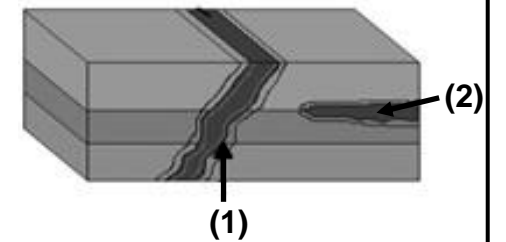


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رُوجع على النص العربي ومطابق الأصل اليوناني ويطلع على مسئولية اللجنة الفنية ،

[E.N / 15] [3] تابع [٥٣ / ج] ث.ع / ث / ح	[E.N / 15] [4] تابع [٥٣ / ج] ث.ع / ث / ح
<p>B) Give reasons for each of the following:</p> <ol style="list-style-type: none"> 1. Aquatic organisms do not die in the polar regions in which water freezes. 2. Usage of the nuclear fuel in generating energy is still limited. 3. Presence of waterfalls in some rivers. 4. Oil is not regarded as a mineral from the geological point of view. 5. The swamp areas behind the river deltas are considered suitable places for formation of the coal. <p>C) 1. What is the relation of light with each of the following...?</p> <ol style="list-style-type: none"> a) Distribution of living organisms on the land. b) Migration of the living plankton. <ol style="list-style-type: none"> 2. What are the assumptions upon which the scientists depended in the interpretation of the plate tectonics theory? 3. Write a note about each of the following: <ol style="list-style-type: none"> a) The most important benefits of the atmosphere. b) The modified Mercalli scale. <p>Fourth question: (15 Marks)</p> <p>A) What are the consequent results of each of the following...?</p> <ol style="list-style-type: none"> 1. Lithification of sand deposits. 2. Exposing of mica mineral to break. 3. Presence of the magnetic field of the Earth. 4. Accumulation of remains of marine vertebrate animals during Upper Cretaceous period. 5. When the wind loaded with sand faces an obstacle. <p>B) 1. Determine the name of the rock or the mineral in each case of the following:</p> <ol style="list-style-type: none"> a) A volcanic igneous rock rich in air bubbles and has a domestic use. b) A sedimentary rock rich with the hard remnants of marine organisms. c) A detritus sedimentary rock consists of consolidated grains that their size is more than 2 mm. d) An igneous plutonic rock crystallized in the last stages of the magma crystallization and is silica-rich. e) A mineral formed due to the degradation of feldspar by carbonic acid. f) A mineral that turns into brown when a small percentage of iron atoms replaces zinc. <ol style="list-style-type: none"> 2. Illustrate by a labeled drawing <u>only</u> a section in the delta. <p>[بقية الأسئلة في الصفحة الرابعة]</p>	<p>C) Explain the following statements:</p> <ol style="list-style-type: none"> 1. Complexity of the ecosystem is one of its safety factors. 2. Water movement is considered as one of the factors that control the marine ecosystem. 3. The plant passes during its growth through two consecutive stages that are affected by the factors of the ecosystem. <p>Fifth question: (15 Marks)</p> <p>A) 1. Look at the opposite figure, then answer the following:</p> <ol style="list-style-type: none"> a) What is the kind of rocks of the two structures (1) and (2)? b) How do the two structures (1) and (2) form? c) What is the texture that forms the two structures (1) and (2)? What are its properties? d) Draw another two structures for the kind of rocks that form the two structures (1) and (2). <p>2. How do each of the following adapt with the desert environment...?</p> <ol style="list-style-type: none"> a) Producers b) Consumers <p>B) What would happen in the following cases ?</p> <ol style="list-style-type: none"> 1. Pollution of aquatic environment with oil. 2. Meeting of the river Nile with the Mediterranean sea. 3. The accumulation of rainwater in vents of the inactive volcanoes. 4. Displaying the ancient Egyptian obelisks in Europe and America . 5. The absence of decomposers from the marine food chain. <p>C) 1. Give an example for each of the following:</p> <ol style="list-style-type: none"> a) A radioactive mineral found in the black sand in North Delta. b) The plutonic equivalent to andesite. c) A mineral with hardness (9). d) A mineral with a constant green colour and is used in ornamentation. <ol style="list-style-type: none"> 2. Mention Wegener's theory and the reasons inspired him to introduce the theory. <p>[انتهت الأسئلة]</p>



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

جمهورية مصر العربية
وزارة التربية والتعليم
امتحان شهادة إتمام الدراسة الثانوية العامة
لعام ٢٠١٥ م
نموذج إجابة [الجيولوجيا والعلوم البيئية بالإنجليزية]

[٥٣]
الدور الثانى
(نظام حديث)

