactured by -
carbon -	

### The Science of Chemistry

Chemistry is a science of the composition, properties and reactions of matter. Chemistry **deals with** the matter, its properties, how and why substances combine or separate to form other substances, and how substances interact with energy. It is



concerned with different forms of matter, such as water, salt, iron, sugar, oxygen, etc.

Chemistry is closely related to physics, biology and other sciences. Now there are more than 30 different branches of chemistry. Some of them are: inorganic chemistry, organic chemistry, physical chemistry, analytical chemistry, nuclear chemistry, colloidal chemistry and biochemistry.

Inorganic chemistry deals with substances obtained directly or indirectly from minerals, ores and similar sources. This branch studies inorganic compounds. It includes the study of the structure and properties of these compounds. It also includes the study of the individual elements of the compounds.

Organic chemistry deals with carbon and its compounds. There are millions of organic compounds, with thousands more discovered or created each year.

Doctors, nurses and veterinarians must study chemistry, but understanding basic chemistry concepts is important for almost every profession. Chemistry is part of everything in our lives.

Every material in existence is made up of matter — even our own bodies. Chemistry is involved in everything we do, from growing and cooking food to cleaning our homes and bodies to launching a space shuttle. The food you eat is colored, flavored, and preserved by various chemical additives. The cleaning supplies you use to keep your house clean are manufactured by large chemical firms. The bug killers you use to keep cockroaches from overrunning your kitchen are made in giant labs. Modern life simply wouldn't be possible without the use of chemistry. Chemistry helps us to describe and explain our world.

**4. Read the text and find English equivalents to the following Ukrainian phrases. Use them in the sentences of your own.**

Властивості матерії; галузь хімії; взаємодіяти з енергією; форми матерії; неорганічні сполуки; тісно пов'язаний; створений з матерії; запускати космічний корабель; хімічні домішки; миючі засоби; засоби проти комах.

**5. Answer the following questions:**

1. What is chemistry?

2. What does chemistry deal with?
3. What forms of matter is chemistry concerned with?
4. How many branches of chemistry are there now? What are they?
5. What substances does inorganic (organic) chemistry deal with?
6. Is it important to study chemistry? Why?
7. Where do we use knowledge of chemistry?

**6. Say if the statements are true or false.**

1. Chemistry plays an important role in the life of modern world.
2. Chemists study the composition, the properties and the structure of the matter.
3. Chemistry isn't related to other sciences.
4. There are several branches of chemistry.
5. A lot of organic compounds are discovered every year.
6. Chemistry is important only for doctors, nurses and veterinarians.
7. Chemical plants produce supplies for keeping your house clean.
8. It is possible to live without the use of chemistry.

**7. Fill in the gaps using appropriate words and expressions from the text.**

1. Chemistry is a science that studies ... of matter.
2. Chemistry is related to such ... as biology and physics.
3. There are a lot of different ... of chemistry.
4. Inorganic chemistry studies ... .
5. Our food is flavored by various ... .
6. People use ... to keep their house clean.
7. Chemistry explains how and why substances ... or ... .
8. Organic chemistry deals with ... .
9. Chemistry helps us to ... our world.

**8. Find the equivalents in the first and second columns**

1. cleaning supplies
2. chemistry
3. composition

- 4. property
- 5. matter
- 6. structure
- 7. substance

8. chemical additives

9. branch

10. bug killers

a) a division of science

b) a quality or power, or effect that belongs naturally to smth.

c) the arrangement of various parts of which smth. is made up

d) a chemical substance that is added to something such as food, to preserve it, give it colour, improve it etc.

e) the science studying the substances which make up the Earth, the universe and living things

f) the material that makes up the world and everything in space and can be seen or touched

g) the way in which parts are formed into a whole

h) a material, type of matter

i) supplies you use to keep your house clean (such as spray for the mirror, air fresheners, brushes, dusting, gloves, household cleaners, sponges, squeegees, trash bags).

j) substance used for killing insects

### **9. Fill in prepositions:**

1) Chemistry deals ... the properties, composition and structure of the materials.

2) Chemistry is related ... other sciences.

3) Chemistry is concerned ... different forms of matter.

4) Inorganic chemistry studies substances which are obtained ... minerals, ores and similar sources.

5) There are more than 30 different branches ... chemistry.

6) Chemistry is part of everything ... our lives.

- 7) Every material is made ... of matter.
- 8) Chemistry is involved ... everything we do.
- 9) Our food is colored, flavored, and preserved ... various chemical additives.
- 10) Modern life wouldn't be possible ... the use of chemistry.

**10. Work in pairs. Discuss the following statements:**

1. Chemistry is a very complicated science.
2. Chemistry is closely related to physics, biology and other sciences.
3. Basic chemistry concepts are important for almost every profession.
4. Modern life simply wouldn't be possible without the use of chemistry.

**11. Give the summary of the text (7-10 sentences).**

**Vocabulary**

additives ['ædətɪv] домішка

combine [kəm'blaɪn] поєднувати, об'єднувати

composition [kəm'pəzɪʃ(ə)n] структура, склад (хімічний)

discover [dɪ'skʌvə] робити відкриття, виявляти

matter ['matə] речовина, матеріал

nuclear ['nju:kliə] ядерний

ore [ɔ:] руда

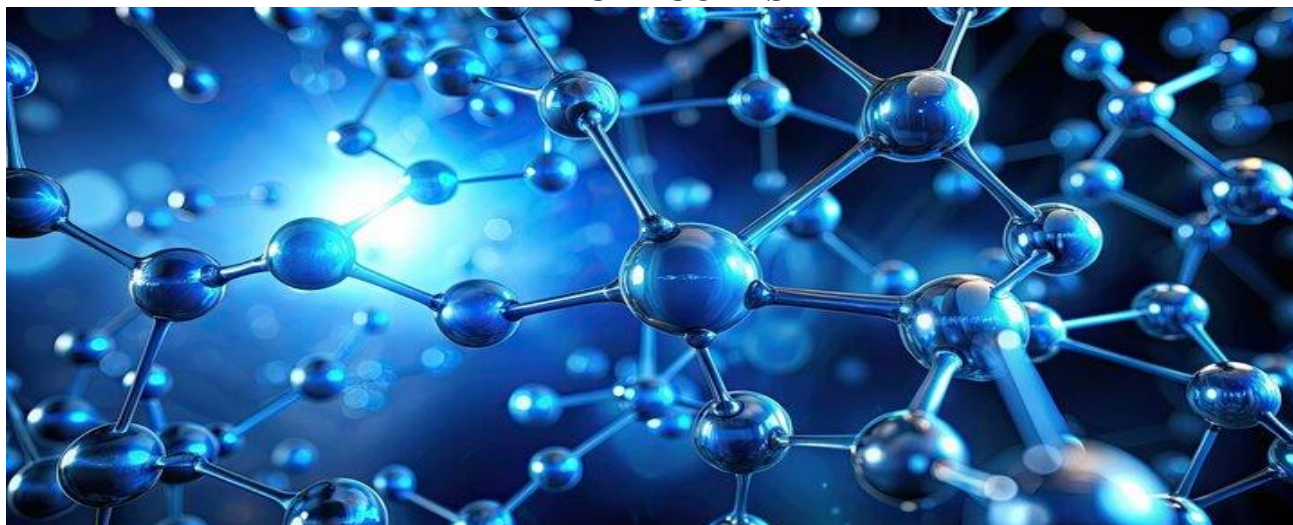
property ['prɒpəti] якість, властивість

separate ['seprət] відокремлювати, роз'єднувати

source [sɔ:s] джерело

substance ['sʌbst(ə)ns] речовина, субстанція

## SELF-STUDY MOLECULES



**1. Before you read the text, look at the following quotation. Do you agree with it?**

—Almost all aspects of life are engineered at the molecular level, and without understanding molecules we can only have a very sketchy understanding of life itself. —

*Francis Crick*

**2. Practice the pronunciation of the following words.**

chemist ['kemɪst] 1) хімік 2) аптекар

occur [ə'kʊː] відбуватися

undergo [ˌʌndə'gəʊ] (underwent, undergone) зазнавати, зносити, переносити

chlorine ['klɔːrɪn] хлор

molecule ['mɒlɪkjʊːl] молекула

aggregate ['ægrɪɡɪt] 1) сукупність 2) агрегат

density ['densɪtɪ] 1) густина, щільність

substance ['sʌbstəns] речовина

compound ['kɒmpaʊnd] суміш; сполучення, сполука

diatomic [ˌdaɪə'tɒmɪk] двоатомний

sulphur ['sʌlfə] сірка

helium ['hiːliəm] гелій

## MOLECULES

To the modern **chemist**, the atom is the smallest particle of an element that can

enter into a **chemical reaction**. Thus, each element has atoms that are peculiar to itself and different from those of each of the other elements. Chemical reactions occur when atoms of different kinds unite to form groups in which they bear definite relationships to each other or when these groups undergo **disruption** or rearrangement. Chemical unions are of two general types.

In one type of union, atoms **become bonded** together to form definite aggregates that exist as independent, electrically neutral particles and are known as molecules (Latin —little mass). Some elements have atoms that unite with others of their own kind to form molecules. These are known as elemental molecules and are exemplified by the chlorine molecule which is made up of two chlorine atoms. Compound molecules **are composed of** two or more kinds of atoms and are exemplified by the water molecule, which contains two atoms of hydrogen and one of oxygen.

To give a short definition of a molecule is not to give a more or less full account of properties. Molecules are regarded as the smallest particles or elementary **substances** that can have independent existence. They account for the chemical properties and at least some of the physical properties of the substance they **constitute**. A single molecule does not exhibit in full the physical properties commonly associated with its particular variety of matter. These properties arise both within the molecule itself and within the aggregates of like molecules that constitute a sample of the given substance. The **density** of water depends not only on the mass and volume of individual molecules but also on the manner in which the molecules are packed together. Since the chemist works with the aggregates, their properties are of great **practical importance**.

A molecule of a compound contains, of necessity, at least two different atoms. An element molecule may contain only one atom, or it may contain two or more. Helium has monoatomic molecules; chlorine and hydrogen each exist as diatomic molecules; and sulphur molecules contain eight atoms. During reactions the atoms of elemental molecules usually are separated and individually **redistributed** in new combinations.

**3. Read the text and give Ukrainian equivalents to the following words and expressions. Use them in the sentences of your own.**

Chemical reactions, physical properties, chlorine molecule, independent existence, exemplify, substance, mass and volume, diatomic molecules, sulphur molecules, neutral particles, rearrangement, Helium, disruption, monoatomic molecules, contain, occur, aggregates, hydrogen.

**4. Find the highlighted words in the text. Match them with the correct meaning below.**

- a) to tie or connect some things together
- b) a person who studies chemistry or a scientist who is engaged in chemical research
- c) physical quantity that defines mass ratio to volume
- d) significance of pragmatic or realistic doings
- e) to arrange or move things again or differently
- f) condition or matter that can be solid, liquid, gas
- g) consist of
- h) a process that can change structure and direction of different elements
- i) to arrange/to form/to construct
- j) destruction/breakdown

**5. Look through the text and decide which word or phrase is best for each space.**

**chemical properties density chemists redistributed constitute molecule atom  
measure the volume**

1. ... is a small part of an element.
2. ... analyze substances, conduct experiments and write different reports on chemical processing.
3. The ions put together by the dissociation of any ... are of two kinds.
4. People study ... of different things and materials in order to develop new goods.
5. Boats and ships can float on the water because of the difference between mass and....
6. Oxygen, carbon, hydrogen, nitrogen, calcium and phosphorous ... our body.
7. It is difficult to ... of a liquid because liquids can change their shapes.
8. The atoms of molecules can be ... in various combinations.

**6. Match two halves of the sentences**

1. Chemical changes
2. Melting, boiling and
3. Chemists investigate the aggregates
4. Dehydration synthesis is a chemical reaction that involves molecules
5. Chemical bond is a process of
6. Hydrocarbons are organic molecules
7. Chlorination is a method of water
8. Diatomic molecules are made up of identical elements

- a. to form larger and complex molecules.
- b. evaporation are the physical changes
- c. that consist of carbon and hydrogen.
- d. and are called diatomic elements.
- e. linking elements (atoms) in molecules by electrical force.
- f. can form new substances.
- g. disinfection and is used all over the world.
- h. that are of great practical importance.

