

 Nyaraya Cluster Examination

**Kenya Certificate of Secondary Education**

# **2023 Form Four Evaluation Programme**

**312/1 GEOGRAPHY Paper 1**

**JULY/AUGUST 2023**

**312/1**

**GEOGRAPHY PAPER1**

**JULY 2023**

**MARKING SCHEME**

**SECTION A**

1. The diagram below represent the flow of air currents. Use it to answer question a and b.



1. Name the air current marked F. (1mk)

F – Land Breeze (1mk each)

b) Describe how the air current marked E occurs. (4mks)

* During the day, land heats faster than the sea/lake
* Air on land rises
* Cool air from the sea/lake moves to the land
* Cool air from the sea to the land is the sea/lake Breeze

(4 X 1mk)

2. a) What is Relative Humidity? (2mks)

This is the ratio of the actual amount of moisture/water vapour of a given mass of air to the maximum amount of moisture/water vapour it can hold at the same temperature. (2 X 1mks)

b) The table below shows temperature readings of Dry bulb thermometer and wet bulb thermometer in three weather stations.

|  |  |  |
| --- | --- | --- |
| **STATION** | **DRY BULB THERMOMETER** | **WET BULB THERMOMETER** |
| **J** | **300C** | **280C** |
| **K** | **300C** | **50C** |
| **L** | **300C** | **300C** |

Give the state of relative humidity in station J, K and L. (3mks)

J – High Humidity

K – Low Humidity

L – 100% (1mk each)

3 a) Differentiate between a magnitude of an earthquake and intensity of an earthquake. (2mks)

Magnitude of an earthquake is a measure of energy given off by an earthquake while intensity of an earthquake is a measure of how strong/hard the earthquake shakes the ground. (2 X 1mk)

b) Describe how a dyke is formed. (3mks)

* Magma under high pressure enters crustal rocks
* The semi fluid rock/magma forces itself into vertical cracks/fissures.
* The magma cools and solidifies in vertical cracks.
* The vertical sheet of igneous rock is the dyke.

(Any 3X 1mk)

4 a) Name **two** types of ice masses found on mountains in East Africa. (2mks)

* Valley glaciers
* cirque glaciers
* Ice caps (Any 2 X 1mk)

 b) State **three** distinctive characteristics of a pyramid peak. (3mks)

* Has steep sides
* Is surrounded by cirques
* Is a sharp rock pinnacle/horn
* Has a radiating systems of a retes. (3 X 1mk)

5 a) Name **two** ocean currents along the Western Coast of Africa. (2mks)

* Benguela
* Guinea
* Canary

 (2 X 1 mk)

b) State **three** causes of ocean currents. (3mks)

* Differences in water density/salinity
* Differences in ocean temperature
* Wind blowing over ocean
* Rotation of the earth
* Shape of the coastal landmass

 (Any 3 X 1mk)

6. Study the map of Kisumu East 1:50,000 (sheet 116/2) provided and answer the following questions.

1. i) What type of map is Kisumu East Sheet? (1mk)

Topographical map

(1 X 1mk)

ii) Give the vertical interval of the map. (1mk)

20m

(1 X 1mk)

iii) State the latitudinal and longitudinal position of North West corner of the map. (2mks)

 O0ool, 34045lE

 OR

Lat O0 ool

Long 340451E

(1 X 2mks)

1. i) What is the bearing of the trigonometrical station at Grid reference 081980 from rock outcrop at grid reference 071992? (2mks)

1390 $\pm $ 10 (1380 – 1400)

(1 X 2mks)

ii) Measure the length of all weather road bound surface B2/1 from the junction at Grid reference 974911 to the edge of the map grid reference 947967. Give your answer in kilometres. (2mks)

7.2km $\pm $ 0.1 (7.1 – 7.3 km)

 (1 X 2mks)

1. i) Draw a cross section between Grid Reference 070940 and 070980. Use a vertical scale 1cm to represent 100 metres. (4mks)



