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

**SUBJECT: GEOGRAPHY AND ENVIRONMENT**

 **MARKING GUIDE**

**SECTION A**: This section is compulsory. **(50marks)**

 1) Name two processes that changes sedimentary rock into igneous rock. **(2marks)**

* Crystallization
* Volcanism/melting

2) State four ways in which rock sediments are carried in a river. (**4marks)**

* Solution - minerals are dissolved in the water and carried along in solution.
* Suspension - fine light material is carried along in the water.
* Saltation - small pebbles and stones are bounced along the river bed.
* Traction - large boulders and rocks are rolled along the river bed.

3) Describe three factors that determine the shape of earth. (**3marks)**

* Force of gravity –it affects the earth by pulling every towards its centers.
* Centripetal force- this pulls the poles towards each other making the poles to flatten.
* Centrifugal force- this causes the bulging at the equator due to high rotation speed at the equatorial region.

4.Give three reasons why the interior of the earth has high temperatures. **(3marks)**

* Due to radio-activity effects.
* The interior of the earth cooled at a slower rate than the outer part after breaking away from the sun therefore, it still retains much of its original temperature.
* The weight of the overlying burden exerts pressure on the core, resulting into high temperatures.

5.(a)Give reasons why the river channel in the lower course tends to be wider than in the upper course.**(4marks)**

* The river is flowing at its fastest.
* The river has its greatest volume.
* The river has its greatest energy.
* There is more erosion in the lowland areas.

 b) Describe the different types of human activities most often found in the lower course of a river basin.**(4marks)**

* Industry/docklands.
* Cities/Towns/Settlements.
* Arable farming/farmland.
* Mining and quarrying

6) (a) Explain why water is such an important agent in weathering.**(4marks)**

* For chemical weathering, water is necessary for hydrolysis and the formation of carbonic acid. Water serves to hold and transport the dissolved products. The expansion of water upon freezing, salts dissolved in water, its support of organic growth all facilitate the mechanical weathering processes. For both chemical and mechanical weathering, it also serves to transport/erode the weathering product.

(b)Describe three ways in which the action of rain contributes to physical weathering. **(3marks)**

* By crystal growth
* By pressure release
* By shaking

7.Explain any six ways in which faulting influence drainage systems inRwanda. **(6marks)**

* When faulting occurs across a river valley, vertical displacement of land may occur.
* When faulting occurs across a river valley, it may cause the river to disappear into the ground through a fault line.
* Faulting may lead to the formation of escarpments with springs forming at the base due to exposure of the water table.
* If rift faulting occurs in an enclosed area, a basin may be formed, when rivers flow into the basin, a lake may be formed. This basin may become an area of inland drainage.
* Uplifting of land which follows faulting may block a river. This may cause it to reverse or change its direction of flow.
* Some rivers may end up flowing along fault lines, thus forming a fault-guided drainage pattern.

8.Briefly describe the effects of earthquakes on physical environment in Rwanda**. (5marks)**

* Cause violent motions of the earth’s surface.
* Give off a lot of explosive energy more than an atomic bomb.
* Causes raising and lowering of the sea floor and the coastal regions` Trigger folding, Vulcancity and fires
* When large reservoirs are constructed and the heavy weight of water reactivate dormant faults causing tremors.
* Earthquake destroy buildings, factories, shops, roads, bridges and schools.
* The cause many people to become homeless.
* Earthquakes can cause disruption to public services like transport systems and communication connections.
* Lack of drinking water because water pipes burst and water supplies are contaminated.

9. Give and explain the importance of volcanism in Rwanda. **(4marks)**

* Volcanic soils are fertile and suitable for agriculture for example regions along the Musanze highlands pyrethrum has been grown and along the highlands
* Volcanic features such as craters, volcanic mountains etc. attract tourists and this gives countries with foreign exchange.
* Volcanic highlands have fertile soils which supports the growth of forests e.g. Birunga complex , hence leading to development of Forestry industry.
* Volcanic mountains have modified the climate of the area where the mountain is located.

10.What are the major effects of the removal of vegetation on the environment in Rwanda? **(4marks)**

* Severe soil erosion leads to creation of gullies that hinder mechanization on agricultural fields.
* Soil erosion leads to loss of soil fertility leading to decline in agricultural productivity hence causing famine.
* Severe soil erosion may trigger off landslides and mass wasting that lead to increased deaths and displacement of people.
* Soil erosion leads to pollution of waters.
* Soil erosion may lead to forest deforestation resulting to scarcity of firewood for domestic use.
* Soil erosion leads to formation of gullies that hinder mechanization and also loss of natural beauty.

11.Describe any four natural causes of soil erosion.**(4marks)**

* Topography/Relief, steep slopes accelerate surface runoff, leading to formation of rills and gullies on the steep slopes.
* Absence of vegetation cover, there is bare land soil erosion tends to be severe.
* Nature of the soils, erosion tends to be severe where soil is loose and tends to be slow where soil is stable.
* Climate, heavy rainfall accelerates erosion which erodes soil surface leading to formation of rills, sheet and gullies.
* Strong winds experienced on the bare grounds in the semi- arid and arid regions erode the soil through deflation processes.