**7. Define true or false sentences.**

1. Atom takes part in aggregation.
2. Atoms join with others of different kind to form ions.
3. Polymer molecules may contain many thousands of component molecules.
4. Chemical bonds are interactions that separate atoms in chemical elements.
5. The density of water depends on the mass and volume of compounds.
6. Diatomic molecules consist of five atoms that are chemically unbound.
7. Diatomic molecules are formed by two elements.
8. Chemical compound is a substance made up of different molecules.
9. The halogens are elements that form sulphur molecules.
10. Water is made of glucose and carbon.

**8. Put these words in the correct order to make questions. Discuss them in pairs.**



1. What /atom /consist/ does /of?
2. is /What/ molecule /a?
3. How/ are/ bonded /atoms /to /a molecule/ form?
4. When / the chemical / the molecules/ reactions /occur/ between / do?
5. What/ the/ chemical reactions/ characteristic /are/ features of/ the?
6. What / the physical /the substances /properties /are /of?
7. How /we/ different /define/ the density /do /of /substances?
8. What / happen/ molecules/ to /the / during/ the /can /reactions?

**9. Read the following issues. Choose one and discuss it in small groups.**

- Chemical reactions in our everyday life.
- Influence of physical and chemical reactions on food industry.
- The role of chemistry in our present day life.

**10. Find some information and make a report on the following issues (15 sentences)**

1. —The power of sunlight and coal, electric power, water power, winds and tides do the work of the world, and in the end all unite to hasten the merry molecular dance. — *Frederick Soddy*.
2. —Chemistry begins in the stars. The stars are the source of the chemical elements, which are the building blocks of matter and the core of our subject. — *Peter Atkins*.
3. —In those days industry would hire any chemist that could breathe. — *William Standish Knowles*

**Vocabulary**

breathe [bri:ð] дихати

core [kɔ:] ядро, суть

characteristic [ˌkærɪktə'rɪstɪk] характерний

chemical ['kemɪk(ə)l] хімічний

definite ['defɪnɪt] визначений; певний

density ['densɪtɪ] густота, щільність

dissociation [dɪˌsəʊʃɪ'eɪʃ(ə)n] роз'єднання; відмежування

dehydration [ˌdiːhaɪ'dreɪʃ(ə)n] збезводнювання, зневоднення

evaporation [ɪ,væpə'reɪʃ(ə)n] випарювання, випаровування

existence [ɪg'zɪst(ə)ns] існування

exemplify [ɪg'zemplɪfaɪ] 1) ставити за взірець, бути прикладом 2) наводити приклад

feature ['fi:tʃə] особливість, характерна риса; ознака, властивість

hasten ['heɪsn] 1) прискорювати, пришвидшувати 2) поспішати

hire ['haɪə] наймати

hydrogen ['haɪdrədʒ(ə)n] водень

interaction [ɪntər'ækʃ(ə)n] взаємодія, взаємодіяння

investigate [ɪn'vestɪgeɪt] досліджувати; вивчати

melt [melt] топити(ся); розчинятися

synthesis ['sɪnθɪsɪs] (syntheses) синтез

substance ['sʌbstəns] речовина

unbind [ˌʌn'baɪnd] (unbound) 1) розв'язувати; розпускати 2) звільняти, визволяти

## THEMA V. PHYSICS IN GENERAL

### 1. Before reading the text, discuss the following questions:



1. Why did you choose to study at the Educational and Scientific Physical and Technological Institute of Lesya Ukrainka Volyn National University?
2. How much do you know about physics? Can you define it?
3. What is interesting about physics for you?
4. What was your first encounter with physics?
5. Do you remember your first physical experiment?

### 2. Find the meaning and pronunciation of the key words in a dictionary and learn them:

Space -	motion -
optics -	electrostatics -
electrodynamics -	mechanics -
matter -	physics -
modern physics-	quantum physics -
atomic and nuclear physics -	high-energy physics -
energy -	classical physics -
acoustics	thermodynamics -
physics of elementary particles -	theory of relativity -

**Physics** (Greek: physics, meaning “nature”) is a natural science that involves the study of matter and its motion through the major science dealing with the fundamental constituents of the universe, the forces they exert on one another, and the results produced by these forces. Sometimes in modern physics a more sophisticated approach is taken that incorporates elements of the three areas listed above; it relates to the laws of symmetry and conservation, such as those pertaining to energy, momentum, charge,

and parity. More broadly, it is the general analysis of nature, conducted in order to understand how the world and universe behave. More shortly, physics is a branch of science traditionally defined as a study of matter, energy and the relation between them. Physics is one of the oldest academic disciplines, perhaps the oldest through its inclusion of astronomy. Over the last two millennia, physics had been considered synonymous with philosophy, chemistry and certain branches of mathematics and biology, but during the Scientific Revolution in the 16<sup>th</sup> century, it emerged to become a unique modern science in its own right. However, in some subject areas such as in mathematical physics and quantum chemistry, the boundaries of physics remain difficult to distinguish.

Physics today may be divided into classical physics and modern physics. Classical physics includes the traditional branches and topics that were recognized and fairly well developed before the beginning of the 20<sup>th</sup> century – mechanics, sound, light, heat, electricity and magnetism. Mechanics is concerned with bodies acted on by forces and bodies in motion and may be divided into statics (study of the forces on a body at rest), kinematics (study of motion without regard to its causes), and dynamics (study of motion and the forces that affect it); mechanics may also be divided into solid mechanics and fluid mechanics. Acoustics, the study of sound, is often considered a branch of mechanics because sound results from the motion of air particles or other medium through which sound waves can travel. Optics, the study of light, is concerned not only with visible light but also with infrared and ultraviolet radiation. Heat is a form of energy, the internal energy contained in the particles of which a substance is composed; thermodynamics deals with the relationships between heat and other forms of energy. Electricity and magnetism have been studied as a single branch of physics since the intimate connection between them was discovered in the early 19<sup>th</sup> century.

Most of classical physics is concerned with matter and energy on the normal scale of observation; much of modern physics deals with the behaviour of matter and energy under extreme conditions or on the very large or very small scale. For example, atomic and nuclear physics studies matter on the smallest scale at which chemical elements can be identified. The physics of elementary particles is concerned with the most basic units

of matter; this branch of physics is also known as high-energy physics because of the extremely high energies necessary to produce many types of particles in large particle accelerators. On this scale common sense notions of space, time, matter and energy are no longer valid.

The two chief theories of modern physics present a different picture of the concepts of space, time, and matter from that presented by classical physics. The quantum theory is concerned with the discrete, rather than continuous, nature of many phenomena at the atomic and subatomic level, and with the complementary aspects of particles and waves in the description of such phenomena. The theory of relativity deals with the description of phenomena that take place in motion with respect to an observer; the special theory of relativity is concerned with relative uniform motion in a straight line and the general theory of relativity with accelerated motion and its connection with gravitation.

### **3. Answer the questions on the text:**

1. How many meanings of the word physics are mentioned in the text?
2. Which definition of physics is the clearest for you?
3. Which branches of science are closely related to physics?
4. Why, according to the text, is physics a science?
5. What are the two divisions of physics?
6. What branches does classical physics include?
7. What does mechanics deal with?
8. What does acoustics deal with?
9. What is optics concerned with?
10. What does thermodynamics deal with?
11. What is the subject of modern physics?
12. How does classical physics differ from modern physics?
13. What does atomic and nuclear physics study?

14. What is the physics of elementary particles concerned with?
15. What do you know about the quantum theory and theory of relativity?

**4. Find synonyms in the text for the following words:**

basic – ..... to be concerned with – .....

important – ..... to give rise to – .....

affect – .....

**5. Make sentences of your own using the words from Task 2:**

1. ....
2. ....
3. ....
4. ....
5. ....

## SELF-STUDY

### THE SCIENCE OF MECHANICS

#### 1. Find the meaning and pronunciation of the highlighted words in a dictionary and learn them:

Mechanics is a branch of physics that **concerns** the motions of objects and their **response** to forces. Modern descriptions of such behavior begin with a careful definition of such quantities as **displacement** (distance moved), time, **velocity**, **acceleration**, mass, and force. Until about 400 years ago, however, motion was explained from a very different point of view. For example, following the ideas of Greek philosopher and scientist Aristotle, scientists reasoned that a cannonball falls down because its natural position is in the earth. The sun, the moon, and the stars travel in circles around the earth because it is the nature of heavenly objects to travel in perfect circles.

The Italian physicist and astronomer Galileo brought together the ideas of other great thinkers of his time and began to analyze motion in terms of distance traveled from some starting position and the time that it took. He showed that the speed of falling objects increases steadily during the time of their fall. This acceleration is the same for heavy objects as for light ones, provided air **friction** (air resistance) is **discounted**. The English mathematician and physicist Sir Isaac Newton **improved** this analysis by defining force and mass and relating these to acceleration. For objects traveling at speeds close to the speed of light, Newton's laws were **superseded** by Albert Einstein's theory of relativity. For atomic and subatomic particles, Newton's laws were superseded by quantum theory. For everyday phenomena, however, Newton's three laws of motion remain the **cornerstone** of dynamics, which is the study of what is motion.

#### 2. Answer the following questions on the text:

1. What branch of physics concerns the motions of objects and their response to forces?
2. What are the quantities that require careful definition?
3. How did ancient people explain motion?
4. What was the impact of Galileo on the field of physics?

5. Does the speed of the falling object increase steadily during the time of its fall?
6. Is it possible to discount air resistance while calculating acceleration?
7. How did Isaac Newton improve the analysis of acceleration?
8. Whose theory superseded Newton's laws?
9. What is the cornerstone for the study of motion?

**3. Decide whether the following statements are true or false according to the text.**

**Prove your answers using the information from the text.**

1. Mechanics concerns acceleration of objects and their response to mass.
2. Greek philosopher reasoned that a cannonball falls down because its mass is lighter than the earth's.
3. The sun, the moon and the stars travel in circles around the earth because of their nature.
4. Galileo showed that the acceleration of falling objects decreases steadily during the time of their fall.
5. Newton improved the analysis by defining acceleration, mass and relating these to force.

**4. Find an odd word:**

1. *number* (*n*), zero, amount, quantity, volume, sum;
2. *reduce* (*v*), condense, contract, increase, decrease, diminish;
3. *conclude* (*v*), deduce, close, start, complete, determine;
4. *progress* (*v*), advance, improve, proceed, regress;
5. *increase* (*v*), extend, grow, decrease, multiply;
6. *opposition* (*n*), contradiction, contrast, denial, resistance, attraction.

**5. Match the word on the left with the correct definition on the right:**

- |                 |  |
|-----------------|--|
| 1. concern      | a) take place of sth that is less efficient, less modern;  |
| 2. displacement | b) measure of rate of change in position of sth with respect to time, involving speed and direction; |
| 3. acceleration | c) smb or sth that is fundamentally important to sth;  |
| 4. cannonball   | d) rate of increase in the velocity of sth;  |



5. friction e) resistance encountered by an object moving relative to another object with which it is in contact;
6. supersede f) be about a particular topic;
7. discount g) amount of an object movement measured in a particular direction;
8. velocity h) decide that sth can be disregarded as unimportant;
9. cornerstone i) make sth happen or exist;
10. cannonball j) heavy metal or stone ball.

## MODULE TEST 2

### 1. Are the following statements true or false?

1. The Earth is the same as the other planets in the Solar System.
2. There are 15 planets in the Solar System.
3. The Earth goes around the Sun and this causes the seasons.
4. The earth is the largest planet.
5. We all know what the earth is like inside.

### 2. Read aloud the following pairs of words. Name synonyms, and then antonyms:

1. different – various; 2. complete – full; 3. complicated – easy; 4. useful – useless; 5. usual – unusual; 6. to assist – to aid; 7. to include – to involve; 8. to include – to exclude; 9. high – low; 10. to provide – to supply; 11. to alter – to change.

### 3. Match the verbs with explanations:

- to provide - data for the determination of Earth's age
- to assist - the relative density of the ore
- to measure - equipment necessary for prospecting
- to detect - radioactive anomalies
- to depend on - geologists in searching for mineral deposits
- to emit - different amount of radiation

### 4. Translate into English:

1. На земну кору впливають повітря та вода.
2. На формування ландшафту України впливають холодні вітри з Льодовитого океану.
3. За теплою зимою прийшло прохолодне літо.
4. На температуру повітря дуже впливає висота.
5. За поясом степів йде зона пустель.

