UNIT 4. SOIL AS A NATURAL RESOURCE

Key words

pesticides – пестициди
erosion – ерозія
weathering – вивітрювання
chemical – хімічний
acid – кислота
fibrous – волокнистий
nitrogen – азот
moisture – вологість
fertility – родючість
to contain – містити
tissue – тканина
to rotate – чергувати
to deplete – виснажувати
deforestation – обезліснення
desertification – опустелювання
hazard – небезпека
overgrazing – надмірний випас худоби
fertilizer – добриво
to cause – спричиняти
to expand – розширювати
carbon dioxide – вуглекислий газ
humus – гумус
to decay – розкладатись
to absorb – поглинати
to bind – з'єднувати
salinization – солоність
irrigation – зрошення
to evaporate – випаровувати
algae – водорості
to contaminate – забруднювати
to contribute – робити внесок
to extract – видобути
residue – залишок
to become barren – стати неродючим

Ex.4.1. Read the text below and complete it with the following phrases:

a) a regulator of water quality
b) which include weathering and erosion
c) together support life
d) most of the Earth's genetic diversity
e) converting dead organic matter into various nutrient forms
f) strong internal bonds
g) plant roots need oxygen
h) receive occasional rainfall

What is Soil?

A

Soil is a mixture of organic matter, minerals, gases, liquids, and organisms that (1)_____. Soil consists of a solid phase, a porous phase that holds gases and water.

Soil is a product of the influence of climate, relief, organisms, and its parent materials (original minerals) interacting over time. It continually undergoes development by way of numerous physical, chemical and biological processes, (2)_____. Taking into account its complexity and (3)_____, it is considered an ecosystem by soil ecologists.

B

Soil acts as an engineering medium, a habitat for soil organisms, a recycling system for nutrients and organic wastes, (4)_____, a modifier of atmospheric composition, and a medium for plant growth, making it a critically important provider of ecosystem services. Since soil has a tremendous range of available niches and habitats, it contains (5)_____. A gram of soil can contain billions of organisms, belonging to thousands of species, mostly microbial which are still unexplored.

C

Since (6)_____, ventilation is an important characteristic of soil. This ventilation can be accomplished via networks of interconnected soil pores, which also absorb and hold rainwater making it readily available for uptake by plants. Since plants require a nearly continuous supply of water, but most regions (7)_____, the water-holding capacity of soils is vital for plant survival.

D

Soils can effectively remove impurities, kill disease agents, and degrade contaminants. Typically, soils maintain a net absorption of oxygen and methane and undergo a net release of carbon dioxide and nitrous oxide. Soils support plants with air, water, temperature moderation, nutrients, and protection from toxins. Soils provide readily available nutrients to plants and animals by (8)_____.

Ex.4.2. Arrange the following headings to the parts of the text above.

1. Soil diversity
2. Essential functions of soil
3. Soil provides water and air for plants
4. Formation of soil

Ex.4.3. Match the words with their definitions.

1)	pollution	a)	rain, snow, sleet, or hail that falls to or condenses on the ground
2)	fertilizer	b)	the maximum amount that something can contain
3)	deplete	c)	the presence in or introduction into the environment of a substance which has harmful or poisonous effects
4)	precipitation	d)	allow (something) to move, act, or flow freely
5)	utilize	e)	a substance used for destroying insects or other organisms harmful to cultivated plants or to animals
6)	deterioration	f)	the action or process of getting rid of something
7)	pesticide	g)	a chemical or natural substance added to soil or land to increase its fertility
8)	release	h)	the process of becoming progressively worse
9)	disposal	i)	use up the supply or resources of
10)	capacity	j)	make practical and effective use of

Ex.4.4. Discuss the following questions:

1. What are the effects of using pesticides and artificial fertilizers in modern farming?
2. What causes erosion of the top layers of the soil?

Ex.4.5. Read the text and check your answers.