T – 1

VA – 1

HA – 1 5 max 4mks

TR – 1

SP/EP- 1

ii) On the cross section, mark and name:-

* All weather road bound surface. (1mk)

RD – 1

* River (1mk)

RV – 1

iii) Calculate the vertical exaggeration (VE) of the cross section. 2mks)

V.E = $\frac{V . S}{H. S}$

= 1/10,000 ÷ 1/50,000

= 1/10000 × 50,000/1

= 5 times

1. Describe the relief of the area covered by the map. (5mks)
* The highest area Nyando escarpment/1872m asL
* The lowest area is the South West/1140m asL
* Land slopes from North to South West
* There is Nyando escarpment.
* The East is a plain / Kano plain
* The north western part is hilly with steep slopes
* The east has gentle slopes
* The landscape in the northern part is dissected by rivers
* The south west is a basin/depression occupied by a lake.
* There are many river valleys. (5 X 1mk)

e) Citing evidence from the map, give two social services offered in Kisumu Town. (4mks)

|  |  |
| --- | --- |
| Social services | Evidence |
| * Educational
 | * School
 |
| * Religion
 | * Mission/church
 |
| * Rehabilitation
 | * Prison
 |
| * Housing
 | * Huts/built up areas
 |
| * Water supply
 | * Water works
 |
| * Health/medical
 | * Hospital
 |
| * Security
 | * Police lines/police station
 |
| * Administration
 | * DO/DC
 |
| * Recreation
 | * Stadium
 |
| * Burial
 | * Cems/cem
 |

(2 X 2 mks)

7. a) Describe the following characteristics of minerals.

1. Lustre (2mks)
* This is the appearance of a mineral as it reflects light.
* Some minerals are dull while others are shinny. (1X2mks)
1. Density (2mks)
* Minerals have different weight per unit volume of water.
* Some minerals are heavy while others are light. (1 X 2mks)
1. Cleavage (2mks)
* Minerals have patterns in which they break
* Some Minerals break into thin layers while others break along layers.

 (1 X 2mks)

b) Giving an example for each, describe the three types of mechanically formed sedimentary rocks. (9mks)

* Arenaceoust - made up of particles of size of sand

Example – Grit/sandstone.

* Agillacteous made up of very small particles such as those of clay and mud

Example – shale/clystone/siltstone/mudstone/loess

* Rudaceouts. Made up of particles larger than sand

Example – conglomeretes/Breccia/ Bounder clay. (3 X 3mks)

c) You are required to carry out a field study on the types of rocks within the vicinity of your school.

i) State four reasons why you would conduct a reconnaissance (4mks)

* To seek permission for the visit
* To prepare a work schedule
* To determine appropriate tools for the study
* To find out possible problems likely experienced during the field study
* To determine appropriate methods of data collection
* To formulate study objectives
* To formulate study hypotheses
* To draw a route map

(Any 4 X1mk)

 ii) State how you would use the following items during the field study.

* Geological hammer (2mks)
* Hitting for breaking rocks into portable pieces
* Hitting the rocks to determine hardness. (1 X 2mks)
* Magnifying lens (2mks)
* For viewing rock crystals to determine their shapes/sizes (1 X 2mks)
* Geological map (2mks)
* To guide on the types/location/distribution of rocks in the area. (1 X 2mks)

8 a) Give **two** types of Earth Movement within the earth’s crust. (2mks)

* Vertical/Epeirogenic
* Horizontal/Lateral/Orogenic

(1 X 2mks)

b) i) Describe the origin of continents according to the theory of

* Continental Drift. (6mks)
* the earth was originally one huge landmass/super continent/pangea
* Pangea was surrounded by a large water body/sea/panthalassa
* Pangea split into two subcontinents to form two other landmasses called Lauvasia and Gondwanaland
* The two landmasses were separated by a sea called Tethys
* The two land masses further split
* Lauvasia broke to form continents in the Northern hemisphere
* Gondwanaland broke to form continents in the southern Hampshire
* The continents gradually drifted to their present position

 (Any 6 X1)

ii) Explain the following evidence which support the theory of Continental Drift.