### 5. Are the following statements true or false?

1. Lakes are areas of water surrounded by land.
2. Lakes last forever.
3. Lakes disappear if more water flows out of them than the rivers bring in.
4. The Caspian Sea has not changed.

5. Artificial dams have created lakes.

**6. Translate paying attention to the translation of "some" and "same".**

1. All the planets revolve about the sun in the same direction.
2. In time some cracks increase in size and the rock breaks up into small pieces.
3. The line joining on a map all places with the same atmospheric pressure we call an isobar.
4. All the lower atmosphere contains some water vapour.
5. The earth's axis is always inclined in the same direction.
6. Scientists believe that there is some air at the height of 200 miles.

**7. Translate into English:**

Африка – другий за величиною материк після Євразії. Його площа разом з островами дорівнює 30,3 млн кв. км. Біля берегів Африки мало островів, тільки один острів – Мадагаскар – займає значну територію. Береги Африки порівняно з іншими материками слабо порізані. Тут є тільки одна велика затока – Гвінейська, яка мало врізається в сушу, і лише один великий півострів – Сомалі, який виступає в Індійський океан. В Африці мало бухт, зручних для будівництва портів.

**8. Select the English equivalents from the right column to the Ukrainian words in the left column.**

1. esophagus	a) зовнішня оболонка, оболонка
2. particle	b) луска
3. passage	c) функція
4. waste	d) стравохід
5. function	e) частинка
6. specific	f) скорочення
7. include	g) включати
8. contraction	h) специфічний
9. scales	i) зайвий, непотрібний

10. integument	j) проходження, прохід
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### 9. What word is odd?

1. microbe, spoon, virion, bacteria, microorganism, pathogen.
2. beer, cheese, bread, wine, fish, ore, meat, butter.
3. host, nucleic acid, RNA, DNA.
4. leucosis, yellow fever, plant, brucellosis, anthrax, glanders, rabies, toxoplasmosis.

### 10. Match two halves of the sentences

1. Chemical changes
  2. Melting, boiling and
  3. Chemists investigate the aggregates
  4. Dehydration synthesis is a chemical reaction that involves molecules
  5. Chemical bond is a process of
  6. Hydrocarbons are organic molecules
  7. Chlorination is a method of water
  8. Diatomic molecules are made up of identical elements
- 
- a. to form larger and complex molecules.
  - b. evaporation are the physical changes
  - c. that consist of carbon and hydrogen.
  - d. and are called diatomic elements.
  - e. linking elements (atoms) in molecules by electrical force.
  - f. can form new substances.
  - g. disinfection and is used all over the world.
  - h. that are of great practical importance.

## GRAMMAR TEST

### Reported Speech.

#### I. Choose the correct item.

1. "He will come tomorrow". She told me that he \_\_\_\_\_ tomorrow.  
a) is coming b) will come c) would come
2. "I see the clouds". He told me that she \_\_\_\_\_ the clouds.  
a) sees b) is seeing c) saw
3. "My mother is taking the bus to work tomorrow". He told me that his mother \_\_\_\_\_ the bus to work tomorrow.  
a) is taking b) was taking c) will take
4. "I will call you". I told her that I \_\_\_\_\_ her.  
a) will call b) would call c) would have called
5. "I have been there". She told me that she \_\_\_\_\_ there.  
a) had been b) has been c) was
6. "I will be studying tomorrow". I told him that I \_\_\_\_\_ tomorrow.  
a) will be studying b) would be studying c) will study
7. "Open the window!". He asked me \_\_\_\_\_ the window.  
a) to open b) open c) opened
8. "I am happy". She told me that she \_\_\_\_\_ happy.  
a) has been b) is c) was
9. "I have seen that movie". He told me that he \_\_\_\_\_ that movie.  
a) had seen b) will have seen c) has seen
10. "I am flying to India tomorrow". He told me that he \_\_\_\_\_ tomorrow.  
a) is flying b) was flying c) will fly
11. Christopher: "Do you want to dance?" Christopher asked me \_\_\_\_\_ to dance.  
a) did I want b) weather I want c) if I wanted
12. Betty: "When did you come?" Betty wanted to know \_\_\_\_\_.  
a) if I came b) when I had come c) when had I come
13. Mark: "Has John arrived?" Mark asked me \_\_\_\_\_.  
a) if John had arrived b) had John arrived c) if had John arrived
14. Ronald: "Where does Maria park her car?" Ronald asked me \_\_\_\_\_.  
a) if did Maria park b) where Maria parked her car  
c) where did Maria park her car
15. Elisabeth: "Did you watch the latest film?" Elisabeth asked me \_\_\_\_\_ the latest film.  
a) if had I watched b) if I had watched c) if did I watch
16. Mandy: "Can I help you?" Mandy wanted to know \_\_\_\_\_ help me.  
a) weather could she b) if could she c) if she could
17. Andrew: "Will Mandy have lunch with Sue?" Andrew asked me \_\_\_\_\_ have lunch with Sue.  
a) if Mandy would b) if would Mandy c) weather Mandy will
18. Justin: "What are you doing?" Justin asked me what \_\_\_\_\_.  
a) are they doing b) I was doing c) was I doing

19. Frank: "How much pocket money does Lisa get?" Frank \_\_\_\_\_.

a) wanted to know how much pocket money Lisa got b) wants to know how much pocket money Lisa gets c) wanted to know how much pocket money Lisa had got

20. Anne: "Must I do the shopping?" Anne \_\_\_\_\_.

a) said if she had to do the shopping b) asked if she has to do the shopping c) asked if she had to do the shopping

21. Ian and Marvin: "We need new shoes." Ian and Marvin remarked (that) \_\_\_\_\_ new shoes.

a) they needed b) they need c) we needed

22. Teacher: "Rachel has never been to Philadelphia." The teacher \_\_\_\_\_ (that) Rachel \_\_\_\_\_ to Philadelphia.

a) told / wasn't b) asked / had never been c) said / had never been

23. Nick: "Walter doesn't eat meat." Nick \_\_\_\_\_ us (that) Walter \_\_\_\_\_ meat.

a) said / hadn't eat b) told / didn't eat c) noticed / wasn't eating

24. Gloria: "I am sorry but I can't come to your birthday party because I am going away for the weekend." Gloria said that she \_\_\_\_\_ sorry but she \_\_\_\_\_ come to my birthday party because she \_\_\_\_\_ away for the weekend.

a) is / couldn't / has gone b) was / couldn't / was going

c) was / was able to / had gone

25. Judy: "I have already written this paragraph four times". Judy \_\_\_\_\_ that paragraph \_\_\_\_\_ four times.

a) complained / had already written b) remarked / wrote c) said / has already written

### **Infinitive or Gerund**

#### **I. Choose the correct item.**

1. After his insulting comments, I thought Jack deserved \_\_\_\_\_ fired.

a) being b) to be c) having been

2. Max avoided \_\_\_\_\_ his cell phone when other people were in the room.

a) to use b) using c) use

3. We arranged \_\_\_\_\_ a taxi pick us up and take us to the airport.

a) having had b) to have c) having

4. I resent \_\_\_\_\_ treated like a servant in my own home!

a) to be b) was c) being

5. Frank completed \_\_\_\_\_ the new barn last week. Next, he is going to paint it red.

a) built b) having built c) building

6. Don't worry, I don't mind \_\_\_\_\_ dinner. I think I'll make fish with steamed vegetables, and a big salad on the side!

a) made b) making c) to make

7. Crying, the mother looked into the television camera and said, "Society will no longer tolerate \_\_\_\_\_."

a) to drink and drive b) drinking and driving c) having drunk and to drive

8. Karen and Neil would like \_\_\_\_\_ that new dance club downtown. It's supposed to have one of the largest dance floors in the world.  
a) try b) trying c) to try
9. I can't see \_\_\_\_\_ a car when you don't even have a driver's license. That doesn't make any sense!  
a) having bought b) to buy c) buying
10. When do you wish \_\_\_\_\_, now or later?  
a) to begin b) beginning c) began
11. My mother usually goes \_\_\_\_\_ at the weekends.  
a) to fish b) fishing c) fish
12. My father loves \_\_\_\_\_ to music.  
a) to listen b) listen c) listening
13. Do you \_\_\_\_\_ lunch at home every day?  
a) to have b) have c) having
14. We always go \_\_\_\_\_ on Saturdays.  
a) ride b) riding c) to ride
15. I hate \_\_\_\_\_ e-mails.  
a) write b) to write c) writing
16. I want \_\_\_\_\_ to the manager, please.  
a) speak b) to speak c) speaking
17. Do you go \_\_\_\_\_ in the winter?  
a) ski b) to ski c) skiing
18. Joan dislikes \_\_\_\_\_ in an office.  
a) to work b) work c) working
19. Would you like \_\_\_\_\_ for a walk?  
a) to go b) go c) going
20. Can you \_\_\_\_\_ a musical instrument?  
a) play b) to play c) playing
21. I would like \_\_\_\_\_ the bill now, please.  
a) pay b) to pay c) paying
22. Could you \_\_\_\_\_ the phone?  
a) answer b) to answer c) answering
23. I enjoy \_\_\_\_\_ to get up so early in the morning. Sleeping in is great!  
a) having b) not to have c) not having
24. Nancy proposed \_\_\_\_\_ a picnic at the beach.  
a) our having b) our to have c) us to have
25. Do you wish \_\_\_\_\_, or would you like to stop now?  
a) to continue b) continuing c) our continuing
26. His car needs \_\_\_\_\_. It looks like it hasn't been washed in years.  
a) him to wash b) washing c) to wash
27. Smokers risk \_\_\_\_\_ several smoking related illnesses.  
a) me to get a) getting c) to get
28. The astronomer told us \_\_\_\_\_ into the sun during the eclipse.  
a) not looking b) not to look c) looking

29. I wish she would just quit \_\_\_\_\_ all the time.

a) complaining b) to have complained c) to complain

30. Linda regretted \_\_\_\_\_ her high school reunion.

a) not to go to b) to have gone to c) not going to

### Participle Clauses.

#### I. Choose the correct item.

1. \_\_\_\_\_, she didn't mention her daughter's promotion.

a) Not wishing to boast b) Her not wishing to boast

c). Alice not wishing to boast

2. The company closed for a year of renovations, \_\_\_\_\_.

a) the boss leaving many employees looking for work. b)

leaving many employees looking for work. c) left many employees looking for work.

3. \_\_\_\_\_, he had a long holiday.

a) Having finished the novel b) The novel finished c) The writer having finished the novel

4 \_\_\_\_\_ with his daughter's behaviour, he bought her sweets.

a) Her daddy pleased b) Pleased c) Having pleased

5 \_\_\_\_\_, Mark retired from international competition.

a) Having won every major judo title b) Won every major judo title

c) He having won every major judo title

6 \_\_\_\_\_, I feel that my training sessions are much better.

a) Taking my multivitamin b) Taken my multivitamin c). I taking my multivitamin

7 \_\_\_\_\_, the surface maintains its original appearance over time.

a) Cleaned with hot water and soap b) Cleaning with hot water and soap c) Having cleaned with hot water and soap

8 \_\_\_\_\_, he heard a strange noise that came from the ceiling.

a) Reached the top of the stairs b) John reaching the top of the stairs

c) Reaching the top of the stairs

9 \_\_\_\_\_, he had to stay home while his friends were out having fun.

a) Without John having any money b) Not having any money

c) Not being had money

10. The boy \_\_\_\_\_ a blue parcel crossed the street.

a) carried b) having carried c) carrying

11. The battle \_\_\_\_\_ at this place was very significant.

a) fought b) fighting c) having fought

12. We were sitting in the bus shelter \_\_\_\_\_ for the rain to stop.

a) waiting b) waited c) having waited

13. \_\_\_\_\_ a little money, he travelled to Australia.

a) Saving b) Having saved c) saved

14. \_\_\_\_\_ along, they didn't see the car coming.

a) Having chatted b) Chatting c) Chatted

15. The reception, \_\_\_\_\_ carefully, was a great success.

a) prepared b) having been prepared c) be prepared

16. \_\_\_\_\_ by his mother, he didn't have to wait for the bus.



