**SENIOR ONE END OF YEAR EXAMINATIONS, 2021**

**SUBJECT: GEOGRAPHY AND ENVIRONMENT**

 **MARKING GUIDE**

**SECTION A:** This sections **(50 marks)**

1. Outline any two elements that make up the external structure of the earth. **(2marks)**
* Atmosphere
* Hydrosphere
* Biosphere
* Lithosphere
1. The solar system is formed by diverse types of celestial bodies, give four distinctive characteristics of the earth compared to other planets of the system. **(4marks)**
* Earth is the only rocky planet in the inner system to have a big satellite i.e the moon.
* The solid outer layer of the Earth’s surface contains tectonic plates.
* The Earth has the atmosphere which shelters it from the sun’s rays.
* The Earth is 150 million km from the sun.
1. What is difference between latitude and longitude? (**2marks)**
* Latitude is the angular distance of a place north or south of the Earth’s equator *while* longitude is the angular distance of a place east or west of the Greenwich meridian.

 4) a) Show the difference between waxing crescent and waning gibbous moon. **(2marks)**

* Waxing crescent occurs between the 1st and 6th day after the new moon while Waning gibbous appears between 15 to 21 days after the first phase of the new moon.

 b) State any five features of the moon. (**5marks)**

* Moon is a natural satellite of the planet earth.
* Moon is the 5th largest natural satellite in the solar system.
* It is about 3,476 km in diameter (27% the diameter of the earth.)
* The moon orbits (revolves around) the earth once every 27.3 days (27 days, 7hours and 43 minutes)
* The moon completes one rotation on its axis in 27 days. The rotation is almost unnoticed.
* The moon does not produce its own light; it reflects light from the sun and transmits it to the earth.
* It has very low gravitational force.
* Its surface is made up of rocks and dust and it has impact craters caused by impact of meteoroids

5. “Studying geography is essential in Rwanda’s education system” giving reasons to support this statement. (**4marks)**

* Geography provides guidance to leaders on how to allocate national resources to all parts of the country.
* Geography assists learners to know the outside world as they do research.
* Geography equips an individual with knowledge of the relationship of people of different countries.
* Geography equips learners with problem solving skills.
* Geography informs the attitude that countries and individuals have towards other countries.

6.a) What is meant by the term “eclipse”? (**2 marks)**

* An Eclipse refers to the obstruction of one celestial body by the passage of another or an Eclipse is a situation when the earth, moon and sun are in Straight line.

b) With the help of a diagram, explain how a lunar eclipse occurs. (**4marks)**

* Lunar eclipse occurs when the sun, earth and moon are aligned together in a straight line with the earth in the middle such that light from the sun does not reach the moon and Lunar eclipse takes place during the night of a full moon.

**An illustration showing the occurrence of the lunar eclipse.**



7.(a)Copy and complete the table below about the atmosphere. (**3marks)**

|  |  |
| --- | --- |
| **Layer of atmosphere** | **Zone of transition** |
| Troposphere | Tropopause |
| Stratosphere | Stratopause |
| Mesosphere | Mesopause |

b) Of what importance is the atmosphere to man.(**5marks)**

* It holds important gases like oxygen we breathe and carbon dioxide for plants.
* The atmosphere shields the earth from the sun’s harmful radiations (i.e. the Ozone layer).
* It neutralizes the pollutants of the earth.
* It regulates temperature on the earth.
* The temperature and pressure patterns in the atmosphere determine precipitation.

8. Differentiate between revolution and rotation of the earth.(**2marks)**

* Revolution refers to the motion of the earth around the sun whereas Rotation is the spinning of the Earth on its axis in an anti-clock wise direction.

b) State four effects of rotation of the earth**. (4marks)**

* It causes days and nights
* It causes deflection of winds and ocean currents
* Leads to daily rising and falling of tides.
* Difference of one hour between two meridians.

9) Describe the characteristics of the oceanic crust. (**5marks)**

* It has dense rocks
* It is composed of silica and magnesium(SIMA)
* It has a thin layer
* It is composed of basaltic rocks.
* It has dark colored rocks
* It covers the largest part of the earth’s crust (about 60-70%)

10) What are the characteristics of convectional rainfall?(**6marks)**

* Convectional rainfall occurs daily in the afternoon in the equatorial regions.
* It is of very short duration but occurs in the form of heavy showers (heavy downpour).
* It is caused by thick dark and extensive cumulonimbus clouds.
* It is accompanied by thunder and lightning.
* It causes a lot of runoff.
* In temperate regions, it is slow and of longer duration so that most of rainwater infiltrates into soils.