Fertility

Soil has been forming for over thousands of years from the weathering of rock. There are three types of weathering: physical weathering (temperature changes make the rock expand and contract until it shatters into pieces), chemical weathering (carbon dioxide and water form a weak acid that dissolves rocks such as limestone) and biological weathering (the rock is broken down by the action of living things such as plant roots and bacteria). The top layer of the soil (topsoil) is rich in humus – a dark, fibrous material formed from decaying organic matter.

Humus contains micronutrients such as nitrogen, minerals and microorganisms that break down the organic matter. Humus absorbs moisture and binds inorganic particles together. The quality

(or fertility) of soil depends on the amount of humus in it – the organic content. Good quality topsoil is dark, moist and crumbly.

The middle layer of the soil contains less organic material but it is rich in minerals. The lower layer is made of inorganic material similar to the parent rock which originally formed the soil.

All living things are made of protein which contains nitrogen. Without nitrogen plants and animals cannot grow because they cannot build new tissue. Traditional farming methods rotate cereal crops (which remove nitrogen from the soil) with leguminous plants (which replace the nitrogen). Intensive growing of cereals tends to deplete the soil of nitrogen. Repeated cropping and overgrazing (putting too many cattle on a small area of grassland) cause erosion of the top layers of the soil. The essential nitrates are removed from the topsoil so the nitrogen cycle which is crucial to the balance of nature is broken.

The earth loses 24 billion metric tons of topsoil every year through intensive farming methods and deforestation. The final stage of the topsoil loss is desertification. All the organic and mineral content of the soil disappears and the poor quality subsoil isn't able to support plant growth. About 20 million hectares of productive land become barren every year due to soil erosion. Thirty percent of the world's land surface is in danger of desertification.

Another hazard of intensive farming is salinization which is caused by perennial irrigation in arid climates. Soil contains some salt which is washed away when it rains. In the areas where rainfall is minimal, the amount of salt in the soil is very high. Evaporation from reservoirs and irrigation channels increases the salinity of the water. When a new irrigation scheme raises the water table, salt in the soil dissolves and rises up to the surface. Unless the area is left fallow and unirrigated for a season so that the salty water can drain away, the land will become permanently salinized and unable to support plant life.

The quality of soil can be improved by adding fertilizers. Organic fertilizers are made from animal and plant material such as compost or manure that enrich the soil with essential micronutrients such as nitrates, phosphates and potash. Artificial (inorganic) fertilizers contain high concentration of these micronutrients. They are much more powerful than natural organic fertilizers but they cause eutrophication that damages the environment. Excess nitrogen is washed out of the soil

during the rain. It goes to rivers and lakes and encourages the growth of algae in the water and wild plants on nearby land. Overgrowth of algae breaks the balance of nature in lakes and seas. Oversaturating of the banks with wild plants causes them to rot and die. The air becomes contaminated with nitrous oxide which contributes to the greenhouse effect. Nitrates, phosphates and potash are taken up by growing plants and get into the soil with animal manure. The phosphates and potash in artificial fertilizers can be extracted from rocks by mining.

Artificial fertilizers contain much more micronutrients which cause rapid plant growth but thus deplete the soil. Artificial fertilizers make the plants tasteless and they have a low nutritional value. They can be contaminated with chemical residues from the fertilizer manufacturing process. For both environmental and health reasons, more and more consumers nowadays are buying organic food that is grown without artificial fertilizers.

Ex.4.6. Read the international words correctly. Mind the stress.

type	method	bacteria
physical	cycle	organic
temperature	balance	microorganism
chemical	ton	intensive
humus	scheme	erosion
mineral	reservoir	productive
protein	phosphate	irrigation
reserve	biological	

Ex.4.7. Match the halves of the sentences. Do you agree or disagree with these statements?

1)	There are three types of weathering: …	a)	… support plant growth.
2)	The quality of soil depends …	b)	… deplete the soil of nitrogen.
3)	All living things are made …	c)	… perennial irrigation.
4)	Plants and animals cannot grow without …	d)	… physical, chemical, biological weathering.
5)	Traditional farming methods rotate …	e)	… of protein.
6)	Intensive farming methods tend to …	f)	… on the amount of humus in it.