- a) Picked up b) Picking up c) Having picked up  
 17. \_\_\_\_\_ her degree, she started to work for an international company.
- a) Finished b) Finishing c) Having finished  
 18. \_\_\_\_\_ to the radio she didn't hear the doorbell.
- a) Having listened b) Listened c) Listening  
 19. \_\_\_\_\_ yet, the room looked like a battlefield.
- a) Not being tidied up b) Having tidied up c) Not having been tidied up  
 20. \_\_\_\_\_ a boyfriend, she flirted with every guy she met.
- a) Not having had b) Not having c) Not had  
 21. Before \_\_\_\_\_ the house, he switched off the lights.
- a) left b) leaving c) having left  
 22. \_\_\_\_\_ there before, he was stunned.
- a) Not having been b) Not being c) Was  
 23. While \_\_\_\_\_ dinner, she cut her finger.
- a) preparing b) having prepared c) prepared  
 24. When \_\_\_\_\_ around Ireland, I always stay in youth hostels.
- a) travelling b) traveled c) having traveled  
 25. \_\_\_\_\_ him at the station, I drove straight to the supermarket.
- a) Dropping b) Dropped c) Having dropped  
 26. While \_\_\_\_\_ on the phone, they forgot everything around them.
- a) having told b) talking c) told  
 27. The conference \_\_\_\_\_ by non-governmental organisations was about globalisation.
- a) planning b) planned c) having been planned  
 28. Irish people \_\_\_\_\_ in Great Britain have the right to vote in British elections.
- a) having lived b) lived c) living  
 29. The problems \_\_\_\_\_ will be essential for your exam.
- a) discussed b) discussing c) having discussed  
 30. Animals \_\_\_\_\_ plants are called herbivores.
- a) eating b) eaten c) having eaten

### If-clauses.

#### I. Choose the correct item.

1. If I had more time, I \_\_\_\_\_ to your party yesterday.  
 a) would have come b) will come c) came
2. Give the book to Jane if you \_\_\_\_\_ it.  
 a) have read b) read c) will read
3. If you hadn't lost our flight tickets, we \_\_\_\_\_ on our way to the Caribbean now.  
 a) would be b) will be c) were
4. If you \_\_\_\_\_ dinner right now, I'll come back later.  
 a) have b) are having c) had
5. If we \_\_\_\_\_ off earlier, we wouldn't be in this traffic jam now.  
 a) had set b) have set c) will set
6. What would you do if you \_\_\_\_\_ of murder?

- a) accused b) will accuse c) were accused
7. If I hadn't eaten that much, I \_\_\_\_\_ so sick now.
- a) won't feel b) would not feel c) hadn't felt
8. We would take another route if they \_\_\_\_\_ the road.
- a) haven't closed b) had not closed c) closed
9. She only \_\_\_\_\_ if she's in a good mood.
- a) is singing b) sang c) sings
10. If she were sensible, she \_\_\_\_\_ that question, by which she offended him so much.
- a) would not have asked b) won't ask c) wouldn't ask
11. \_\_\_\_\_ after their dog again if they go on holiday this year?
- a) will you look b) would you look c) looked
12. I \_\_\_\_\_ the mail if it had contained a virus.
- a) would not have opened b) won't open c) hadn't opened
13. \_\_\_\_\_ that strict if you'd known the truth?
- a) Will you be b) Would you have been c) Will you have been
14. If I \_\_\_\_\_ to classical music, I \_\_\_\_\_ good poems.
- a) listen / can write b) listens / will write c) will listen / write
15. Lisa \_\_\_\_\_ after her baby brother if her father \_\_\_\_\_ jogging.
- a) look / go b) looks / will go c) must look / goes
16. If you \_\_\_\_\_ the train, you \_\_\_\_\_ in Sheffield before 8 pm.
- a) take / should arrive b) takes / arrives c) will take / arrive
17. The girls \_\_\_\_\_ if they \_\_\_\_\_ the tickets yet.
- a) harry / book b) harries / books c) should harry / haven't booked
18. If Phil \_\_\_\_\_ that, Sophia \_\_\_\_\_.
- a) do / scream b) does / will scream c) will do / screamed
19. If they \_\_\_\_\_ careful with the spelling of the new words, they \_\_\_\_\_ a good mark.
- a) aren't / won't get b) won't be / get not c) be not / can get
20. You \_\_\_\_\_ orange if you \_\_\_\_\_ yellow to red.
- a) get / add b) got / can add c) can get / will add
21. I \_\_\_\_\_ Emily my car if she \_\_\_\_\_ it.
- a) lend / need b) lent / will need c) can lend / needs
22. If she \_\_\_\_\_ my dictionary, she \_\_\_\_\_ it back to me.
- a) find / give b) finds / must give c) will find / gave
23. John \_\_\_\_\_ a new monitor if his mother \_\_\_\_\_ him 100 euros.
- a) buy / give b) buys / will give c) might buy / gives
24. If I \_\_\_\_\_ the film in the cinema, I wouldn't have watched it on TV again.
- a) had seen b) saw c) see
25. They'd have been able to return the bottle if they \_\_\_\_\_ the labels.
- a) don't tear off b) didn't tear off c) hadn't torn off
26. If you \_\_\_\_\_ for a little moment, I'll tell the doctor you are here.
- a) wait b) waited c) will wait

27. If you \_\_\_\_\_ the volume down, the music \_\_\_\_\_ clearer.  
 a) turn / sounded b) turns / would sounded c) could turn / would sound
28. This song \_\_\_\_\_ the charts if they \_\_\_\_\_ it in a studio.  
 a) hit / will record b) might hit / recorded c) will hit / record
29. Your pencils \_\_\_\_\_ if you \_\_\_\_\_ your school bag more carefully.  
 a) wouldn't brake / packed b) will brake / have packed c) have broken / will pack
30. If the girls \_\_\_\_\_ to bed earlier, they \_\_\_\_\_ all through the lesson.  
 a) went / wouldn't yawn b) go / yawn c) will go / hadn't yawn

### Joining Clauses

#### I. Choose the correct item.

1. Fans wondered how an old man \_\_\_\_\_ walked with a limp could play football.  
 a) which b) who c) where
2. The team \_\_\_\_\_ scores the most points in this game will win the tournament.  
 a) that b) which c) where
3. Our ability to use language is one of the things \_\_\_\_\_ set us apart from animals.  
 a) who b) that c) which
4. Carmen is the only one of the applicants \_\_\_\_\_ has the ability to step into this position.  
 a) which b) that c) who
5. This is the house \_\_\_\_\_ our grandfather built.  
 a) which b) that c) who
6. They live in a house \_\_\_\_\_ looks a bit like a castle.  
 a) that b) which c) who
7. All the money \_\_\_\_\_ we had was stolen last night.  
 a) that b) which c) who
8. Alice is the only person \_\_\_\_\_ understands me.  
 a) that b) which c) who
9. Chris is the only person \_\_\_\_\_ I trust.  
 a) that b) which c) who
10. This is the place \_\_\_\_\_ I saw Robert for the first time.  
 a) that b) which c) where
11. Jessica is going out with a boy \_\_\_\_\_ brother is a swimming champion.  
 a) whose b) who c) that
12. This is the picture \_\_\_\_\_ Martin painted last week.  
 a) whose b) \_\_\_\_\_ c) that
13. I quite like the girl \_\_\_\_\_ you have invited to the party.  
 a) whose b) \_\_\_\_\_ c) that
14. A scientist is a person \_\_\_\_\_ asks questions and tries different ways to answer them.  
 a) who b) that c) whose
15. I won't ask Hannah anything \_\_\_\_\_ could embarrass her.  
 a) which b) who c) whose
16. People \_\_\_\_\_ had small children boarded the plane first.  
 a) who b) which c) whose

17. Can you see the car \_\_\_\_\_ is coming up the road?  
a) which b) who c) that
18. The new gym \_\_\_\_\_ was built last year is better than the old one.  
a) where b) that c) whose
19. Yesterday, I met a girl \_\_\_\_\_ was in my class in primary school.  
a) which b) where c) who
20. I bought a stopwatch \_\_\_\_\_ broke after a week.  
a) whose b) who c) which
21. This is the house \_\_\_\_\_ we lived when I was a child.  
a) which b) where c) whose
22. I'm phoning the person \_\_\_\_\_ car is parked in front of the gate.  
a) whose b) who c) that
23. The shop \_\_\_\_\_ I bought my table tennis bat is closed today.  
a) who b) which c) where
24. There is a swimming pool \_\_\_\_\_ we swim every morning.  
a) who b) which c) where
25. The television \_\_\_\_\_ was bought 20 years ago was stolen.  
a) that b) were c) who
26. The customer liked the waitress \_\_\_\_\_ was very friendly.  
a) who b) which c) whose
27. The man \_\_\_\_\_ I saw told me to come back today.  
a) who b) whom c) that
28. People \_\_\_\_\_ rents have been raised can appeal.  
a) whose b) who c) that
29. The film is about a spy \_\_\_\_\_ wife betrays him.  
a) whose b) whom c) who
30. This is the picture \_\_\_\_\_ caused such a sensation.  
a) who b) whose c) which
31. The stairs \_\_\_\_\_ lead to the cellar are rather slippery.  
a) which b) who c) where
32. The ladder \_\_\_\_\_ I was standing on began to slip.  
a) \_\_\_\_ b) where c) whose
33. Ann, \_\_\_\_\_ children are at school all day, is trying to get a job.  
a) who b) whose c) whom
34. Have you seen the photographs \_\_\_\_\_ Ann took?  
a) \_\_\_\_ b) where c) whose
35. What's the name of the hotel \_\_\_\_\_ we stayed?  
a) when b) where c) which

## GRAMMAR EXERCISES

### THE SEQUENCE OF TENSES

#### Exercise 1. Change direct statements and questions into indirect ones according to the patterns

A

I live here. — She said (that) she lived there.

I am not hungry. — She said she was not hungry.

I have lived here for two years. — He said he had lived there for two years.

I shall do it tomorrow. — He said he would do it the next day.

1. He usually goes to the country on Sundays. 2. He usually watches the news on TV every night. 3. He'll telephone you when he returns. 4. Since she left school she has seen him only once. 5. She'll return my book as soon as she has read it. 6. She has been studying Italian for a year. 7. He is watching TV now. 8. She is rising at 5 tomorrow. 9. She is going to take her sister to the Zoo today.

B Who is he? — I wondered who he was. Is he a student?

— I wondered if he was a student.

1. What does he want? 2. Why is he late? 3. Will he come? 4. Whose book is it? 5. Who lives in that large house at the corner? 6. What are they doing? 7. What is it? 8. Are they sportsmen? 9. Are you Ukrainian?

C Does Pete study at school? — He asked me if Pete studied at school.

When did you see the film? — He asked me when I had seen the film. 1. Do you find English a difficult language to learn? 2. Have you been waiting for a long time? 3. When does your brother return from England? 4. Where did you go for your holiday? 5. How many English lessons do you have each week? 6. Hasn't Tom left yet? 7. How long have you been learning English? 8. Are you going to take an examination in English?

#### Exercise 2. Change according to the patterns

A She lives here. (I remembered). — I remembered (that) she lived there.

1. What does he mean? (I understood). 2. It is curious. (She thought). 3. I'm very hungry. (He said). 4. She is speaking English. (I heard). 5. I don't like football. (John confessed). 6. You are right. (I thought). 7. My friend's name is Jane. (She said). 8. How well you are looking! (Everyone said). 9. He is a boxer. (I didn't know). 10. I am tired. (She complained). 11. What is Dick doing? (He asked). 12. Is he right? (I doubted). 13. It is getting late. (She remarked). 14. Are you satisfied or not? (She asked me).

B Jane will be back in a few days. (He told me). — He told me (that) Jane would be back in a few days.

1. The train will leave in a quarter of an hour. (He said). 2. I'll behave myself. (The boy promised). 3. How shall we proceed? (She asked). 4. I'll do it now. (Karen said). 5. Things will improve. (The assumption was). 6. I'll be here in half an hour. (He promised). 7. When will the plane leave? (I wondered). 8. He'll do his best. (I was sure). 9. I'll telephone today. (He said). 10. How long will it take me to do the work? (She wondered). 11. My sister will be thirty in May. (He said). 12. I shall work harder next term. (He promised). 13. The plan will fail. (I warned them). 14. Shall I open the window? (He wondered).

