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رُوجع ومطابق للأصل البيوى ويُطبع على مسئولية اللجنة الفنية ،

ح14 ARAB REPUBLIC OF EGYPT {269} ت.ع.ج/أول
Ministry of Education
General Secondary Education Certificate Examination, 2014
{ First Session – New System }
Geology & Environmental Sciences Time: 3 Hours

الجيولوجيا والعلوم البيئية { باللغة الإنجليزية } { الأسئلة في أربع صفحات }
تنبيه مهم : ١- يسلم الطالب ورقة امتحانيه باللغة العربية مع الورقة المترجمة .
٢- الإجابات المتكررة عن أسئلة الاختيار من متعدد لن تقدر ويتم تقدير الإجابة الأولى فقط .

Answer (four) questions only from the following:
First question: [15 marks]
(A) Choose the correct answer for each of the following, and write it only in your answer sheet:

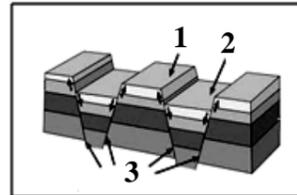
- 1 - Scientists could identify the internal parts of the earth by studying
a) the rotation speed of earth b) seismic waves
c) gravity of the earth d) ozone layer
- 2 - When the temperature becomes unsuitable , Bacteria revert to
a) formation of cyst b) hibernation
c) formation of spore d) summer laziness
- 3 - Which of the following factors help mainly in sedimentation in the river ?
a) presence of obstacles in the course of the river
b) decreasing of water temperature
c) increasing of water speed
d) increasing of water quantity
- 4 - All the following belong to cohesive properties of minerals except
a) cleavage b) transparency c) hardness d) fracture
- 5 - Rock salt arises as a product of the
a) chemical deposition of sedimentary rocks
b) biogenic deposition of sedimentary rocks
c) biochemical deposition of sedimentary rocks
d) detritus deposition

(B) What is the difference between?

- 1 - Torrents as an agent of degradation and ground water as an agent of chemical degradation.
- 2 - Rhyolite and gabbro (in terms of kind of rock – texture).
- 3 - Producers and consumers.

(C)

- 1 - The opposite figure shows some kinds of faults, answer the following:
a) Mention, how does the structure no (3) result ?
b) Show the difference between the two structures no (1) and (2).



بقية الأسئلة في الصفحة الثانية

ح14 - 2 -
تابع {269} ت.ع.ج/أول

2 - " Minerals are non-renewable resources that man exploits in different aspects of his life activities "
a) What is meant by mineral for mineralogist ?
b) How can we overcome the depletion of quantities of minerals in the earth's crust ?

Second question: [15 marks]
(A) Write the scientific term for each of the following statements:

- 1 - The science which study the relief and the topographical features of a region.
- 2 - Marine organisms that need relatively small amount of light; therefore it can manufacture its food at a 25 meters deep.
- 3 - Properties of minerals which depend on the interaction between light falling on the mineral and that reflected from its surface.
- 4 - Continuous reduction in the members of species without compensating that by reproduction until it disappears completely and consequently the complete loss of this species.
- 5 - The Solid waxy substance exist in the oil shale. It decomposes by heating to about 480 °C to yield oil.

(B)

- 1 - Illustrate by drawing only a fully labeled diagram of the following:
a) movement of sand dunes.
b) steps of the formation of oxbow.
- 2 - Which rock of the following is suitable for assembling and storage oil and ground water, with mention the reason?
(Gabbro – Rhyolite – sand stone – marble – basalt)

(C)

- 1 - Discuss the following statements:
a) Trees have several benefits to the environment in which it is found.
b) Changing the environment leads to the extinction of many species of living organisms.
- 2 - Mention the parts of a volcano.

Third question: [15 marks]
(A) Justify the following:

- 1 - The first trophic level in the marine food chain is more important than following trophic level in terms of energy.
- 2 - Variation of crystal forms of minerals.
- 3 - Formation of meanders in some rivers.
- 4 - Extinction is a natural event in evolution.
- 5 - Transformation of igneous or sedimentary rocks to metamorphic rocks in the Earth's interior.

بقية الأسئلة في الصفحة الثالثة

			التاريخ
			التوقيع
			الاسم
			التاريخ
			التوقيع
			الاسم

رُوجع ومطابق للأصل البيوى ويُطبع على مسئولية اللجنة الفنية ،

(B)

1 - Explain the following statements:

- a) Re-use of materials is one of the methods that can be used for solving the depletion of resources.
b) The marine ecosystem uses its wastes.

2 - Write short notes about:

- a) The main environmental systems.
b) The government's role in the treatment of the urbanization problem and the decline in agricultural land.