7)	Repeated cropping and overgrazing cause …	g)	… adding fertilizers.
8)	Poor quality subsoil cannot …	h)	… cereal crops with leguminous plants.
9)	Salinization is caused by …	i)	… nitrogen.
10)	The quality of soil can be improved by …	j)	… erosion of the top layers of the soil.

Ex.4.8. Complete the table with adjectives.

Noun	*Adjective*
e.g. salinity	saline
environment	
product	
height	
salt	
biology	
origin	
fibre	
nutrient	
tradition	
use	
reason	

Ex.4.9. Match the English word combinations with their Ukrainian equivalents.

1)	weathering of rock	a)	чергувати культури
2)	to shatter into pieces	b)	виснажувати грунт
3)	to dissolve rocks	c)	порушувати цикл
4)	plant roots	d)	інтенсивне сільське господарство
5)	to absorb moisture	e)	завдавати шкоди навколишньому середовищу
6)	fertility of soil	f)	вивітрювання гірських порід
7)	to get washed down with the rain	g)	коріння рослин
8)	to rotate crops	h)	змити дощем
9)	to deplete the soil	i)	руйнувати гірські породи

10) to break the cycle	j) поглинати вологу
11) intensive farming	k) родючість грунту
12) to cause environmental damage	l) розбити на шматки

Ex.4.10. Translate into Ukrainian the following words and word combinations.

Dissolve: Dissolve in the water.

Soil: Poor soil, rich soil, virgin soil, sandy (clayey) soil, permanently frozen soil, poor quality subsoil.

Moisture: Moisture of plants, to absorb moisture.

Arid: Arid zone, arid climate, arid desert.

Irrigation: Irrigation engineering, irrigation canal, irrigation farming, irrigation station.

Waste: Waste disposal, waste utilization.

Eutrophication: Anthropogenous eutrophication, cultural eutrophication, eutrophication of waters.

Ex.4.11. Combine the adjectives with nouns to form word combinations:

Adjectives: animal (human), chemical, biological, productive, intensive,
poor quality, low nutritional, artificial, mineral, organic

Nouns: farming methods, content, subsoil, land, fertilizers, resources,
waste, value, residues, weathering

Ex.4.12. Match the verbs in column A with a suitable phrase in column B.

A	B
to remove	the organic matter
to encourage	the inorganic particles together
to contribute	the rock to expand and contract
to break down	rocks
to buy	new tissue
to deplete	nitrogen from soil
to bind	plant growth

to cause	to the greenhouse effect
to dump	animal and human waste into the sea
to dissolve	the soil of other nutrients
to support	organic vegetables
to build	the growth of algal

Ex.4.13. Choose the correct option (*a*, *b*, *or c*) *to complete the following sentences.*

1. The top layer of the soil is rich in … .
   a) clay b) limestone c) humus
2. The quality of soil depends on the … of humus in it.
   a) weathering b) amount c) types
3. The middle layer of the soil … less organic material.
   a) contains b) changes c) absorbs
4. The lower layer is made of inorganic material … to the parent rock.
   a) contrary b) similar c) like
5. Without nitrogen plants and animals cannot … .
   a) form b) bind c) grow
6. Repeated cropping and overgrazing cause … of the top layer of the soil.
   a) weathering b) erosion c) moisture
7. The final stage of the loss of topsoil is … .
   a) desertification b) erosion c) weathering
8. Salinization is caused by perennial … in arid climates.
   a) farming b) irrigation c) evaporation
9. The quality of soil can be … by adding fertilizers.
   a) damaged b) decreased c) improved
10. Artificial fertilizers cause environmental … by a process called eutrophication.
   a) effect b) damage c) growth

Ex.4.14. Find English equivalents to the Ukrainian word combinations.

Багаторічна іригація (зрошення), сухий клімат, розчиняти в воді, погрожувати, підтримувати життя рослин, стати неродючою (про землю), опустелювання, збезлісення, верхній шар грунту,

вуглекислий газ, вивітрювання (ерозія) породи, температурні зміни, засолення (грунтів), надмірне підбурювання пасовища, виснажувати (грунт), вбирати вологу, вапняк, чергувати культури, інтенсивне сільське господарство, руйнувати породи, родючість грунту.