ANSWER THE FIRST QUESTION: (5 + 5 + 5 = 15 MARKS)

A) (1 × 5 = 5 marks)

1. 9 1E28 2. depressions 5G124 3. volcanic 1G19
4. Graphite 3G78 5. species extinction 2E61

B) (2 + 3 = 5 marks)

1- (0.5 × 4 = 2 marks)

- a) The stalagmites: are calcareous deposits projecting upward from the floor of a limestone cave. **2G52**
b) The needle shaped crystal: It grows in one direction top to bottom more than the other two horizontal directions with extreme growth in one direction. **3G70**
c) The volcano: It is an opening into the Earth's crust that permits the passage of molten rocks and the prisoned gases outside to the Earth's surface. **4G101**
d) The denudation : The effect of external factors on rocks , erosion , removing and exposing a fresh surface to weathering and trasport material . **2G29**

2- 3 Marks

- a) The upper part of the layer (2) **(Half mark)** is partially molten and weak where lava and magma are generated. This weak zone is regarded as consisting of rock material which behaves as fluids under certain conditions of temperature and pressure and this is a situation that convection currents may result in a matter which permits the drifting of continents. **(One mark) 1G5-6**
b) The layer (3) is consisting of molten iron and nickel which originate the magnetic field of the Earth that depends on the shape of the old iron oxide as revealed from remnant magnetism attributed to iron oxide and iron sulfide included in the rocks. **(One mark) 1G6 - 5G121**
c) The layer (4) is consisting of rocks of very high density (about 14 gm / cm³). **(Half mark) 1G6**

C) (3 + 2 = 5 marks)

1- 3 Marks (3 points are enough)

Converting Wastes into Resources: 2E56

- Transforming organic matter that form 75% of garbage into fertilizers.
- Transforming animal excretion by degradation into methane gas that is used as fuel (biogas).
- Transforming of agricultural wastes into paper, food or organic fertilizers.
- Transforming some industrial products into products that can be used in other industries.

2- 2 marks

Volcanic bombs	volcanic breccias
These are elliptical shaped rock fragments erupted from volcanic vent formed from lava which solidified near earth surface. (One mark) 4G102	These are broken volcanic neck material - it is characterized by sharp edged rock fragments spread around volcano. (One mark) 1G19

ANSWER THE SECOND QUESTION: (6 + 5 + 4 = 15 MARKS)**A) (1 × 6 = 6 marks)**

1. The natural grazing field 2E48
2. Ecology science 1E10
3. Orthoclase 3G77
4. Sial 5G119
5. Mechanical weathering 2G31
6. Environmental science 1E10

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

(1) Nodular bacteria	Earth worms
Fixing the atmospheric nitrogen. (Half mark) 2E47	Aerate the soil. (Half mark) 2E47

(2) Marine bathyal Zone 2G56	Marine abyssal zone 2G56
<ul style="list-style-type: none"> Depth from 200 m to about 2000m - The water is quiet with no effective currents , no light and the water temperature is constant. (Half mark) Sediments include fine materials that are represented by mud with very fine sand and calcareous and siliceous materials of floating organisms that settle to the bottom after death(forminifera and siliceous radiolaria and diatoms). (Half mark) 	<ul style="list-style-type: none"> Depth greater than 2000 m - There is no light , pressure is very high and water temperature is less than 5° C. (Half mark) The deposits consist of red clays with sets of organisms (forminifera and diatoms). (Half mark)

(3) The degradation effect of the torrents	The mechanical degradation effect of ground water
When the torrents has high velocity and power, they carry detritus of different sizes ranging from boulders to finest clay particles (Half mark) which are used as tools of erosion to widen and deepen their channels and the action of the torrents appeared in old wadies in the desert areas. (Half mark) 2G42	Collapsing rocks blocks on slops sides (Half mark) when permeable rocks are saturated with water. (Half mark) 2G51

C) (4 × 1 = 4 marks)

	The use or benefit
1- Joints 1E16	Constructing tombs and obelisks of Ancient Egyptians.
2- Humus 2E48	Nourishes the soil and keeps its fertility.
3- Oil shale 4G95	It is an important source of energy and is kept as reserves till natural oil and gas deposits have been consumed from earth.
4- Seismograph 5G128	Recording earthquakes.