(C) What are the consequent results of each of the following ...?

- 1 - Abundance of nutrients in the moving surface water.
2 - Presence of saprophytic bacteria in the ecosystem.
3 - Falling of pesticides on agricultural soils.
4 - Cultivation of wheat during the months of February and March.
5 - Increased evaporation and reduction in rain or river mouths in the Arabian Gulf.

fourth question: [15 marks]

(A) Explain the following:

- 1 - Diamond is considered precious stones.
2 - The length of the day time is an important factor in triggering migration.
3 - Formation of Laccolith.
4 - Spread and diversity of marine plants in the depth less than 200 m.
5 - Importance of Ozone layer.

(B) Correct the underlined words in the following statements, then write the corrected words only in your answer sheet:

- 1 - The river increase its rate of erosion at downstream.
2 - Hardness is the property depends on the ability of mineral to pass the light through it.
3 - Abu EL Mahariq belt is one of the most important products of degradation action of rain.
4 - Magma flows in the direction of the earth's surface then it cools above surface and forms a rock with rough texture.
5 - The study of the rules and environments that govern the formation of the layers and the sites of deposition of the sediments through science of mineralogy and crystallography.

(C) What are the reasons that lead to...?

- 1 - The movement of surface water in the seas.
2 - Formation of rock salt.
3 - The color of basalt is differ from the color of granite.
4 - Formation of Lakes near the sea beaches.
5 - Formation of splits in the littoral zone.

fifth question: [15 marks]

(A) What would happen in the following cases...?

- 1 - Overgrazing of perennials plants.
2 - Falling rains accompanied by strong winds on the limestone rock.
3 - Hydration of anhydrite mineral.
4 - Magma is intruded parallel to surfaces of surrounding rocks.
5 - Breaking of volcanic neck material formed during volcanic eruption.

(B)

1 - Show the difference between each of the following:

- a) Andesite and diorite (in terms of kind of rock - texture).
b) Halite and Calcite (in terms of cleavage).

2 - " Quartz is multicolored mineral " explain.

(C)

1 - Mention the bases of classification of folds.

2 - Choose from column (B) the suitable for column (A):

Column (A)	Column (B)
1 - Deposits of fresh water lakes	a) There are not gradient texture
2 - Residual soils	b) Gypsum and rock salt
3 - The black sand	c) Works on the erosion of limestone rock
4 - Deposits of salt lakes	d) Deposits of gravel and sand
5 - Transported soils	e) Similar in composition to the parent rock
6 - Carbon dioxide dissolved in water	f) Placer deposits
	g) Dry delta
	h) Waterfalls .

الدرجة العظمى (٦٠)
الدرجة الصغرى (٣٠)
عدد الصفحات (٥)

جمهورية مصر العربية
وزارة التربية والتعليم
امتحان شهادة إتمام الدراسة الثانوية العامة
لعام ٢٠١٤ م
نموذج إجابة [الجيولوجيا والعلوم البيئية بالانجليزية]

[٢٦٩]
الدور الأول
(نظام حديث)

Question one : (15 marks)

(A) 5×1= 5 marks

- 1- b) seismic waves
- 2- c) formation of spore
- 3- a) presence of obstacles in the course of the river
- 4- b) transparency
- 5- a) chemical deposits of sedimentary rocks

(B) (2+2+1) = 5 marks

1-

Torrents as an agent of degradation 42	ground water as an agent of chemical degradation 51
torrents usually carry all loose detritus available on the slopes which are used as tools of erosion to widen and deepen their channels	dissolving rock constituents, when ground water is acidic by dissolving carbon dioxide, it may completely dissolve rocks such as limestone where percolating water may widen joints and fractures forming wide caves in limestone

2- 97

Rhyolite	Gabbro
volcanic - microcrystalline or glassy	Plutonic - coarse crystalline

3-

Producers	Consumers
the green plants that convert the solar radiant energy into chemical energy stored in the food through photosynthesis. All other organisms depend on green plants in a direct or indirect way.	the animals that depend on green plants for their food. Some of them feed directly on the plants (herbivores) and some feed on animals that fed on plants (carnivores)

(C) 5 marks 14g

1- 3mark

- a) Structure no (3) : results from tension and the resulting rock masses occupying the hanging wall to be displaced along the fault plane down with respect to those that occupy the footwall. (Mark)
- b) Structure no (1) : developed when the two footwall of two normal faults combine with each other in one rock block (Mark)
Structure no (2) : develop when the two hanging walls of two normal faults combine with each other in one rock block. (Mark)