Ex.4.15. Read the text and discuss why and where erosion occurs.

Erosion

Erosion is the action of surface processes (such as water flow or wind) that removes soil, rock, or dissolved material from one location on the Earth's crust, and then transports it to another location . This natural process is caused by the dynamic activity of erosive agents, that is, water, ice (glaciers), snow, air (wind), plants, animals, and humans. In accordance with these agents, erosion is sometimes divided into water erosion, glacial erosion, snow erosion, wind erosion, etc. The particulate breakdown of rock or soil into clastic sediment is referred to as physical or mechanical erosion; this contrasts with chemical erosion, where soil or rock material is removed from an area by its dissolving into a solvent (typically water), followed by the flow away of that solution. Eroded sediment or solutes may be transported just a few millimetres, or for thousands of kilometres.

While erosion is a natural process, human activities have increased by 10–40 times the rate at which erosion is occurring globally. At well-known agriculture sites such as the Appalachian Mountains, intensive farming practices have caused erosion significantly compared to the natural rate of erosion in the region. Excessive (or accelerated) erosion causes both 'on-site' and 'off-site' problems. On-site impacts include decreases in agricultural productivity and (on natural landscapes) ecological collapse, both because of loss of the nutrient-rich upper soil layers. In some cases, the eventual end result is desertification. Off-site effects include sedimentation of waterways and eutrophication of water bodies, as well as sediment-related damage to roads and houses. Water and wind erosion are the two primary causes of land degradation; combined, they are responsible for about 84 % of the global extent of degraded land, making excessive erosion one of the most significant environmental problems worldwide.

Intensive agriculture, deforestation, roads, anthropogenic climate change and urbanisation are amongst the most significant human activities in regard to their effect on stimulating erosion. However, there are many prevention and remediation practices that can stop or limit erosion of vulnerable soils.

Ex.4.16. Match the words in column A with those in column B and translate these word combinations into Ukrainian.

A	B
erosive	farming
intensive	erosion
ecological	practices
land	agent
waterways	degradation
sediment-related	collapse
excessive	sedimentation
prevention	damage

Ex.4.17. Complete the sentences according to the text:

1. Erosion is … .
2. Erosion is caused by … .
3. Excessive (or accelerated) erosion results … .
4. On-site impacts include … .
5. Off-site effects include … .
6. Water and wind erosion are … .

Ex.4.18. Match the words with their definitions:

1)	erosion	a)	the mechanical and chemical breakdown of rocks by the action of rain, snow, cold, etc.
2)	silt	b)	a prolonged period of abnormally low rainfall, leading to a shortage of water
3)	weathering	c)	water or other liquid diffused in a small quantity as vapour, within a solid, or condensed on a surface
4)	reduce	d)	the gradual destruction and removal of rock or soil in a particular area by rivers, the sea, or the weather.

5)	drought	e)	the action or process of causing so much damage to something that it no longer exists
6)	moisture	f)	fine sand, clay, or other material carried by running water and deposited as a sediment, especially in a channel or harbour
7)	exhaust	g)	provide with something needed or wanted
8)	famine	h)	make smaller or less in amount, degree, or size
9)	destruction	i)	extreme scarcity of food
10)	supply	j)	use up (resources or reserves) completely

Ex.4.19. Speak on the topics using key words below.