C I warned her against taking a hasty decision. (He said).

— He said that he had warned her against taking a hasty decision.

1. No one has ever spoken to me. (She complained). 2. You've convinced me. (I told her). 3. Did you see the boy that evening? (She was asked). 4. The exhibition finished last week. (Karen explained). 5. The play proceeded very slowly from this point. (He said). 6. I saw them yesterday. (He told me). 7. I moved there two years ago. (He explained). 8. Have they left? (She wondered). 9. Our team has won the match at last! (The boys exclaimed). 10. Your parcel arrived yesterday. (He told me). 11. Have you been to London? (She asked me). 12. She has already seen the picture. (He remarked). 13. I don't know how it was done. (He said).

### **Exercise 3. Change to the past. Mind the sequence of tenses**

*I have no doubt that you will succeed. — I had no doubt that you would succeed.*

1. I question whether he is right. 2. She complains that no one has ever spoken to her. 3. It is surprising that you didn't lose your way in the dark. 4. She has her doubts whether he will come. 5. The question is what she will do next. 6. I promise I shall return your book as soon as I have read it. 7. He admits he has made a mistake. 8. Few people know how hard he works. 9. I wonder why she left without saying good-bye. 10. We all hope (that) you will be able to come. 11. He says he is busy. 12. I promise (that) I will come. 13. Mary says (that) I am wrong. 14. He asks what John is doing.

### **Exercise 4. Change according to the patterns**

Please show me your new book. — He asked her to show him her new book.

Don't take my book. — He told her not to take his book.

1. Take a seat, please. 2. Have a cup of tea, please. 3. Don't buy any oranges today. 4. Please don't go out tonight. 5. Please show me round the city tomorrow. 6. Please book two train tickets. 7. Don't be late for the theatre, please.

### **Exercise 5. Change direct speech into reported speech**

1. «Please show them round the city,» Peter said to him. 2. «Don't call me up before Wednesday,» Mr. Dobson said to him. 3. «Please phone Mr. Petrov,» Mr. Dodd said to the secretary. 4. «Please show me another pair of shoes,» the customer said to the shop-assistant. 5. «Don't buy any bread today,» Mary said to her son. 6. «Please don't come back very late,» Peter said to his daughter. 7. «Please try on these shoes,» the shop-

assistant said to the customer. 8. John asked a passer-by, «Is it far from here?» 9. Jane asked, «Is there a bus from here to the National Gallery?» 10. Peter asked, «Does this bus go to the station?» 11. John asked an old man, «Can you tell me where to get off?» 12. Ann asked one of the passengers, «Is this the right bus for the Town Hall?» 13. Peter asked me, «What are your plans for tomorrow morning?» 14. He asked me, «What are you doing in the afternoon?» 15. He asked John, «What Art galleries have you been to?» 16. «Did you find the shortest way to the underground station yesterday?» Bill asked him. 17. «How long will it take me to get there?» he asked the taxi-driver. 18. The policeman said to him, «Turn round and turn left at the traffic-lights».

### **Exercise 6. Change the sentences to direct speech**

1. The farmer said that he hadn't grown any wheat since 1975. 2. The teacher told his students that he was going to give them a test. 3. Mother told her children not to play with fire. 4. I asked Peter to open the window. 5. I told him that I hadn't seen his brother for a long time. 6. Henry told the teacher that he liked arithmetic, but he didn't like algebra. 7. I told the taxi-driver that he was driving too fast. 8. My sister said that she hadn't got a watch. 9. John asked who had taken his pen. 10. I asked my sick friend what the doctor had said. 11. He asked me how I spelt «beginning». 12. Mary's mother asked her if she was hungry. 13. I asked Tom if he had sold his bicycle. 14. Mary's mother asked her whether she was hungry or thirsty. 15. The teacher asked his students not to forget their homework.

### **Exercise 7. Translate into English. Follow the rules of the Sequence of Tenses where necessary**

1. Завтра я запитав його, чого він хоче. 2. Він сказав, що дискусія продовжується. 3. Сподіваюсь, що лист прийде вчасно. 4. Вона повідомила про те, що бачила. 5. Я сумнівався, чи він був правий. 6. Наступного разу я зроблю, як він говорить. 7. Цікаво, чому він спізнився. 8. Він помітив, що раптом похолоднішало. 9. Він сказав, що поїхав до того, як вони прибули. 10. Вона зауважила, що стає пізно. 11. Я обіцяв, що прийду. 12. Кажуть, що дослід удався. 13. В газетах сповіщали, що договір вже підписано. 14. Він помітив, що, мабуть, буде дощ. 15. Вона сказала, що хоче бачити мене. 16. Звідки тобі було відомо, що він прийде? 17. Джон сказав, що я помиляюсь.

## THE TYPES OF QUESTIONS

**Exercise 1. Ask questions using the words in brackets. Follow the patterns. Mind the tense**

### A general question

*They go to see him everyday. (Tom). — Does Tom go to see them everyday?*

1. I returned home late yesterday. (Ann). 2. She meets her friends every day. (You). 3. He loses his pen every day. (Mary). 4. They are listening to the news now. (Your friend). 5. The children were playing in the garden at 5 o'clock yesterday. (Peter). 6. We spent our holidays at the seaside last summer. (Jane). 7. She stayed at home on her day off. (John). 8. I have got many books. (You). 9. I have read this book. (Mary). 10. He will arrive tomorrow morning. (Your mother). 11. I shall go there next month. (She). 12. He has written a novel. (They).

### B special question

*She went to see them yesterday. (When). — When did she go to see them?* 1. He got up early yesterday. (When). 2. She met him at the seaside last. (Where). 3. They spent their summer in the South. (Where). 4. He will pack his bags tomorrow night. (What). 5. He has sold his car. (What). 6. She is typing a letter now. (What). 7. She usually drinks tea in the morning. (When). 8. They have been discussing this matter for two hours. (How long). 9. It was raining yesterday, so I took my umbrella. (Why). 10. Dinner will be served soon. (When). 11. He is going to spend two days more here. (Where).

### C subject question

*She went to see them yesterday. (Who). — Who went to see them yesterday?*

1. He was watching TV when you phoned. (Who). 2. We were skating all day long yesterday. (Who). 3. The film has been running for a month. (What). 4. My friend has lived here all his life. (Whose friend). 5. These houses were built about twenty-five years ago. (What). 6. This room hasn't been swept for a fortnight. (What room). 7. The sick man has just been taken to hospital by ambulance. (Who). 8. He won't get the letter in time. (Who). 9. My friend can't find a good job. (Whose friend). 10. Sally and Tom were driving to Scotland. (Who). 11. They haven't seen Bill for ages. (Who). 12. I get up at 7 o'clock in the morning. (Who).

**Exercise 2. Ask general questions according to the pattern. Mind the tense**

*Ask Peter if he lives far from here. — Peter, do you live far from here?*

1. Ask Mary if she is fond of skating. 2. Ask Jane if she has got many English books at home. 3. Ask John if he has already had his breakfast. 4. Ask him if he has done these exercises. 5. Ask Sam if he is going to leave for Lviv on Sunday. 6. Ask Jane if she has passed her English. 7. Ask him if his father is busy. 8. Ask your friend if he is writing a report. 9. Ask Tom if he will come on Sunday. 10. Ask them if dinner will be served soon. 11. Ask Mary if she saw him yesterday. 12. Ask your friends if they had been discussing the plan for half an hour before he came.



**Exercise 3. Ask alternative questions changing the Present Indefinite Tense into the Present Continuous Tense. Follow the pattern**

*At this time he always reads. (To have dinner). — Is he reading or having dinner now?*

1. At this time he always plays tennis. (To play football). 2. At this time my mother usually sweeps the floor. (To cook dinner). 3. At this time Mary always does her homework. (To listen to the radio). 4. At this time he always looks through newspapers. (To look through magazines). 5. At this time Nick usually does his morning exercises. (To sleep). 6. At this time my parents usually play chess. (To go for a walk). 7. At this time my grandmother always cooks dinner. (To make a dress). 8. At this time my father always takes a bath. (To walk).

**Exercise 4. Ask an alternative question as in the pattern. Mind the tense**

*Ask Peter if he will come on Saturday or on Sunday. — Peter, will you come on Saturday or Sunday?*

1. Ask Helen if she made her report two or three days ago. 2. Ask Ann if she is going home or to the library after the lecture. 3. Ask her if we are going to have our meeting before or after the lessons. 4. Ask Miss Smith if there is much or little snow here in winter. 5. Ask Jane if she is fond of skating or skiing. 6. Ask Peter if he has got many or few English books at home. 7. Ask John if he can speak English or French. 8. Ask the teacher if we must read one or two texts for the next lesson.

**Exercise 5. Translate the alternative questions into English**

1. Його день народження у лютому чи у березні? 2. Він обіцяв прийти о шостій чи о п'ятій годині? 3. Ми повинні виконати цю вправу усно чи письмово? 4. Ви зайдете за мною чи ми зустрінемося у бібліотеці? 5. Завтра ви збираєтесь залишитися вдома чи піти до друзів?

**Exercise 6. Add question tags. Follow the pattern**

A

*He is fond of reading. — He is fond of reading, isn't he? His bag isn't heavy. — His bag isn't heavy, is it? He will have to start early. — He will have to start early, won't he? He won't have to start early. — He won't have to start early, will he?*

1. They are going to his lecture tonight. 2. She will pass her examination successfully. 3. They weren't present at the conference last Monday. 4. These students aren't taking the examination. 5. He wasn't sitting at the back desk. 6. She won't be back from school till after dinner. 7. He'll miss the train if he doesn't hurry. 8. They were just in time. 9. The journey was not an easy one. 10. That was not a very polite remark.

B

1. She likes music very much. — She likes music very much, doesn't she?  
2. He didn't attend lectures regularly. — He didn't attend lectures regularly, did he?  
1. The house looks very attractive. 2. You never drink coffee. 3. She easily loses her temper. 4. These students don't know Dutch. 5. She always has dinner at 5 o'clock. 6. They have three music lessons a week. 7. He didn't have much work to do. 8. She

usually comes in time. 9. They always pass their examinations successfully. 10. He learned that poem by heart last week. 11. Tom didn't promise to give her his notes.

C

1. They have passed their examination today. — They have passed their examination today, haven't they?

2. They haven't passed their examination today. — They haven't passed their examination today, have they?

1. You haven't had your lunch yet. 2. We have been waiting for him for an hour and a half. 3. These students haven't seen him at the lecture. 4. The driver hasn't broken the traffic regulations. 5. She has invited him to our party. 6. He has learned the grammar rules.

D

1. She can read English texts now. — She can read English texts now, can't she?

2. She couldn't read English texts last year. — She couldn't read English texts last year, could she?

1. He could make a report yesterday. 2. They couldn't do a written translation of this article. 3. He could have practised those rules. 4. She can learn this poem by heart. 5. She couldn't have written such a composition.

E There is a book on the table. — There is a book on the table, isn't there?

1. There wasn't a single seat vacant. 2. There used to be a hotel at the corner. 3. There won't be time to get lunch before the lecture. 4. There isn't any milk in the jug. 5. There can't be anything wrong with him. 6. There were some books on the shelf.

### **Exercise 7. Ask subject questions. Don't forget to use the direct word order.**

***Mary knows German. — Who knows German?***

1. My friend will graduate from the University this year. 2. Peter failed at the examination. 3. They have already visited the new plant. 4. Jane will give you a piece of advice. 5. Your friends were late for the seminar. 6. Something fell on the floor. 7. Ann has broken her pen. 8. The teacher is giving a lesson. 9. They have already written the test. 10. Tom went on an excursion last Sunday. 11. This switch operates the machine.

## MODALS

### Exercise 1. Make these sentences a) interrogative, b) negative

*She can read English books now. — Can she read English books now? She can't read English books now.*

1. He can speak English quite well. 2. The boy can climb the tree. 3. I can type this letter for you. 4. The machine can be packed into this case. 5. You can persuade him to give up smoking. 6. My brother can do sums better than his friend. 7. His sister's son can run very quickly.

