**312/1**

**GEOGRAPHY**

**Paper 1**

**JUNE 2022**

**Time: 2¾ hours**

**KASSU JET JOINT EXAMINATION**

**Kenya Certificate of Secondary Education**

**312/1**

**Paper 1**

**GEOGRAPHY**

**MARKING SCHEME**

**SECTION A**

*Answer* ***all*** *the questions in this section.*

1. **(a) State three reasons what is important to study geography (3 marks)**

* *It leads to development of career opportunities*
* *Promotes positive attitudes towards protection*
* *Encourages international awareness*
* *Encourages time management or responsibility*
* *Helps to develop mental skills*

**(b) What is the relationship between Geography and Agriculture**

* *Geography studies the relief of an area which helps identify areas suitable for agricultural countries.*
* *Geography studies different types of soils. Which influences types of agriculture crops.*
* *Geography deals with the study of climate and weather which is important in the planning of agricultural activities such as planting and harvesting.*

1. **(a) What is weather forecasting? (2 marks)**

* *It is the production of the state or condition of the atmosphere of a given place within a specified time.*

**(b) List three elements of weather. (3 marks)**

* *Humidity*
* *Air pressure*
* *Rainfall*
* *Wind*
* *Cloud cover*

1. **Study the diagram below and use it to answer the questions (a) and (b) below.**
2. **Identify the feature (1 mark)**

* *Plug dome/plug volcano/spine volcano*

1. **Describe how it is formed. (4 marks)**

* *Earth movements from a vent in the earths crustal rocks.*
* *Highly viscous magma is forced out through the vent as cylindrical mass.*
* *The eruption is explosive breaking the rocks around the vent and the rock debris settle around the vent.*
* *The magma cools solidified rapidly as if reses form a plug.*
* *More underground the pushes upwards rising higher above the ground to form a cylindrical circular pillar of solid lava called plug*

1. **(a) What is Karst scenery? (2 marks)**

* *It is a landscape made of chalk, limestone or dolomite rock surface and underground features form due to carbonation and solution processes.*

**(b) State three factors influencing the occurrence of underground water.**

* *The amount of rainfall*
* *Slope gradient*
* *Vegetation cover*
* *Level of ground saturation*
* *The rate of evaporation*

1. **The diagram below shows how land glaciated features. Study the diagram and answer the following question.**
2. **What is outwash plain (2 marks)**

* *It is gentle slopping made of unconsolidated materials of clay, soil, and gravel deposited in a surface manner in lowland glaciated area by meet water.*

1. **Identify the features marked U,V and W (3marks)**

* *U – Drum line*
* *V – Eratic block*
* *W – Moraine dammed lake.*

**SECTION B**

**Answer question SIX and any other TWO questions from this section.**

**6. Study the map of Nyeri 1:50000 (sheet 120/4) provided and answer the following questions**

**(a) (i) Name the two districts in the northern part of the map extract (2 marks)**

* *Laikipia district*
* *Nyeri district*

**(ii) Give the latitudinal extent of the are covered by the map (2 marks)**

* *From 0 º19 ʹ South to 0 º30 ʹ South*

**(iii) According to the marginal information provided in the map, what is the magnetic variation of the area when the map was drawn.(2 marks)**

* *Magnetic variation =1 º 31 ʹ*

**(iv) Calculate the area of Nyeri forest on the map. Give your answer in square kilometres. (2 marks)**

*Complete square = 2*

*Incomplete squares= 21*

*Area = 2 +21/2 =2 + 10.5*

***= 12.5 km***

**(b) Describe drainage of the area covered by the map (5 marks)**

* *The main drainage features is rivers*
* *River Chanya is the main river*
* *Most rivers are permanent*
* *There are many reservoirs in the area covered by the map*
* *River Chanya and its tributaries form a dendritic drainage pattern*
* *Rivers generally flow from west to east/westwards*
* *There is a high density of /many rivers in the area covered by the map*
* *Most rivers originate from Aberdares forest*
* *Most rivers are bending/winding*
* *Most rivers are in the youthful stage*

**(c) Citing evidence from the map, explain three factors that favour the growing of coffee in Nyeri area.** **(6 marks)**

* *The area experiences cool temperatures that favours coffee growing due to high altitude as evidenced by contours that rise above 1600 metres above the sea level*
* *The area receives high rainfall that is adequate for growing coffee as evidenced by the presence of many permanent rivers/presence of forests*
* *The area has well drained soils suitable for coffee growing evidenced by the presence of gently sloping terrain as indicated by moderately spaced contours*
* *The area has adequate supply of labour necessary for coffee picking evidenced by the high density of settlement*
* *The area has well developed transport network for transporting coffee to the coffee factories evidenced by the many roads/tracks*

*(NB the factor ,evidence and explanation must be given)*

**(d) Explain three factors that have influenced settlement in the area covered by the map (6 marks)**

* *Transportation; the area is served by many roads which makes movement of people and goods easy thus encouraging settlement along the roads*
* *Drainage; there are few settlement/no settlement along the rivers/near reservoirs this may be due to seasonal flooding/presence of pests and water borne diseases*
* *Vegetation; there are no settlement /few settlements within the forests due to land being reserved for forests*
* *Relief; there are many settlements in the south eastern part because the land is gently sloping/most of the river valleys have no settlement*