1. The weathering of rock.

(*To form; to make the rock expand and contract; to shatter into pieces; to dissolve rocks; to break down; to be formed from decaying organic matter; to contain; to absorb moisture; to bind inorganic particles together; to depend on*)

2. Farming methods.

(*To rotate cereal crops; to deplete the soil; to cause erosion; to remove; to be crucial; deforestation; desertification; poor quality subsoil; to support plant growth; to become barren; salinization; perennial irrigation; arid climate; to increase the salinity of water; to support plant life*)

3. How to improve the quality of soil.

(*To add fertilizers; to enrich the soil with micronutrients; to contain; artificial fertilizers; natural organic fertilizers; to cause environmental damage; to encourage the growth of algae; to break the balance of nature*)

4. What contributes to the greenhouse effect.

(*To rot; to die; to become contaminated with nitrous oxide*)

Ex.4.20. Make up as many word expressions as possible and translate them into Ukrainian.

to kill	pesticides
to absorb	cancer
to accumulate	birth defects
to cause	insects
to increase	crop yield
to reduce	microorganisms

to introduce	water
to deplete	capacity
	failure of crops
	damage
	farming methods
	soil quality

Ex.4.21. Match the following words with their synonyms.

hazard	join (unite)
absorb	whole
similar to	necessary
remove	development
deplete	become better
essential	take in (suck in)
growth	take off / away
arid	use up
add	dry
entire	like (of the same sort)
improve	danger

Ex.4.22. Match the words with their definitions.

1)	rock	a)	not able to produce crops
2)	expand	b)	varying the crops grown each year on the same land to avoid exhausting the soil
3)	contract	c)	having not enough rainfall to support plants
4)	decay	d)	continuing throughout the whole year
5)	bind	e)	solid stony part of the earth's crust
6)	fertile	f)	make or become larger
7)	similar	g)	lose power; go bad
8)	remove	h)	tie or fasten
9)	rotation (of crops)	i)	producing much
10)	barren	j)	like; of the same sort
11)	perennial	k)	make or become smaller or shorter
12)	arid (of climate)	l)	take off or away (from the place occupied)

Ex.4.23. Read the text and answer the questions:

1. What are the main fossil fuels?
2. What problems does coal mining cause?
3. Where is petroleum used?
4. Why is natural gas a clean form of energy?

Fossil fuels

Fossil fuel is a general term for buried combustible geologic deposits of organic materials, formed from decayed plants and animals that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and pressure in the earth's crust over hundreds of millions of years.

Fossil fuels contain high percentages of carbon and include petroleum, coal, and natural gas. Other commonly used derivatives include kerosene and propane. Fossil fuels range from volatile materials with low carbon to hydrogen ratios like methane, to liquids like petroleum, to nonvolatile materials composed of almost pure carbon, like anthracite coal. Methane can be found in hydrocarbon fields either alone, associated with oil, or in the form of methane clathrates.

Although fossil fuels are continually being formed via natural processes, they are generally considered to be non-renewable resources because they take millions of years to form and the known viable reserves are being depleted much faster than new ones are being made.

The use of fossil fuels raises serious environmental concerns. The burning of fossil fuels produces around 21.3 billion tonnes of carbon dioxide (CO_2) per year. It is estimated that natural processes can only absorb about half of that amount, so there is a net increase of 10.65 billion tonnes of atmospheric carbon dioxide per year. Carbon dioxide is a greenhouse gas that increases radiative forcing and contributes to global warming. A global movement towards the generation of low-carbon renewable energy is underway to help reduce global greenhouse gas emissions.

Coal

Coal supplies us with about 28 % of all the energy used. It is burned to make water hot and produce steam. The steam, in turn, generates electric power or operates steam engines. In many countries people use coal to heat their homes.

Coal mining caused many problems in the past. Accidents in coal mines kill workers every year and breathing coal dust can lead to lung diseases. Although many factories have installed cleaning filters, coal emits sulphur oxides that pollute our air when burned.

Today, scientists are looking into ways to burn coal in a cleaner way – like turning it into liquid or gas first. Such methods are still very expensive and probably cannot be used on a large scale for years to come.

Coal will remain a major source of energy for a long time, because the world still has reserves to last a few hundred years.

Petroleum

Petroleum or crude oil supplies the world with about 40 % of its energy. It is not only used to make petrol and heating oil but chemicals, fertilizers, plastics, drugs and other products as well.

Most of our petroleum lies in rock layers deep below the surface of the earth. Oil workers pump it out by drilling into these layers. Then it is transported over long distances, mostly by pipeline or tankers to refineries, where it is made into petrol and diesel as well as other petroleum products.