2- 2marks

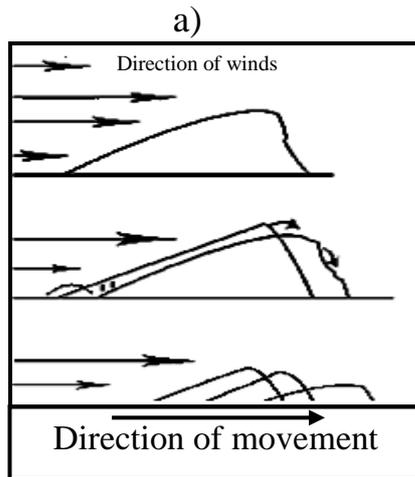
- a) a naturally occurring inorganic element or compound having an orderly internal atomic structure and characteristic chemical composition, crystal form and physical properties. 68
- b) the recycling of minerals through melting the manufactured metals that are no longer suitable for use and reshaping it.71

Question two : (15 marks)**(A) 5×1= 5 marks**

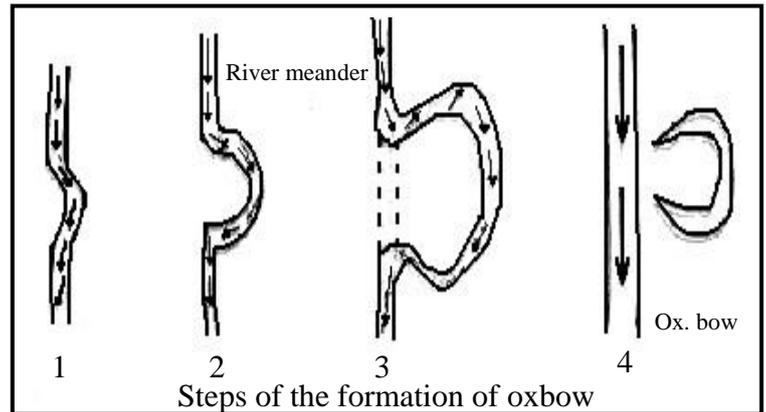
- 1- Geomorphology 3
- 2- Read algae 20
- 3- Optical properties 73
- 4- Extinction 77
- 5- Kerogen 95

(B) (2+2+1=5 marks)

1-



b)



2- sand stone , porous sedimentary rock

(C) (2+1½+1½= 5 marks)

1-

- a) Trees have several benefits to the environment in which it is found in industrial areas it acts as natural screen for carbon dioxide, besides providing us with oxygen.½ In agricultural areas, it acts as wind breakers for protecting the other plants and providing shade and wood.½ In the forest, trees have other benefits for the environment. It sheds its leaves periodically. These shredded leaves decompose forming humus which nourishes fertility, It ensures almost a constant temperature for wild animals which find in the forest a shelter and a suitable place for its life ½ man cuts lots of trees to get both wood and cellulose necessary for paper and textile industry ½ 68- 69
- b) About 40% of the equatorial forests in the world were destroyed , this leads to the eradication of many rare birds and threatens many mammals and reptiles that live between the trees of these forests ½. This is in addition to a large number of spiders, insects and worms In addition, drying out the lakes and building dams to control the rivers caused harm to many aquatic migrating birds and threatened with their extinction.½ The change in the environment in the delta and upper Nile led to the disappearance of papyrus plants and the ibis bird which were signs of the ancient Egyptian life.½ 79

2- Volcano consists of : volcanic vent - volcanic neck – volcanic cone 101

Question three : (15 marks)**(A) 5×1 = 5 marks**

- 1- In order to make good use of the productivity power of the seas. 31
- 2- The crystal shape depends on the degree of growth in the three directions of space. In this case the crystal will be cubic in shape. Also, the crystal will be columnar of rod-like if it grows in one direction more than the other two horizontal directions, if a crystal grows in the two horizontal directions more than the third the resulting crystal will be discoidal. 70
- 3- When water changes its direction in a bend, it moves faster on one side (bank) more than on the other. The result is more erosion on one bank, causing the river to cut and erode this outer bank in the bend. At the same time the river deposits its material on the inner side of the bend where the speed of flow is lowest. this depends on the hardness of the river banks.
- 4- It is occur at the same time with climate changes harmful to the environment and its plants, thus these plants disappear and the animals feeding on it may die of starvation. Certain species may disappear from the environment due to the invasion of other species capable of competition and expelling the original species or eradicating them. 78
- 5- because the rocks are subjected to increased temperature (and/ or pressure) will respond to become in equilibrium with the new physical conditions.103