ANSWER THE THIRD QUESTION: (5 + 5 + 5 = 15 MARKS)**A) (5 × 1 = 5 marks)**

1. Talus slops **2G32**
2. Gondwana **5G125**
3. Sinai panther or tiger **2E64**
4. Streak **3G75**
5. more than 21 **5G114**

B) (5 × 1 = 5 marks)

1. Once the surface water temperature reaches 3° C, the water expands and its density is decreased and it floats to the surface where it freezes thus protecting the aquatic life from freezing. **1E23**
2. For many reasons, such as the high cost and the many precautions that should be taken into consideration. **2E52**
3. Because when the water passes on the rock sequence in the cliff which is made of rocks of different hardness. The stream is flowing on a strong and resistant rock while the underlying bed is made of the soft and easily eroded shale. The soft bed is eroded faster than the top strong bed making the lip of the fall. Once the soft bed is removed to a distance, the lip becomes hanging and will fall piece by piece under its own weight. **2G45**
4. Because oil is liquid, of organic origin and has no characteristic chemical composition. **3G69**
5. Because the conditions are suitable for the rapid burial of the plant remains in the bottom of the earth away from oxygen so the plant tissues lost their volatile constituents and carbon gets concentrated forming coal. **4G95**

C) (2 + 1 + 2 = 5 marks)**1. (2 marks)**

- a) The living organisms are adapted to cope with the conditions in which they exist: The desert is characterized by increase in the amount of light accompanied with increase in temperature and reduction in the relative humidity. **(Half mark)**
The equatorial forest is characterized by reduction of light underneath the huge trees and an increase in the relative humidity. **1E20 (Half mark)**
- b) The living plankton move up to the surface or descend to the sea floor daily. The roaming crustaceans, as an example, are affected by the ultraviolet light, thus they remain under a depth of 27m all the day and migrate to the surface at night. **1E21 (one mark)**

2. (One mark)

The assumptions: Earth surface made up of number of large lithospheric plates either oceanic or continental each attaining up to 100 km in thickness and they are continuously moving and active through tremendous growing fractures extending for long distances on deep ocean floors or continents. **5G124**

3. (2 marks)

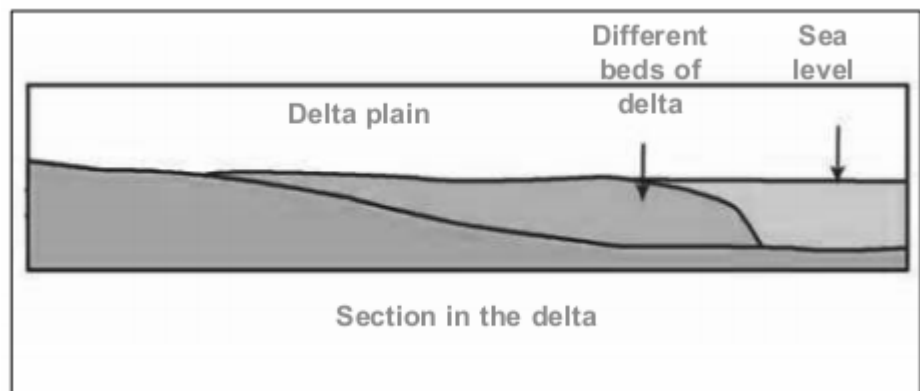
- a) The benefits of the atmosphere: Living organisms that depend on Oxygen live near the surface. - Oxygen and nitrogen are close to the earth surface. - Oxygen dissolves in seawater in small quantities to be sufficient for marine life to continue. - Oxygen form ozone gas, which absorb ultraviolet rays before reaching us from the sun. **1G7-8 (one mark)**
- b) **The modified Mercalli scale:** is the most common intensity scale used, this scale is divided into twelve scales (between very weak to very strong) which cause huge damage. **5G130 (one mark)**

ANSWER THE FOURTH QUESTION: (5 + 5 + 5 = 15 MARKS)**A) (5 × 1 = 5 marks)**

1. Sand stone rocks are formed. **4G93**
2. Mica splits along one basal cleavage plane forming thin plates. **3G78**
3. The magnetic field of the Earth prevents charged atomic particles and cosmic rays from reaching the surface. These rays are concentrated in the form of belts, known as Van Allen belts surrounding the Earth at high altitudes. **1G8**
4. Accumulation phosphate deposits and such deposits occurred in Egypt. **5G112**
5. The velocity of wind decreases and it will not be able to carry sand grains for longer distance and will deposit its load as sand dunes. **2G39**

B) (3 + 2 = 5 marks)**1. (0.5 × 6 = 3 marks)**

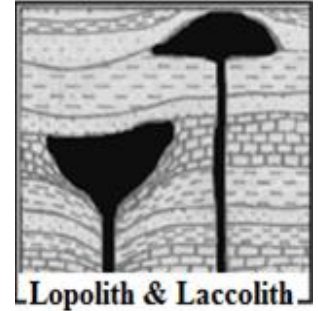
- | | | |
|-------------------------|--------------------------|------------------------------|
| a) Pumice. 4G100 | b) Limestone 4G94 | c) Conglomerates 4G93 |
| d) Granite 4G100 | e) Kaolinite 2G35 | f) Sphalerite 3G74 |