But like coal, petroleum creates problems in our environment. Tanker accidents cause oil to leak out into the ocean. Burning petrol or diesel in cars and trucks leads to smog and other kinds of pollution.

Although oil reserves are slowly running out, oil companies are constantly searching for new reserves. Such new reserves, however, lie mostly in areas which are very difficult to reach.

In some places, like the western United States, there are big deposits of oil rock, called oil shale. Petroleum can be extracted from this rock but such a process is still very expensive.

Natural Gas

About 20 % of the energy used worldwide comes from natural gas. Deposits are usually found in the same areas as petroleum, but there are places, like Siberia that have gigantic gas fields.

Natural gas is a cleaner form of energy because it doesn't have most of the pollutants that coal and oil have. The gas is turned into liquid and can be transported over long distances through pipelines.

Ex.4.24. Circle which of the following energy sources are represented by fossil fuels:

Coal – solar energy – petroleum – wind energy – nuclear energy – tidal energy – natural gas – methane – geothermal energy – kerosene – biomass energy.

Ex.4.25. Match the words with their definitions.

1)	crude oil	a)	something that is put on a field to make plants grow
2)	deposit	b)	a factory where oil is made purer and into other products
3)	drill	c)	oil that comes out of an oil well naturally
4)	fertilizer	d)	material between two things
5)	layer	e)	illnesses that make it hard for you to breathe
6)	lung disease	f)	a layer of a mineral or metal in rocks
7)	reserves	g)	sandy, soft rock that has oil in it
8)	run out	h)	to make a hole into the earth with a machine
9)	oil shale	i)	to become less and less
10)	refinery	j)	raw materials

Ex.4.26. Use the words from the box to complete the paragraph.

electricity	gas	pollution	burned
coal	oil	fossil	carbon dioxide

Most of the energy they use in Britain comes from 1)_____ fuels. Three fossil fuels are: 2)_____, 3)_____and 4)_____. Fossil fuels are 5)_____ to give us energy, and are often used to generate 6)_____. This produces 7)_____, as well as sulphurous and nitrous oxides that can lead to air 8)_____ and acid rain.

Ex.4.27. Read the text and answer to the following questions.

1. Why do we need energy?
2. Which traditional energy sources are available?
3. Which environmental problems are related to the use of fossil fuels?
4. What are the alternative sources of energy?

5. Which of the alternative sources are renewable?
6. Why is the use of nuclear energy controversial?

Sources of energy

The energy is very important in our life because we use it for transportation, for electricity production, for house heating and for cooking gas. Traditional energy sources are coal, petroleum and natural gas. Coal is a solid fossil fuel used for production of energy and chemical compounds. Petroleum is a mixture of hydrocarbons derived from the decomposition of organic matter in anaerobic conditions. Natural gas and other fossil fuels are separated from crude oil through fractional distillation. Natural gas is mainly composed of methane; since it's colourless and odourless, for safety reasons an odorant called mercaptan is added to the gas before being delivered. The use of fossil fuels rises several issues related to the environmental pollution, since combustion releases CO_2 in the atmosphere contributing to global warming, to the high risks of environmental disasters during extraction and delivery and to the increasing costs due to their limited availability.

Nuclear energy may represent an alternative source of energy, but uranium is not present in unlimited amounts. Nuclear power is characterised by the very large amount of energy produced from a very small amount of fuel, however, much of the waste produced is radioactive and therefore must be carefully managed as hazardous material. Some renewable sources of energy have been developed, such as solar energy, tidal energy, biomass energy, wind energy, hydroelectric energy, geothermal energy.

Solar energy is used for heating water and for electricity production (photovoltaic energy). Wind power derives from the conversion of wind energy into electricity by using a turbine and a generator. Geothermal energy exploits the endogenous heat inside the Earth. Hydroelectric energy exploits the gravitational force of water falling, while tidal energy is based on the conversion of the gap between high and low tide into electricity. Biomass energy is derived from several sources such as wood, landfill gases, garbage, waste and alcohol fuels. Such sources provide great advantages since they are unlimited and they are not depleted by use, but there are some disadvantages, such as the high

costs in building the power plants and the fact that their use is limited by the characteristic of the territory. Further technological improvements aim to the reduction of power plants costs and of CO_2 emissions.