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

12.a) Explain the challenges that Rwanda faces in obtaining sustainable clean water.**(5marks)**

* People lack comprehensive information and awareness on the importance of water resources.
* People lack adequate capital to purchase water tanks to harvest and store water.
* Swamp reclamation and degradation due to population pressure on wetlands for agriculture.
* Climate change that has contributed to degradation of water bodies with decreased amount and quality water caused by floods and drought conditions.
* Agricultural chemicals such as fertilizers applied in the soil during agricultural modernization, when it rains they are washed away and deposited to water bodies threatening lifespan of watery fauna.
* Damping of Industrial wastes and domestic wastes such as garbage (household wastes), animal wastes, etc.
* Increased infrastructural and housing development has reduced water infiltration and increased runoff, this has increased soil erosion and chances of flooding.

 b) Supposed you have been nominated as an expert in water sanitation corporation, what measures would you put forward to conservation of water bodies and supplying clean water to the population. **(5marks)**

* Developing and maintaining strategic boreholes, traditional dug wells, supply water pipe lines to improve accessibility to water resources.
* Enforcing laws against destruction of water resources.
* Organizing awareness campaigns to people enforcing the need for sustainable use of water resources.
* Increasing capture and storage of rain water to ensure availability of water during dry seasons, especially roof harvesting at household level.
* Creation of organization that are responsible for enforcing laws against poor water resource management and emphasizing conservation measures for water resources.
* Recycling of wastes
* Treating or disinfecting wastes to reduce the toxic substances.
* Remove invasive plants
* Protecting water catchment areas

13.(a)Briefly explain the problems associated with urban growth and development in Rwanda.( **5marks)**

* Development of shanty towns (slums) and associated problems such a prostitution, high crime rates, etc.
* Pollution of the environment for example air pollution, water pollution and noise pollution.
* Urban centers are associated with smelling of water sewage
* Decline in agricultural productivity due to rural -urban migration that leave the old in rural areas incapable of doing too much work.
* Poor sanitation and high spread of diseases.
* Traffic congestion especially during rush hours when people are going to and from work.

 b) Assume you have been elected as a mayor of one district’s in Rwanda, what measures would you employ to overcome the problems mentioned in (a) above? **(5marks)**

* Recycling, treatment and proper disposal of industrial waste.
* Strengthening the policies to fight crime.
* Developing the transport system by constructing sub ways and enlarging roads to control traffic congestion.
* Resettlement of people to areas of low population to reduce high population in urban areas.
* Decentralization of industries in rural areas for job creation.
* Encouraging urban – rural migration.

14. Explain factors that have limited the expansion of manufacturing industries in developing countries like Rwanda. (**10marks)**

* Insufficient capital that make it difficult for most African countries are economically poor that cannot afford buying mining equipment or even hire technicians.
* Shortage of skilled labor force to explore and extract mineral resources
* Poor infrastructure i.e. poor transport and communication that make it difficult to access mineral ores as well as marketing mineral products.
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* Poor technology that make mining extraction difficult in Africa.
* Most mineral deposits occur in small quantities and at times are found in remote areas where transport is difficult or difficult to access making mining expensive.
* Competition of market with other producing countries that cause shortage of market as well as price fluctuations.

15 a). Explain the difficulties that Rwanda is likely to be facing because of its land lockedness**. (5marks)**

* There is need for warehousing and charges for handling their imports and exports are high.
* In case of political instabilities and wars in neighboring states transport networks are cut off and also cause delays and damages on goods on transit.
* Tourism is less developed
* Dependency on transport network always cause delays of goods in transit due to inefficiency at ports they depend on.
* Due to transport problem there is a reduction in international trade
* There is a threat of high way robbers due to the long route.
* Transport costs of goods into the interior and from the interior are high due to long distance.

b) Assume you have been appointed by cabinet as a state minister in the ministry of foreign affairs, what measures would set to solve the challenges of Rwanda being land locked country. (**5marks)**

* Rwanda has fostered good political relations with her neighbouring countries to enable easy transit of goods.
* Improvement in technology especially use of internet to enable flow of information that is encourage development of e – commerce.
* Development of international relations with her neighbouring countries to ease transportation of goods through those countries from the sea port.
* Rwanda should make agreements with her neighbouring countries to lower transportation costs through their lands.
* Rwanda is improving quality roads, which is part of vision 2020 in partnership with her neighbouring countries. Rwanda is expected to benefit from the Northern corridor. since it’s a gateway through Kenya to land locked countries of Uganda, Rwanda, Burundi, D.R.C and also Southern Sudan.

16. Giving examples, explain factors responsible for environmental degradation in Rwanda. **(10marks)**

* Industrialisation which leads to air, water and land pollution
* Deforestation which causes soil erosion especially in hilly areas e.g. Gakenke District.
* Cultivating the land without putting it to rest leads to loss of soil fertility e.g. Nyamagabe District.
* Cultivating up and down hill has encouraged soil erosion especially in steeper slopes of Gicumbi and Musanze.
* Swamp reclamation leads to aridity.
* Drilling boreholes lowers the water table hence environmental destruction.
* Overstocking leads to overgrazing hence soil erosion e.g. Eastern province.
* Quarrying and mining destroy the crust and leaves ditches which are dangerous to man e.g. Rutonga, Bugarama, Rwinkwavu.
* Drought i.e. Prolonged period without rainfall in the districts of eastern provinces.
* Poor garbage disposal in Urban areas e.g. Kigali city
* Fire out brakes which destroys the vegetation.
* Heavy rainfall leading to floods.