### Exercise 2. Change to the past

*You can get there by car. — You could get there by car yesterday.*

1. He can play the piano very well. 2. You can visit this museum. 3. I can go sightseeing. 4. I can't finish the work in time. 5. She can translate these English texts. 6. The teacher can't give you this book. 7. Can they see this picture at the exhibition? 8. Nobody can do it better. 9. I can't believe my eyes. 10. They can easily get to the University in half an hour. 11. We can watch them playing football. 12. I cannot understand what it means.

### Exercise 3. Add question tags

*She can swim. — She can swim, can't she?*

1. She can skate. 2. We can help them. 3. If necessary, my brother could speak English. 4. Now they can hear us. 5. I couldn't see this picture last year. 6. We can't use the definite article with this noun. 7. Your sister can't speak English. 8. His son can't be out after nine o'clock. 9. You couldn't change the time of the meeting.

### Exercise 4. Change to the future

*We can speak French a little. — We will be able to speak French a little in a year.*

1. Everybody can do this work. 2. He can write to me. 3. We can see the performance tonight. 4. I can't buy this book. I haven't got enough money about me. 5. Which of your students can take part in the concert? 6. Can you go to the South in the summer? 7. When can they go somewhere for a holiday? 8. I am sure he can make a good report.

### Exercise 5. Translate into Ukrainian. Remember that the modal verb «can» may have the meaning of doubt, uncertainty

*My son can't be telling lies. — Не може бути, щоб мій син брехав.*

1. It can't be true. 2. It can't be Peter. 3. He can't know French well. 4. He can't have read this book in two days. 5. I can't have lost the ticket. I've put it in my pocket. 6. They can't have arrived. I received the telegram only yesterday. 7. He can't have been studying English for only three years. 8. They can't have been arguing for two hours.

### Exercise 6. Change the sentences according to the pattern. Translate them into Ukrainian

*I am able to help him. Я в змозі допомогти йому. — I can help him. Я можу допомогти йому.*

*I was able to help him. Я зміг допомогти йому. — I could help him. Я міг допомогти йому.*

1. He was able to repair his radio set himself. 2. I am able to translate this text by myself. 3. We were able to finish the work in five days. 4. I am glad that I was able to help him. 5. We are unable to wait for her any longer. 6. Are you able to start working immediately?

### **Exercise 7. Refer the sentences to the past using the Perfect Infinitive**

*He can't know this. Він не може цього знати. — He couldn't have known this. Не може бути, щоб він про це знав.*

1. It can't be true. 2. The conference can't be cancelled. 3. Can it be cold? 4. Can you discuss the subject without your friend? 5. You can't hear him. 6. He can escape by this window. 7. It can't be so. 8. Can you believe it? 9. They can't be at home. 10. Can they be waiting for someone? 11. She can't mean it.

### **Exercise 8. Answer the questions according to the pattern. Use the Perfect Infinitive. Translate the answers**

*Did you go to the theatre? — No. We could have gone to the theatre but we decided not to. Ми могли б піти до театру, але вирішили не йти.*

1. Did you go to the concert last night? 2. Did Tom take the examination? 3. Did John play football? 4. Did she buy a new car? 5. Did they play tennis yesterday? 6. Did you stay with Mary in New York?

### **Exercise 9. Open the brackets using the correct form of the Infinitive.**

#### **Translate the sentences into Ukrainian**

1. Is it your dog running in the garden? — No, it can't (be) my dog. My dog is at home. 2. He couldn't (catch) the 9.20 train because he didn't leave home till 9.25. 3. She can't (read) four hours at a running. She has read only two pages. 4. The door was open. — It couldn't (be) open. I had locked it myself and the key was in my pocket. 5. I saw Ann in the library yesterday. — You couldn't (see) her, she is still abroad. 6. The lecturer is a tall thin man with white hair. — Then it can't (be) Dr. Smith because he is short and fat. 7. We went sailing on a lake in a London park. I think it was the Round Pond. — It couldn't (be) the Round Pond. There are only toy boats there. 8. We went to a restaurant and had a very good dinner for 75 p. — You couldn't (have) a very good dinner if you only paid 75 p.

### **Exercise 10. Translate into English**

1. Чи ви можете мені допомогти? 2. Що я можу для вас зробити? 3. Я знав, що він зможе зробити цю роботу. 4. Я не міг піти додому тому, що йшов дощ. 5. Хто з ваших студентів зможе працювати перекладачем? 6. Він не міг запросити так багато людей. 7. Один з моїх друзів вміє грати у шахи. 8. Вони нічого не можуть обіцяти. 9. Я знав, що можу відповісти на це запитання. 10. Чи зможете ви дістати

квитки на цю виставу? 11. Ви можете пообідати зі мною сьогодні, чи не так? 12. Він міг заповнити бланки до ланчу. У нього був час. 13. Не може бути, щоб він залишив університет.

**Exercise 11. Ask for permission using the modal verb «may». Mind the pattern**  
***To come in. — May I come in?***

1. To go out. 2. To go with you. 3. To have a cigarette. 4. To open the window. 5. To have an apple. 6. To leave the office half an hour earlier today. 7. To trouble you for a glass of water. 8. To ask you to do me a favour.

**Exercise 12. Change the sentences using the verb «may»**  
***We don't mind his smoking here. — He may smoke here.***

1. Do you allow me to smoke here? 2. He permits us to have our meeting in this room. 3. Would you mind my closing the window? 4. Permit me to stay here. 5. We don't mind your visiting us. 6. Will you allow me to see my sister, doctor? 7. Will you allow him to leave the office half an hour earlier today? 8. Will you permit us to watch television?

**Exercise 13. Make the sentences negative**

***You may come in. Ви можете увійти. — You may not come in. Вам не можна увійти.***

1. You may go out now. 2. You may smoke here. 3. He may see his sister now. 4. She may switch on the radio. 5. We may put off the meeting till tomorrow. 6. He may look through this letter. 7. Children may see this film.

**Exercise 14. Change to the past. Mind the sequence of tenses. Translate your sentences into Ukrainian**

He says they may come soon. — He said they might come soon. Він сказав, що вони, мабуть, скоро прийдуть.

1. He says they may come in time. 2. I think it may be the chance of a lifetime. 3. His mother says the boy may be doing his lessons. 4. The teacher thinks that the news may affect us. 5. The students say that he may have told her about the meeting. 6. He says he may wear his new suit.

**Exercise 15. Change the sentences according to the pattern. Remember that «may» may be used to express advice, disapproval or reproach. Translate the sentences**

***He doesn't want to help us. — He might help us. Він міг би допомогти нам (можливо й допоможе).***

***He didn't want to help us. — He might have helped us. Він міг би допомогти нам (але не допоміг).***

1. You never gave them a chance. 2. He did not tell the truth. 3. They are not going to finish their work ahead of time. 4. You do not remember their request. 5. He does not pay attention to written exercises. 6. They do not know the writer's biography. 7. She

did not take the opportunity. 8. He did not warn us of the meeting. 9. The boy did not keep his temper.

**Exercise 16. Change the second part of the sentence to the past using the Perfect Infinitive. Follow the pattern**

*He says she may help them. Він каже, що вона може допомогти їм. — He says she may have helped them. Він каже, що вона, можливо, допомогла їм.*

*He said she might help them. Він казав, що вона може допомогти їм. — He said she might have helped them. Він казав, що вона, можливо, допомогла їм.*

1. I suppose he may ignore their remarks. 2. We hope he may keep his promise. 3. I think your assumption may prove wrong. 4. She suggested that he might be offended. 5. The boy says the teacher may give them a text to translate. 6. He says the students may speak to the dean. 7. He said they might be at home at this time. 8. We thought he might be informed of the matter.

**Exercise 17. Open the brackets using the correct form of the Infinitive. Translate the sentences into Ukrainian**

1. I saw them in the street but they didn't stop to speak to me. They may (be) in a hurry. 2. I know she was in because I heard her radio but she didn't open the door. She may not (hear) the bell. 3. You might (be) right but I don't think you are. 4. If you said that, he might (be) offended. 5. It may (rain), take a coat. 6. He said that it might (rain). 7. Nobody knows how people first came to these islands. They may (sail) from South America on rafts.

**Exercise 18. Translate into English**

1. Він, мабуть, подзвонить мені увечері. 2. Це, мабуть, єдина можливість у житті. 3. Він, можливо, у залі зараз очікує на нас. 4. Ви, мабуть, зустрінете їх на виставці. 5. Вони, мабуть, працюють зараз у бібліотеці. 6. Він, мабуть, захворів. 7. Вона сказала, що вони, можливо, вже приїхали. 8. Вони, можливо, вже обмінялись думками з цього питання. 9. Він міг би попередити нас про збори учора. 10. Він сказав, що Мері, мабуть, все їм розповіла.

**Exercise 19. Change the sentences to the negative. Translate them**

*He must go there. Він повинен їм туди. — He mustn't go there. Він не повинен їм туди.*

1. He must do it. 2. You must wait for them. 3. He must give the dictionary to her. 4. You must read this book. 5. They must put off the meeting.

## THE INFINITIVE

**Exercise 1. Translate the sentences into Ukrainian. Define the function of the Infinitive. (It may be used as a subject, attribute, object, part of a predicate, adverbial modifier)**

- a) 1. To know Russian literature is to know Pushkin, Tolstoy, Chekhov and Gorky. 2. The best way to learn about a country is to read a lot. 3. He said he would try to get on the afternoon flight. 4. I am happy to have met him. 5. I regret to say he thinks too much of himself. 6. I stayed there to see what would happen.
- b) 6. «I'd like you to join us. Will you give me your room number, Jim?» said Mr. Brown. 7. I understood you to have changed your mind. 8. I consider your paper on mouth diseases (to be) brilliant, said Dr. Burton. 9. Everyone in the lobby heard the assistant-manager speak to Dr. Nicholas. 10. He watched the curtain go up. 11. I myself saw Peter hand the papers to Mr. Smith. 12. Do you mean to say it was his father who made him go into politics?
- c) 13. He is said to have established another record. 14. The company is known to have been rehearsing the new play for two months. 15. «He happens to be one of the dentists», said Jim. 16. Bill turned out to be a very good translator. 17. They are unlikely to get to the station in time. 18. He is certain to have kept the appointment. 19. They are bound to agree to our plan.
- d) 20. It won't be too difficult for you to encourage him. 21. This is for Mr. Burton to decide. 22. The most difficult thing for him to do was to agree to our proposal.

**Exercise 2. Make up sentences using the words in brackets and translate them**

**A** *It is important to do this exercise. (To help him). — It is important to help him. Важливо допомогти йому.*

1. It is important to know this rule. (To read this book). 2. It was important to leave him alone. (To talk to the point). 3. It is necessary to discuss this question. (To paint the door). 4. Was it important to convince him? (To take a photo). 5. Was it possible to save him? (To buy a new car). 6. There was no reason to leave him alone. (To permit it). 7. It was very impolite of you to go on reading. (To make such a remark).

**B** *He was the first (man) to arrive. (To help me). — He was the first (man) to help me. Він перший допоміг мені. (Він був першою людиною, яка допомогла мені).*

1. It is the only book to read. (To translate). 2. It is a nice place to live in. (To stay in). 3. She was the first to come. (The last to leave). 4. Who was the first to tell the truth? (To tell a lie). 5. I only had a chance to look at it twice. (To look through the book once). 6. You didn't get much chance to enjoy the play. (To get tickets). 7. We have very little to be ashamed of. (To be proud of).

**Exercise 3. Combine the sentences into one using an Infinitive. Translate the sentences. Follow the patterns**

**A**

*They sent me to Spain. They wanted me to learn Spanish. — They sent me to Spain to learn Spanish. Вони відправили мене до Іспанії вивчати іспанську мову.*

1. I am saving up. I want to buy a car. 2. He rang the bell. He wanted to tell us that the dinner was ready. 3. He opened the lions' cage. He intended to feed the lions. 4. I am buying paint. I want to paint my hall door. 5. You should take your holidays in June. In this way you would avoid the rush. 6. They evacuated everybody from the danger zone. They wanted to reduce the risk. 7. He rushed into the burning house. He wanted to save the child.