 **Section B: Attempt all questions. (50marks)**

11) (a)The diagram below shows the water cycle.

 E



Name the processes and parts indicated by **A**, **B**, **C** and **D** and **E**. **(5marks**)

 A -Condensation

 B- Surface Runoff.

 C- Evaporation

 D- Water body or sea.

 E- Sun

b) Explain any five ways in which humans can maintain the water cycle in its normal state.(**5marks)**

* Damming hydroelectricity power.
* Using water for irrigation
* Avoiding deforestation
* Avoid dumping water in water bodies
* Increased afforestation
* Gazetting water bodies from human encroachment.

12. Abundant rainfall in most parts of Rwanda has accelerated soil erosion commonly in hilly areas. in your views what are the main causes of soil erosion in Rwanda. **(10marks)**

* Heavy rainfall: this leads to heavy run-off which leads to soil erosion
* Nature of the slope: steep slopes increase the speed of running water

which leads to high soil erosion

* Nature of the soils:Volcanic soils mainly loose porous in nature and offer less resistance to the destructive winds and rainwater hence soil erosion
* Winds: Strong winds experienced on the bare grounds in the semi-arid areas or hilly areas.
* Deforestation: the cutting down of trees exposes the land to agents of erosion like running water and wind which causes erosion
* Over-cultivation/over-cropping: this is the growing of crops on a given piece of land over a long period of time; this makes soil light and easy to erode.
* Monoculture**,** this is growing one type of crop on a given piece of land for a long period of time; this makes soil easy to erode.
* Burning of vegetation cover.
* Population pressure on the land.

13. Explain how the following types of rain fall are formed:

1. Relief rainfall. **(5marks)**
* Relief rainfall (orographic rainfall). This type of rainfall is received in hilly areas. It is formed when warm moist air meets higher land such as a mountain and is forced to rise. As it rises, reaches the condensation level, forms clouds (Stratus clouds) and falls as rain on the windward side of the mountain.
1. Convectional rainfall. (**5marks)**
* Convectional Rainfall, this is the most common type of rainfall. It occurs as a result of too much heating of the sun. When the surface is heated, moist air rises, cools and condenses to form clouds in the atmosphere. When the clouds become heavy, water droplets result in form of rain. It normally takes place in the afternoon with a lot of thunderstorm. This type of rainfall is common in the tropical region where temperatures are always high.

14.(a)Match the correct definitions with types of rocks and examples in the table below. **(6marks).**

|  |  |  |
| --- | --- | --- |
| **Definitions** | **Types of rock** | **Examples**  |
| A rock which may have been formed as a result of cooling and solidification of magma | Sedimentary rock |  Basalt |
|  A rock type which has been deposited under water. | Metarmophic rock | Coal |
| A rock type which has been charged by heat or pressure. | Igneous rock | Marble |

*Answer*

|  |  |  |
| --- | --- | --- |
| Definition | **Types of rock** | **Examples**  |
| a) a rock type which which has been deposited under water | Sedimentary rock | coal |
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| A rock which may have been formed as a result of cooling and solidification of magma | Igneous rock | basalt |

b) Explain four the importance of rocks to man. **(4marks).**

* Support construction industry like construction of roads and buildings
* Rocks form mountains which attract tourists like Birunga volcanic mountains
* Rocks filter water that flows into rivers especially the ground water
* Igneous rocks form mountains which modify the climate through relief rainfall
* Some of the mountain rocks are source of rivers whose water is used domestically and in industries
* Some rocks on the surface form beautiful scenery
* Rocks are weathered to form fertile soils for crop growing like volcanic soils in North Western Rwanda
* Rocks contain minerals like copper, diamond.

15.Show the differences between a map and an aerial photograph. **(10marks)**

|  |  |
| --- | --- |
| **Maps**  | **Aerial photographs** |
| * A map is a representation of a part of the earth’s surface
 | * An aerial photograph is a picture taken from a raised platform representing a small part of the earth’s surface
 |
| * They are drawn to scale
 | * Not taken to scale
 |
| * A map can represent a relatively large area
 | * Only covers a small area or object
 |
| * The features used on a map are interpreted by use of symbols
 | * The features are clearly seen without the use of symbols. They appear in their natural form
 |
| * A map is sometimes difficult to interpret
 | * An aerial photograph is easy to interpret
 |
| * A map only shows specific information that is needed. It is thus prepared selectively
 | * It shows all features that are near the place whether useful or not
 |
| * A map is difficult to come up with. It requires a wide range of skills such as cartographic techniques
 | * It is relatively easier to take a photograph with a camera and to know how to use it
 |