Ex.4.28. Decide if the sentences are true or false.

1. Scientific community agrees that oil reserves are unlimited.
2. Coal is a liquid fossil fuel.
3. Petroleum is a mixture of hydrocarbons.
4. Natural gas is colourless and odourless.
5. Hydrocarbon combustion contributes to global warming.
6. Solar energy can only be used for electricity production.
7. Wind energy is a renewable source of energy.
8. Geothermal energy exploits heat from the sun.

Ex.4.29. Circle which of the following energy sources are renewable:

Coal – solar energy – petroleum – wind energy – nuclear energy – tidal energy – natural gas – methane – geothermal energy – kerosene – biomass energy.

Ex.4.30. Match the words on the left with the correct definition on the right:

1)	coal	a)	main component of natural gas
2)	solar energy	b)	process related to nuclear energy
3)	fission	c)	in the absence of oxygen
4)	photovoltaic energy	d)	important part of the hydroelectric power plant
5)	methane	e)	substance added to natural gas for safety reasons
6)	wind farm	f)	renewable source of energy
7)	nuclear energy	g)	solid fossil fuel
8)	dam	h)	alternative, but not renewable source of energy
9)	mercaptan	i)	type of solar energy used for electricity production
10)	anaerobic condition	j)	groups of wind turbines in the same location

Ex.4.31. Choose the best option to complete the sentences.

1. Coal is _____ .
   a) an alternative source of energy b) a solid fossil fuel
   c) a renewable source of energy d) a liquid fossil fuel
2. _____ is the main hydrocarbon component of natural gas.
   a) Methane b) Ethane c) Propane d) Butane
3. _____ is a renewable source of energy.
   a) Uranium b) Sun c) Petroleum d) Coal
4. Photovoltaic solar energy is used for _____ .
   a) heating water b) steam production
   c) kinetic energy conversion d) electricity production
5. Wind energy is obtained by converting _____.
   a) electric energy in kinetic energy
   b) chemical energy in electric energy
   c) kinetic energy in electric energy
   d) electric energy in kinetic energy
6. Hydroelectric energy is produced by using _____.
   a) different temperature of water b) force of falling water
   c) highly pressurized water d) electrolysis of water
7. Geothermal energy exploits _____.
   a) heat from the sun b) heat inside the Earth
   c) steam from boiling water d) hot water from the house
8. _____ represents one of the reasons for controversial in the use of nuclear energy.
   a) The unlimited reserves of uranium
   b) The very low cost of construction of nuclear power plant
   c) The low risk related to nuclear power plant
   d) The disposal of radioactive waste

Ex.4.32. Read the text. In the first paragraph fill in the gaps with the words from the box below. In the second paragraph choose appropriate words.

a) solar	b) combined	c) seventh	d) greenest
e) increase	f) broke	g) free	h) fossil

The United Kingdom is doing a lot to (1)_____ its use of renewable energy. It is moving away from (2)_____ fuels

and making more use of green energies, such as wind power, nuclear power and (3)_____ energy. New figures from the UK's electricity provider show that the UK had its (4)_____ year ever in 2017 for electricity production. It even had its first coal-(5)_____ day for over 150 years. The UK (6)_____ 13 clean energy records in 2017. In June, wind, nuclear and solar power produced more electricity than gas and coal (7)_____. It was the first time this has ever happened. The UK's power system is now the fourth cleanest in Europe and the (8)_____ cleanest in the world.

The United Kingdom has been *tried / trying* to reduce the amount of coal it uses. Coal now *supplies / supply* less than 7 per cent of the UK's *electrical / electricity*. A spokesman said it must now try to use fewer / less gas to make sure it meets its target for greenhouse gas *emissions / remissions*. The UK currently uses too much gas. The *conversation / conservation* charity World Wildlife Fund said it was pleased that the UK is moving *forwards / towards* greener energy. It said: 'We have never been cleaner or greener, and we are on [target] for an even better year in 2018'. It added: 'Climate change is *weakening / wreaking* havoc on our nature and wildlife, but we are at *last / lost* facing up to the challenge. We are turning our backs on polluting fossil fuels and embracing a new, *clean / cleanse* future'.