(B) 5 marks

- 1- $1\frac{1}{2} + 1\frac{1}{2} = 3$ marks
 - a) Recycling the used water so that it can be suitable for use once again for certain purposes such as irrigation. $\frac{1}{2}$ Reusing the used car oils and batteries after treating them. $\frac{1}{2}$ Smelting metal products that are not any more suitable for use such as car frames and reshaping and using it. $\frac{1}{2}$
 - b) fish excretes nitrogenous wastes used as food by the algae on which fish feed Thus these wastes do not stay in the sea water keeping its characteristics. $\frac{1}{2}$ Also, living marine organisms produce carbon dioxide in its respiration. This is used by the marine plants in the process of photosynthesis which produces - in addition to the organic substances the oxygen necessary for respiration. (Mark)
- 2- (1+1= 2 marks)
 - a)
 - 1- Biosphere means the system which is made of the space where life exists.
 - 2- The technosphere includes all what man made and established in the biosphere
 - 3- The sociosphere includes all kinds of establishments formed by man to administer the internal relation amongst members of society and manage the relationship between society and all other natural and constructed systems.37
 - b) the government established a number of new cities on uncultivated desert land. The government encouraged the establishment of industrial projects in these cities. It provided these cities with the infrastructure and houses, schools and the different services. Besides, the government issued legislations that prevent building on agricultural land.

(C) 5×1= 5 marks

- 1- The increase of fish production in any marine area. 29
- 2- Ensuring the continuity of life in the ecosystem. 15
- 3- Loss of nodular bacteria and their beneficial structure and function. 67
- 4- The wheat grows vegetative without flowering. 19
- 5- The degree of saltiness is increased to 40 gm/ liter or more. 26

Question four : (15 marks)**(A) 5×1 = 5 marks**

- 1- because the diamond has play of color property , When light falling on a diamond disperses into red and violet. 75
- 2- day length affects the activity of birds which in turn affects the size of the sexual glands which increase by increasing the day length. 22
- 3- As the magma goes up through layered rocks and is highly, viscous, it accumulates causing arching or doming the rocks above .18
- 4- The light which passes through the surface sea water plays an important role in the plant life which depends on it for carrying out photosynthesis. 27
- 5- Protection human beings from the damaging effects of cosmic and ultraviolet rays.8

(B) 5×1= 5 marks

- 1- upstream
- 2- transparency
- 3- agent of deposition of wind
- 4- glassy or microcrystalline
- 5- stratigraphy

(C) 5×1= 5 marks

- 1- variations in temperature of water which result in changes in its density and salinity.53
- 2- due to evaporation of water and the increase of salts concentration . These salt deposits crystallize from inland lakes and costal lakes and Abkhaz 94
- 3- the dark color of basalt is due to the increasing of the ratio of iron. While granite is rosy color is attributed to the presence of quartz by high rate reach to 25% in addition to potash and sodic feldspar. 100
- 4-due to coral reef acts as a barrier to separate part of the sea water .57
- 5- Deposits of this zone brought to the oceans by rivers in addition to products of wave erosion on coast lines. This material consists mainly of sand and gravel. 154

Question five : (15 marks)**(A) 5×1 = 5 marks**

- 1- lead to the continuous removal of the green parts. This effect is augmented by the repeated drought. This leads to the removal of certain plants suitable for grazing whereas other plants find the chance to grow and spread. 36
- 2- Help in transporting detritus or eroding rocks as what happened sometimes by rain falling grooves as in Sinai peninsula. 41
- 3- changing anhydrite to gypsum. 36
- 4- form silks.
- 5- form volcanic breccia and volcanic ash. 19

(B) (3+2 = 5 marks)

1- 3 marks

a) 2 marks 100

Andesite	Diorite
Volcanic rock - microcrystalline or glassy	Plutonic rock – coarse crystalline

b- mark 78

Halite	Calcite
cubic cleavage	Rhombohedral cleavage

2- 2 marks 74

pure quartz is seen as the transparent variety "rock crystal". $\frac{1}{2}$ Quartz is rose and amethyst (purple to violet) this color is due to small amounts (impurities) of titanium for the rose and ferric iron for amethyst. $\frac{1}{2}$ Smoky quartz, which is often used as a semi-precious stone acquires its yellowish grey to black color when exposed to high energy radiation as from a radioactive source. $\frac{1}{2}$ Milky quartz is white like milk due to minute gas and liquid inclusions held in the mineral. $\frac{1}{2}$

(C) 2+3 = 5 marks

1- 2 marks (two points enough)

on the basis which such fold elements might take a certain position in the field - or according to the shape of its outcrop in the field - or According to the type and nature of tectonic forces affecting the rocks during the mechanical folding process - type of fold : syncline - anticline 13

2- $\frac{1}{2} \times 6 = 3$ marks

- 1- d)
- 2- e)
- 3- f)
- 4- b)
- 5- a)
- 6- c)

انتهى نموذج الإجابة