2. The drawing 2G49 (2 marks)**C) (1.5 + 2 + 1.5 = 5 marks)**

1. Any ecosystem is complicated to a certain degree. This is because of its physical and chemical components, living organisms, and its mutual intricate relationships on one side and between them and the non-living factors on the other hand. This means the presence of food web in the ecosystem. **(One mark)**
This complication is one of the important factors for the safety of ecosystem as it limits the effect of ecological changes. If the ecological changes were successfully followed, it will cause disturbance in the balance and stability of ecosystem for a long or a short periods according to the cause of change. **(Half mark) 1E24**
2. The water movement is affected by:
The wind direction, the tide and the location of the coast with respect to waterfalls and river mouths. **(One mark)**
In some seas, huge water currents are generated with specific routs directed by the earth rotation, temperature and water density. This affects the distribution of the marine organisms. **(One mark) 1E28**
3. Plant passes through two stages:
Vegetative growth stage: The embryo cells divide during seed germination where root, stem and leaves are formed.
The flowering and fruiting stage: starts after a period of vegetative growth stage, the plant forms flowers and fruits due to many internal reactions. **(One mark)**
These two stages are affected by the factors of the ecosystem. These factors may be favorable for the two stages or may be favorable for the vegetative growth only. **(Half mark) 1E19**

ANSWER THE FIFTH QUESTION: (6 + 5 + 4 = 15 MARKS)**A) (3 + 3 = 6 marks)****1. 3 marks**

- a) Intruded igneous rocks **1G17 (half mark)**
 b) Structure (1) is formed when the molten magma in the crust emplaced nearly vertical plane cracks. **1G17(half mark)**
 The structure (2) is formed when the molten magma is intruded concordant (parallel) with the bedding plane. **1G17(half mark)**
 c) The porphyritic texture. **(Half mark)**
 Its properties: It has coarse mineral crystals present in microcrystalline ground. **4G97(half mark)**
 d) Drawing **(half mark) 1G18**

**2- 3 Marks****a) Adaptation of producers with the desert environment: 1E33 (1.5 marks)**

The increase in the ratio of the root system to the shoot system - Roots that extend - Vertically (deep) into the soil to absorb the underground water - Horizontally under the soil surface to absorb the dew drop that fall on the soil surface - Thick cuticle cover that protect the plant from evaporation - Leaves are reduced in size to keep the plant water from transpiration - The Temporary vegetation: Annual plants that appear only in winter after the rain and go away by the arrival of drought in summer and disappear by leaving its seed in the soil.

b) Adaptations of consumers with the desert environment: 1E35 (1.5 marks)

Some of them developed tight protective covering around their bodies to keep the water - Some of them increase their activity at night or in early morning - Or its urine is concentrated and its perspiration is reduced very much to economize on water - And some (Jerboas) don't touch water all their life - Others depend on the blood of preys as a source of water.

B) (1 × 5 = 5 marks)

- Killing many of the aquatic birds and micro-organisms and the fish that feed on them. **2E60**
- Delta sediments are deposited. **4G91-2G49**
- Rounded lakes are formed. **4G102**
- Their surface became rough; their colour faded and they lost their brightness. **2G34**
- The dead bodies will stay in the place where they died without decomposing, the elements that are reused in building phytoplankton (that represent the corner stone in the production of food for the rest other marine organisms) would not be liberated and stay in these dead bodies. **1E15**

C) (2 + 2 = 4 marks)**1. (0.5 × 4 = 2 marks)**

- a) Zircon **2G50** b) Diorite **4G100** c) Corundum **3G76** d) Malachite **3G68**

2. (2 marks) 5G119

* **ALFRED WEGNER Theory:** Continents of earth were huge vast land mass called Pangaea (mother of continents) formed of Sial (external mantle of the crust whose rocks rich in silica about 70% and alumina) over Sima build up ocean floors (interior mantle of the sial, whose rocks are less rich in silica 45% and magnesium). The single vast land mass started to split by the close of the Mesozoic era into a number of fragments and by Pleistocene time they achieved their positions as our modern continents. **(One mark)**

*** The reasons:**

- The great similarity of the eastern coastline of both north and south America and the western coastline of Europe and Africa as if they were one land piece and drifting away from one another.
- Similarly the similarity (correlatable criteria) of the rocks of these continents.
- The close features of ancient life and distribution of climatic belts on two sides of Atlantic Ocean. **(One mark)**