## B

### enough + Infinitive

*He is strong. He can carry this box. — He is strong enough to carry this box. Він досить сильний, щоб нести цю коробку.*

1. The rope wasn't strong. I couldn't support the two men. 2. The fire isn't very hot. It won't boil a kettle. 3. The coffee isn't strong. It won't keep us awake. 4. She is quite old. She could be your mother. 5. You aren't very experienced. You can't understand these things. 6. He was very curious. He opened the letter. 7. You are quite thin. You could slip between the bars.

## C

### so as/in order(not) + Infinitive

*He turned out the light. He didn't want to waste electricity. — He turned out the light so as / in order not to waste electricity. Він вимкнув світло, щоб не витрачати марно електрику.*

1. They got up very early. They wanted to get to the top of the hill before sunrise. 2. He read only for short periods each day. He didn't want to strain his eyes. 3. He sent his children to their aunt's house. He wanted to have some peace. 4. I sent him out of the room. I wanted to discuss his progress with his headmaster. 5. He was playing very softly. He didn't want to disturb anyone. 6. I took off my shoes. I didn't want to make any noise.

## D

### too + adj + (for somebody) + Infinitive

*a) It is very cold. We can't go out. — It is too cold for us to go out. Надто холодно, щоб ми могли вийти з дому. b) He is very ill. He can't eat anything. — He is too ill to eat anything. Він надто хворий, щоб їсти.*

1. It was very dark. We couldn't see him. 2. He was very snobbish. He wouldn't talk to any of us. 3. It is very cold. We can't have breakfast in the garden. 4. I was terrified. I couldn't move. 5. He was furious. He couldn't speak. 6. It is very cold. We can't bathe. 7. I am rather old. I can't wear that kind of hat.

## Exercise 4. Make up sentences of your own using the Infinitive in the function of an attribute. Translate the sentences. Follow the pattern

*Box / to put toys in. — The children have no box to put toys in. У дітей немає коробки, в яку можна покласти іграшки.*

1. Companions / to play with. 2. Hotel / to stay at. 3. Garden / to play in. 4. Refrigerator / to keep food in. 5. Film / to talk much about. 6. Knife / to cut meat with.

## Exercise 5. Translate the Ukrainian sentences into English and the English



### ones into Ukrainian

1. Марно обговорювати це питання. 2. It was impossible to save him. 3. Жити — означає творити. 4. He had never had to earn his living. 5. Мені немає на що скаржитися. 6. He was the first to come here. 7. Він перший сказав правду. 8. They began to discuss the question. 9. Вона почала прибирати зі столу. 10. They were going to have a rest there. 11. Вони збиралися повернутися до Лондона. 12. They could translate it without my help. 13. Він міг зробити це сам.

### Exercise 6. Give the Passive Infinitive form of the verbs

To build — to be built

To book, to make, to finish, to take, to sign, to publish, to borrow, to teach, to see, to speak, to write, to send, to study, to buy, to sell, to know, to consider.

### Exercise 7. Change the sentences according to the pattern. Translate them

*He must complete the novel next month. Він має закінчити роман наступного місяця. — The novel must be completed next month. Роман має бути закінченим наступного місяця.*

1. He can finish this translation tonight. 2. You may buy a guidebook about Lviv in Kyiv. 3. They must settle the problem. 4. He may sign the letter after lunch. 5. You should open the window. 6. They may publish his new book next January. 7. You should teach foreign languages to children. 8. You can borrow books from the library.

### Exercise 8. Translate into English paying attention to the Passive Infinitive

1. Я сподіваюсь, що стаття може бути закінчена сьогодні. 2. Ці підручники також можуть бути використані. 3. Я гадаю, що план має змінитися. 4. Слід закрити вікно. У кімнаті прохолодно. 5. Дітей слід вчити іноземним мовам у ранньому віці. 6. Багато чудових картин російських художників можна побачити в цьому музеї. 7. Квитки на літак необхідно замовляти заздалегідь.

### Exercise 9. Answer the questions using the words in brackets

*What did you make him do? (To keep one's promise). — We made him keep his promise.*

1. What did you watch the children do? (To play in the garden).  
2. What did you make your friend do? (To help me with my English).  
3. What did they see the shop assistant do? (To choose a scarf for me).  
4. What did you like to watch Maryna do? (To play the piano). 5. What did you hear the students do? (To discuss a new film). 6. What did you let Oksana do? (To buy a new dress).

### Exercise 10. Put in the particle «to» in the Objective with the Infinitive Construction (the Complex Object) where necessary. Translate the sentences

1. The room made him ... feel comfortable. 2. They want me ... go shopping on Sunday. 3. She felt her heart ... beat with joy. 4. When I heard him ... go downstairs I went down after him. 5. Suddenly he saw her ... rise and ... turn away. 6. Did you see Halyna ...

enter or ... leave the house? 7. She made him ... see a doctor at once. 8. I don't expect you ...think ill of me. 9. I felt they expected me ... say clever things. 10. I want you ... get to know each other closer. 11. We didn't expect him not ... accept your suggestion. 12. The passenger asked the porter ... carry his luggage to the taxi rank. 13. She wants us ... make an appointment today. 14. I would like you ... offer Peter your help. 15. He told the children ... be back home in time. 16. Why do you allow them ... speak to each other in this way? 17. He ordered the boat ... be unloaded.

### **Exercise 11. Translate the Ukrainian sentences into English and the English ones into Ukrainian**

1. He felt his heart beat with joy. 2. Вона відчула, як у неї затремтіли руки. 3. We stood on the deck and watched the sun go down. 4. Мати спостерігала, як діти їдять. 5. When did you see me swim? 6. Я ніколи не бачив, як він плаває, але я чув, що він добре плаває. 7. His question made me laugh. 8. Я змусила її вивчити вірш напам'ять.

### **Exercise 12. Change the sentences using the Complex Object instead of the subordinate clause**

1. We saw that John walked along the street. 2. I have never heard that my brother sings. 3. Have you ever watched that your son plays football? 4. I hate it when people speak so rudely. 5. I don't like it when you repeat that nonsense. 6. We saw that he crossed the street looking to the left and to the right. 7. I expect that you will join our excursion. 8. I heard that the door of the entrance hall opened. 9. She felt that her hands trembled. 10. He entered the inn and ordered that the supper should be brought to him.

### **Exercise 13. Translate the sentences using the Complex Object**

1. Вона змусила цього студента працювати. 2. Він змусив дочку вивчити вірша напам'ять. 3. Він наказав їй написати листа. 4. Я дуже не люблю, коли його карають. 5. Я не хочу, щоб ти читав цю книгу. 6. Ми знаємо, що він хороша людина. 7. Ми не думаємо, що він поганий студент. 8. Вони хотіли, щоб він наздогнав групу (to catch up with the group). 9. Я чув, що він говорить у сусідній кімнаті. 10. Я бачив, що хлопчик біжить. 11. Ніщо не може змусити його чекати.

## THE PARTICIPLE

**Exercise 1. Translate the sentences into Ukrainian. Define the function of the participle. (It may be used as an attribute, adverbial modifier, part of a compound verbal predicate)**

*A Present Participle (Participle I) Active/Passive*

1. He looked at the smiling children. 2. The large house being built in our street is a new school. 3. When playing tennis he slipped and broke his leg. 4. Entering the room he saw a letter on his desk. 5. John looked out of the window while waiting for her answer. 6. He did not say a word, again looking at his hands. 7. Not being able to read or think she phoned her brother and asked him to come. 8. Being packed in strong cases, the goods arrived in good condition.

*B Past Participle (Participle II)*

1. The teacher asked the students to read the sentences written on the blackboard. 2. The problem discussed at the meeting yesterday is very important. 3. The girl stopped before the closed door. 4. Squeezed by the ice the steamer could not continue her way. 5. Asked whether he would return soon, he answered that he didn't know. 6. The stone is thrown.

*C Perfect Participle Active/Passive*

1. They were old friends having been at school together. 2. Having closed the sitting-room door, she sat down in the armchair. 3. Having never been to Canada myself, I listened to him with great interest. 4. Having been sent to the wrong address, the letter didn't reach him. 5. Having been dried and sorted, the goods were placed in a warehouse.

**Exercise 2. Translate into English using Participle I**

*Дівчина, яка чекає на мене. — The girl waiting for me. Сонце, що сходить. — The rising sun.*

1. Літак, що летить. 2. Сонце, що сідає. 3. Чоловік, який сидить за столом. 4. Жінка, яка варить обід. 5. Студенти, які вивчають англійську мову. 6. Дитина, що спить. 7. Чоловік, що веде машину. 8. Хлопчик, що біжить. 9. Люди, що купують фрукти та овочі.

**Exercise 3. Translate into English using Participle II**

*Розбита чашка. — A broken cup. Книги, взяті у бібліотеці. — Books taken from the library.*

1. Мова, яку вивчають студенти. 2. Машина, яку веде спортсмен. 3. Приготований обід. 4. Текст, перекладений студентами. 5. Написана програма. 6. Лист, який одержав мій друг. 7. Зруйнований будинок. 8. Фрукти, куплені у цьому магазині.

**Exercise 4. Complete the sentences in your own**

*The girl cooking dinner is... — The girl cooking dinner is in the kitchen. The language studied at school is ... — The language studied at school is English.*

1. Some illustrated catalogues are ... . 2. The man crossing the street is ... . 3. The boy going to the factory canteen is ... . 4. The girl waiting for me in the entrance-hall was ...

. 5. The men discussing their monthly budget are ... . 6. The men drinking coffee are ...  
 . 7. His broken pencil was ... . 8. The man serving tea is ... . 9. The person driving a car  
 is ... . 10. The people swimming in the river are ... . 11. The letter signed by the  
 director will be ... . 12. The girl typing papers is ... . 13. The young man studying  
 foreign languages will be ... . 14. The boy drawing pictures is ... . 15. The tea made by  
 my friend was ... . 16. The picture drawn by the boy is ... .

**Exercise 5. Join the sentences using either a non-perfect Participle I (knowing), a perfect Participle I Active/Passive (having known / having been known), or Participle II (known)**

1. He got off his horse. He began searching for something on the ground. — Getting off his horse, he began searching for something on the ground. Злізши з коня, він почав шукати щось на землі.

2. I had seen photographs of the place. I had no desire to go there. — Having seen photographs of the place, I had no desire to go there. Після того, як я побачив фотографії цього місця, у мене не було бажання їхати туди.

1. The speaker refused to continue. He was infuriated by the interruptions. — Infuriated by the interruptions, the speaker refused to continue. Роздратований тим, що його перебивали, промовець відмовився продовжувати.

2. The letter didn't reach her. It had been sent to the wrong address. — Having been sent to the wrong address the letter didn't reach her. Лист не дійшов до неї, тому що його було відправлено за неправильною адресою.

1. He found no one at home. He left the house in a bad temper. 2. He was exhausted by his work. He threw himself on his bed. 3. I turned on the light. I was astonished at what I saw. 4. She didn't want to hear the story again. She had heard it all before. 5. She entered the room suddenly. She found them smoking. 6. I have looked through the fashion magazines. I realize that my clothes are hopelessly out of date. 7. We were soaked to the skin. We eventually reached the station. 8. The room looked much better. It had been cleaned.

**Exercise 6. Open the brackets using the correct form of the Participle.**

**Do not mix these:**

interested spectators — interesting films (зацікавлені глядачі) (цікаві фільми)

excited children — exciting games (схвильовані діти) (ігри, що збуджують)

bored students — boring lessons (студенти, яким нудно) (нудні уроки)

1. After hearing the (frighten) tale the (frighten) children wouldn't go to sleep. 2. Nothing can save the (sink) ship now, all we can do is to try and save the passengers. 3. I don't know what was in the (burn) letter, I didn't read it. 4. Why do you look so (worry)? — I have had a number of (worry) telephone calls lately. 5. A crowd of (excite) people were watching the firemen trying to save the (burn) building.

**Exercise 7. Change the sentences according to the patterns. Translate**

*A*

*The man who is standing near the captain is their new coach. — The man standing near the captain is their new coach. Людина, що стоїть біля капітана — їхній новий тренер.*

1. Do you know the name of the man who is talking to Mr. Brown?
2. The sea which washes Norway in the south-west is called the North Sea.
3. The new stadium that houses forty-five thousand people is a wonderful building.
4. She looked at the plane which was disappearing in the clouds.