Ex.4.33. Choose the best option to complete the sentences according to the text.

1. The United Kingdom is doing a lot to increase its _____ energy.
   a) used of renewable b) user off renewable
   c) use of renewable d) use off renewable
2. It is moving away from fossil fuels and making more use of _____.
   a) greenish energies b) greened energies
   c) greens energies d) green energies
3. The figures from the UK's electricity provider show that the UK had its greenest year _____.
   a) never in 2017 b) even in 2017
   c) ever in 2017 d) every in 2017

4. The wind, nuclear and solar power produced more electricity than gas _____.

a) end coal combine b) and coal combined
c) and coals combined d) and coal combine

5. The UK's power system is now the _____ Europe.

a) fourth cleanest on b) fourth cleanest in
c) fourth clean nest in d) fourth clean nest on

6. The United Kingdom has been trying to reduce _____ coal it uses.

a) the a mountain of b) the a mount of
c) the all mount of d) the amount of

7. A spokesman said it must now try to use less gas to make sure it _____.

a) meets its target b) meet its target
c) meets it target d) meet it target

8. World Wildlife Fund said it was pleased that the UK is moving _____ energy.

a) two wards greener b) too wards greener
c) towards greener d) tow wards greener

9. It added: 'Climate change is wreaking _____ nature'.

a) havoc on hour b) havoc on your
c) havoc in our d) havoc on our

10. We are turning our backs on polluting fossil fuels and embracing _____ future.

a) a new, clean b) anew, cleaned
c) a news, clean d) a new, cleaned

Ex.4.34. Put the words into correct order to complete the sentences.

1. moving / from / fuels / is / away / fossil / It.
2. New / from / UK's / provider / figures / the / electricity.
3. power / more / than / Solar / produced / electricity / gas.
4. was / has / the / ever / first / happened / time / It / this.
5. the / power / fourth / system / cleanest / is / The / now / UK's.
6. Trying / of / to / coal / reduce / it / the / uses / amount.
7. try / now / must / It / gas / less / use / to.
8. The / is / towards / energy / UK / moving / greener.

9. Climate / nature / our / on / havoc / wreaking / is / change.
10. fossil / on / backs / our / turning / are / We / fuels.

Ex.4.35. Match the words with their definitions.

A

1) renewable	a)	a black or dark brown rock found underground deposits and burnt for heating or power
2) fossil fuels	b)	something that creates and gives something to people
3) provider	c)	a natural source of power that comes from under the ground or under the sea, such as coal and gas
4) solar	d)	a set of connected things or parts forming a bigger whole
5) coal	e)	a type of energy that is not gone forever when it is used
6) combined	f)	about the sun
7) system	g)	united or joined

B

8) reduce	h)	gives or provides someone with something needed or wanted
9) supplies	i)	now; at the present time
10) target	j)	making the air, rivers, seas or other things dirtier because of dangerous things going into them
11) emissions	k)	a goal, objective or result which people try to reach or get to
12) currently	l)	lots and lots of damage and destruction
13) havoc	m)	the production and sending out of something, especially gas or radiation
14) polluting	n)	make smaller or less in amount, degree, or size

Ex.4.36. Put the letters in the underlined words into correct order.

1) <u>resnaice</u> its use of renewable energy
2) moving away from <u>isfsol</u> fuels
3) <u>lurance</u> power
4) <u>eirtyticlce</u> production
5) <u>lroas</u> power

6) The UK's power sytsme
7) reduce the atmnuo of coal it uses
8) greenhouse gas nseosmisi
9) The conservation htircay World Wildlife Fund
10) wreaking vcoah on our nature
11) facing up to the clalenghe
12) embracing a new, clean rfueut