1. **(a) (i) Differentiate between a rock and a mineral. (2 marks)**

*A rock is a substance that is an aggregate of mineral particles forming the earths crust* ***while*** *minerals are naturally occurring inorganic substances with definite physical and chemical properties occurring at or beneath the surface of the earth.*

**(b) Describe the following characteristics of minerals.**

**(i) Color. (2 marks)**

* *Different minerals display different colors e.g gold is yellow in color .*

**(ii) Hardness. (2 marks)**

* *This is a measure of resistance of a mineral to disintegration. Some minerals e.g. diamond have a high resistance to breakage while others are soft .e.g. Talc*

**(c) (i) What are igneous rocks? (2 marks)**

* *These are rocks that are formed from cooling and solidification of magma or lava on or below the earth’s surface.*

**(ii) State three notable differences between plutonic and volcanic rocks. (3 marks)**

* *Plutonic rocks form from magma while volcanic rocks form from lava.*
* *Plutonic rocks form deep in the earth’s crust while volcanic rocks form on the surface of the earth.*
* *During formation of plutonic rocks magma cool slowly while during formation of volcanic rocks, lava cools rapidly.*
* *Plutonic rocks form large crystals /coarse grained /textured while volcanic rocks form small crystals or no crystals at all/are fine grained.* ***(3×1=3mks)***

**(d) Describe the formation of the following rocks.**

**(i) Mechanically formed sedimentary rocks. (3 marks)**

* *Sediments of rock particles are derived from pre-existing rocks by the process of weathering.*
* *The sediments are transported by agent of erosion e.g., water, wind, ice and deposited in sea, or on land in layers.*
* *The sediments undergo compaction and cementation as more layers are deposited and consolidated to form a new rock.*

**(ii) Chemically formed sedimentary rocks. (3mks)**

* *They form when minerals in rocks gets dissolved and carried in solution in water bodies.*
* *Water reaction with these dissolved minerals leads to precipitation of the sediments.*
* *The sediments accumulate at the bottom of the water body and finally compress to form a rock.*

**8. Identify the missing type of rocks. (3 marks)**

|  |  |
| --- | --- |
| Original rock | Metamorphic rock |
| Limestone | 1. ***Marble*** |
| 1. ***Coal*** | Graphite |
| Granite | 1. ***Gneiss*** |

**(a) Supposing you were to carry out a field study on rocks at the Kenyan coast.**

**(i) State two reasons as to why you would ask for permission from the school administration. (2 marks)**

* *For the administration to be informed of some students being out of school for official purpose.*
* *To help in preparation of the budget needed.*
* *To help in preparation of the transport means****.* (any first 2 ×1=2mks)**

**(ii) What reasons would you give for the widespread of sedimentary rocks at the coastal plain? (3 mks)**

* *The coastal plains were once part of the extensive continental shelf of the Indian ocean and so sedimentation took place.*
* *Shallow continental shelf provided conducive environment for coral polyps to form sedimentary rocks.*
* *Many rivers deposit their load to at the mouth in the ocean accumulating to form sedimentary rocks.*

**10 (a) (i) Differentiate between soil texture and soil structure (2 marks)**

*Soil texture is the size distribution of minerals particles composed in the soil while soil texture is the way the individual soil particles are arranged and joined to form lumps/clusters*

***OR***

*Soil texture is the coarseness and fineness of soil grains while soil structure is the arrangement of soil particles to form particular shape*

(**ii) Apart from living organisms, name four other components of soil** **(4 marks)**

* *Organic matter*
* *Soil water /moisture*
* *Soil air*
* *Mineral particles/weathered materials/inorganic matter*

**(b) The diagram below shows different layers of soil. Use it to answer questions (b) (i), (ii) and (iii)**

**(i) Name the soil layers X ,Y and Z. (3 marks)**

* *X – Sub soil*
* *Y – Weathered parent rocks materials*
* *Z – Parent rock*

**(ii) Give two main processes of soil formation which takes place in horizon W (2 marks)**

* *Elluviation*
* *Leaching*

**(iii) State four characteristics of soil in horizon X (2 marks)**

* *Consists mainly of silicate clays, alluminiun and iron*
* *Made up of hard pan/laterite*
* *Soils are prismatic/columnar*
* *It’s a zone of illuviation/zone of enrichment*
* *Soils are generally dark in colour*

**(c) Explain how the following farming practices may result to loss of soil fertility**

**(i) Continuous irrigation (2 marks)**

* *Causes leaching of soil nutrients making the soil deficient of soluble minerals causing soil salinity*

**(ii) Over grazing (2 marks)**

* *Leads to the removal of vegetation cover thus exposing the soils to agents of soil erosion which will remove the top fertile soils*

**(iii) Over cultivation (2 marks)**

* *Weakens the soil structure making it easy for agents of soil erosion carrying away the top soil*
* *May increase oxidation resulting to loss of organic matter*

**(d) Explain ways in which natural vegetation may prevent soil from erosion (4 marks)**

* *Plant leaves cover and reduce the force of the rain drops controlling splash erosion*
* *Vegetation cover increases the rate of rain water infiltration into the soil reducing surface run off controlling sheet erosion*
* *The roots of plants increase the rate of rain water percolating into the soil controlling erosion*
* *The plant roots bind the soil particles together thus controlling erosion*
* *Plant cover reduces the rate of soil water evaporation making the soil moist/wet and compact*
* *Dead and decaying vegetation matter adds humus to the soil making the soil particles bound*