### B

*I have just read his article that was published in «Kyiv Post». — I have just read his article published in «Kyiv Post». Я щойно прочитала його статтю, надруковану у «Київ Пост».*

1. The new school that was built last year is one of the finest buildings in our street.
2. Did you see the letter that was signed last Thursday?
3. Did you hear the announcement that was made on the radio?
4. Did you see the article that was translated by him?

### C

*When I heard the news, I phoned Peter. — Hearing the news I phoned Peter. — Почувши новину, я подзвонив Пітеру.*

1. When I saw him, I felt happy.
2. When he watched the game, he enjoyed it.
3. When she spoke to Peter, she asked his advice.
4. When they drove home, they saw Mr. Bentley.
5. When they arrived at the airport, they saw their friends there.

### D

*As she said so she went out of the room. — Saying so she went out of the room. Говорачи так, вона вийшла з кімнати.*

1. As he looked out of the window he saw his father.
2. As she felt tired she sat down in the armchair.
3. As he did not know what to do he asked his brother's advice.
4. As he failed to hit the ball he got angry.

### E

*While they were travelling in Europe they visited Spain. — While travelling in Europe they visited Spain. Подорожуючи Європою, вони відвідали Іспанію.*

1. While the Smiths were sitting in the dressing-room, they did not say a word.
2. While he was looking through the newspaper, he saw a picture of his friend.
3. While he was speaking to John, he invited him to his birthday party.
4. While he was walking along the street, he met his old friend.

**F**

*After he had done his homework he went for a walk. — Having done his homework he went for a walk. Виконавши домашнє завдання, він пішов прогулятися.*

1. After the Wolves had played the first two periods they felt tired.
2. After he had had a holiday he felt better.
3. After he had made an appointment with Mr. Brown he told the director about it.
4. After they had settled all the problems they had lunch. 5. After he had taken Ben to hospital he phoned his mother.

**Exercise 8. Translate into English using the Participle where necessary**

1. Вона сиділа посміхаючись. 2. Робота, що була розпочата ним, дуже важлива. 3. Виправлені тексти лежали на столі. 4. Спізнюючись на зустріч, вони пішли до того, як закінчилася вечірка. 5. Не знаючи граматичних правил, він зробив багато помилок. 6. Деякі питання, що були порушені (touch upon) у доповіді, заслуговують на увагу. 7. Прибувши за два дні до відкриття конференції, вони мали досить часу оглянути визначні місця. 8. Після приїзду в готель, вона зручно улаштувалася (make oneself comfortable) в номері і раптом знайшла телеграму, що очікувала на неї. 9. Попрацювавши цілий день на сонці, я відчував себе дуже втомленим. 10. Тому що квіти довго тримали без води, вони зав'янули. 11. Не знайшовши потрібної книги вдома, я пішов до бібліотеки. 12. Говорячи це, він вийшов з кімнати. 13. Як досвідчений лікар він відразу побачив, що мені негайно треба лягти до лікарні (go to hospital). 14. Одержані вчора новини справили на всіх велике враження (impress greatly). 15. Не знаючи, чому вона була відсутня, я вирішив подзвонити їй. 16. Залишившись наодинці, він почав розпаковувати свій багаж.

**Exercise 9. Change the sentences using the Participle instead of the Infinitive.****Translate them**

*I see the boy run. — I see the boy running. Я бачу, як хлопчик біжить.*

1. I heard him speak in the next room. 2. We saw the commander stand on the bridge. 3. George watched them eat. 4. He saw people work in their gardens. 5. I could hear them type. 6. I couldn't bear him to whistle all the time.

**Exercise 10. Join the sentences using the Objective Participle Construction**

*I saw him. He was walking along the street. — I saw him walking along the street. Я бачив, як він йшов вулицею.*

1. He saw me. I was playing football. 2. We watched the children. They were playing in the yard. 3. I saw people. They were sitting at their doors. 4. I felt her hand. It was trembling. 5. She heard him. He was singing loudly. 6. They found him in the corridor. He was waiting for them.
7. We found her. She was reading a book.

## THE GERUND

**Exercise 1. Translate the sentences into Ukrainian. Define the function of the Gerund. (It may be used as a subject, attribute, object, part of a compound verbal predicate, adverbial modifier)**

1. *Going* for a trip to the Caucasus sounds great. 2. «Will you, please, stop *writing*?» the teacher said. 3. The family went on *discussing* plans for the summer holiday. 4. Excuse my *interrupting* you. Could you tell me where room 423 is? 5. «Do you mind my *borrowing* your textbook?» asked Jane. 6. «I don't remember ever *meeting* that man. Who is he?» Mr. Brooke asked her. 7. «Is the new film worth *seeing*?» «Certainly, it is,» she answered. 8. He couldn't help *telling* her that her *acting* was marvellous. 9. «It's been a pleasure *meeting* you,» said Mr. Brown. 10. If I were you I wouldn't insist on *their returning* tonight. 11. «I don't feel like *going* for a walk now», he said. 12. They did not think of *staying* there for more than three days. 13. They do not seem to be interested in *settling* the problem. 14. What are his reasons for *refusing* their invitation? 15. Instead of *going* home they went for a drive. 16. Instead of *stopping* the rain increased. 17. The young man stood a moment without *speaking*. 18. a) I do not remember *lending* that book to anyone. b) Remember *to lend* the book to him. 19. a) Will you stop *listening* to the radio, please? b) He stopped *to say* «good-bye» to us. 20. a) Peter forgot *buying* a present for Ann yesterday. b) «I hope you won't forget *to buy* a present for Johny,» she said.

**Exercise 2. Change the sentences using the Gerund instead of the Infinitive**

*He was afraid to remain alone. — He was afraid of remaining alone.*

1. He continued to look at her. 2. She does not like to go there. 3. He likes to go for a walk. 4. They began to talk when he came. 5. Tom went on to tell lies. 6. Nick ceased to smoke. 7. He kept on to knock at the door. 8. He continued to read a magazine.

**Exercise 3. Join the two sentences using the Gerund as in the patterns.**

**Translate the sentences**

**A**

*after prepositions 'without' or 'on'*

*She left. She didn't say good-bye. (Without). — She left without saying good-bye. Вона пішла, не попрощавшись.*

*He received a letter and was very pleased. (On). — On receiving a letter he was very pleased. Після одержання листа він був дуже задоволений.*

1. She translated the text. She didn't consult the dictionary. (Without). 2. They arrived in Kyiv and went straight to the hotel. (On). 3. He came to the holiday camp and went to the beach at once. (On). 4. He went to bed. He didn't take off his shirt. (Without). 5. Mary left home. She didn't lock the door. (Without). 6. She heard the news and burst into tears. (On). 7. He got a telegram from his friend. He immediately drove to the airport to meet him. (On). 8. They went home. They didn't wait for me. (Without). 9. The boy continued to speak. He didn't look at us. (Without). 10. The man saved the child and went away. He didn't give his name. (Without).

**B**

after prepositions 'instead of'

*I walked to the station. I didn't go by bus. — I walked to the station instead of going by bus. Я йшов до станції ніuku, замість того щоб йхати автобусом.*

1. I didn't take a taxi. I went there by bus. 2. We didn't go to the Crimea. We spent the summer in the country. 3. He was not preparing for his exams. He was playing chess. 4. I did not learn the story by heart. I prepared it for retelling. 5. I shall not go to the cinema. I shall watch television. 6. I shan't write her a letter. I'll send her a telegram.

#### **Exercise 4. Use the Gerund as an adverbial modifier instead of the subordinate clause as in the pattern**

*You will discuss it when I leave. — You will discuss it after my leaving.*

1. When I passed my exams, I went to the seaside to have a rest there. 2. When my wife came home, she cooked a delicious dinner. 3. When I got home, I decided to have a shower. 4. When he entered the room, he greeted everybody. 5. When I came home, I sat down to work. 6. Mr. Brown left for London when he received the telegram.

#### **Exercise 5. Change the sentences using the words given in brackets**

*Try to avoid reading in a bad light. (To smoke). — Try to avoid smoking.*

1. I object to discussing this question now. (To give him a bad mark). 2. Thank you for coming. (To inform me of it). 3. He succeeded in making a discovery. (To read an English book in the original). 4. She is proud of answering all the questions. (To pass all the exams successfully). 5. He was tired of swimming. (To work at his report). 6. She is fond of going sight-seeing. (To receive guests). 7. I thought of visiting my friend. (To go on an excursion).

#### **Exercise 6. Ask questions starting with «Is it worth ... ?»**

*I've seen this film. — Is it worth seeing?*

1. We discussed Ukrainian and English cuisines. 2. They tasted her new cake. 3. I advise you to taste these green vegetables. 4. You should go and see this play. 5. I've visited the Ukrainian museum. 6. I went to the «Kyiv» restaurant to have lunch yesterday.

#### **Exercise 7. Open the brackets using Gerunds. Translate the sentences**

1. My watch keeps (stop). — That's because you keep (forget) to wind it. 2. Will you please stop (read)? 3. He doesn't feel like (go into politics). 4. He couldn't help (agree with them). 5. Try to avoid (be) late. He hates to be kept (wait). 6. He offered to buy my old car if I didn't mind (wait) a month for the money. 7. Imagine (have) to get up at five a.m. everyday! 8. He suggested (call) a meeting and (let) them settle the matter themselves. 9. Please go on (write), I don't mind (wait). 10. He didn't want to lose any more money, so he gave up (play) cards. 11. Try to forget it; it isn't worth (worry) about. 12. It's no use (have) a bicycle if you don't know how to ride it. 13. I intended to go to the cinema yesterday, but my friend told me the film wasn't worth (see). 14. What about (buy) double quantities of everything today? 15. Let's go for a swim. — What about (go) for a drive instead? 16. I am tired of (do) the same thing all the time. 17. I am



not used to (drive) on the left side. 18. I wanted to pay the bus fares, but my friend insisted on (pay). 19. The police accused him of (set) fire to the building. 20. Don't forget to lock the door before (go) to bed. 21. After (walk) for three hours we stopped to let the others catch up with us. 22. Why did you go all round the field instead of (walk) across it?

**Exercise 8. Open the brackets using either the Gerund or the Infinitive according to the sense. Translate the sentences**

*I remember meeting him for the first time ten years ago. (I met him in the past, and now I remember). Я пам'ятаю, А що зустріла його вперше десять років тому. I must remember to meet him at the station this evening. (I have not met him yet; the meeting is in the future). Треба не забути зустріти його на станції сьогодні увечері.*

1. We read this book in class last year. Do you remember (read) it? 2. Don't ask me to pay the bill again. I clearly remember (pay) it a month ago. 3. Do you remember (book) seats for the theatre tomorrow? — Yes, I have the tickets here. 4. She remembers part of her childhood quite clearly. She remembers (go) to school for the first time and (be) frightened and (put) her finger in her mouth. 5. Please remember (post) a letter. 6. I remembered (lock) the door before I left but I forgot to shut the windows.

*She completely forgot answering the letter months ago. (She did answer the letter, and then she forgot that she had done so). Вона зовсім забула, що відповіла на лист декілька місяців тому. She completely forgot to answer the letter. (She didn't answer the letter, because she had forgotten to). Вона зовсім забула відповісти на лист.*

1. He forgot (bring) his exercise book; he left it at home. 2. «Where is my dictionary? Have you forgotten (borrow) it a fortnight ago?» 3. She often told her little boy: «You must never forget (say) please and thank you». 4. «Why are you late again? Have you forgotten (promise) me that you would never be late again?»

*Nick was working very hard. He went for a walk to clear his head. What did he stop doing? — He stopped working. Він не перестав працювати. Why did he stop working? — He stopped to go for a walk. Він перестав (працювати), щоб піти на прогулянку.*

1. Do, stop (talk)! I am trying to finish a letter. 2. I didn't know how to get to your house so I stopped (ask) the way. 3. He stopped (light) a cigarette. 4. He stopped (walk) to light a cigarette.

**Exercise 9. Open the brackets using both the Gerund and the Passive Infinitive after «need», «want»**

*His hair needs (cut). — a) His hair needs cutting. — b) His hair needs to be cut.*

1. The windows are very dirty; they need (clean). 2. The house is old, and it badly wants (paint). 3. The famous man didn't need (introduce). 4. The floor is covered with dust; it needs (sweep). 5. The grass in the garden is very dry; it wants (water) badly. 6. The room was in a terrible mess; it needed (tidy up).

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