* Paleontological evidence. (2mks)
* The fossils of plants found in Africa are also found in other continents

(1 X 2mks)

* Paleoclimatic evidence. (2mks)
* Southern continents seem to have experienced large scale glaciation at same period/ presence of ancient glacial deposits in southern continents

( 1 X2mks)

* Sea floor spreading. (2mks)

Recent volicanic eruption in the Mid atlantic ridges fill the gaps left by drifting continents

( 1 X2mks)

 C i) Name One fold mountain in .

* North America (1mk)

Rockies/Appalachians (1 x 1mk)

* Asia (1mk)

Himalayas (1 X 1mk)

* Africa (1mk)

Cape ranges/Atlas (1 X 1mk)

ii) With the aid of a well labeled diagrams, describe how fold maintains are formed (8mks)

* Extensive shallow depression called Geosyncline develop on the earth’s surface
* Prolonged and extensive erosion occurs on the surrounding higher grounds
* The sediments are deposited in the Geosyncline forming thick layers
* The weight of the sediments causes subsidence of the Geosyncline leading to accumulation of more sediments to great thickness
* Further subsidence of the geosyncline triggers off compressional forces which cause sediments to fold
* The folded layers of the geosyncline are thrust upwards to form fold mountain at the edge of the geosyncline



9 a) i) What is a river divide (2mks)

 A river divide is a ridge line/ boundary line separating drainage/river systems/basins

 ii) Describe the three types of River Erosion (9mks)

* Headward Erosion

Takes place at the river’s source.

It lengthens the river

* Vertical erosion

Takes place on the river bed.

 It deepens the river

* Lateral erosion

Takes place on the river’s banks.

It widens the river channel

1. X 3mks)
2. Explain the following drainage patterns and systems
3. Dendritic (2mks)
* It develops in areas where rocks have uniform structure
* Direction of flow is influenced by the slope of the land
* Tributaries join the main river at acute angles
* Tributaries converge on the main river forming s shape like that of a tree and its branches

(Any 2 X1mk)

1. Superimposed (4mks)
* Develops on a rock structure that overlie a totally different one
* The river cuts through the surface rock layers into the underlying rocks
* Gradually the surface rocks are removed
* The underlying rock become exposed on the river bed
* The river maintains its original direction of flow despite the new rock structure

(Any 4 X1mk)

1. Explain Four ways in which Rivers Negatively affect human environment (8mks)
* When rivers flood, they destroy property/crops, may displace people, may lead to loss of human life
* Wide/deep rivers are barriers to transport especially where bridges have not been constructed
* River water can be a medium of spreading water borne diseases
* Some rivers are habitats to dangerous wild animals which may attack human beings/destroy crops

(Any 4 X 2mks)

1. a) i) What is soil texture (2mks)
* soil texture is the degree of fitness/coarseness of the particles making up the soil
* it is the size of soil particles

 (Any 1X2mk)

 ii) Give two types of soil according to texture

* Gravel
* Sandy
* Silty
* Loamy
* Clay

(Any 2X1mk)

b) Explain how the following factors influence the formation of soil

1. Parent Rock (4mks)
* The nature of rock influences the rate of weathering in that soft rocks weather faster/ hard rocks are resistant and weather slowly
* The parent rock determines the soil texture in that large/coarse grained rocks produce large/ coarse grained soil/small/fine grained rocks produces small/fine grained soil.
* The type of minerals in the parent rocks are transferred to the soil during formation.

 (2x 2mks)

1. Living organisms
* Micro-organism in the soil assist in plant/animal decay to form humus
* Micro-organism mix and aerate the soil
* The roots of plants penetrate the soil enabling it to become porous
* Penetration of plants roots/ ploughing/digging break up rocks into small particles forming soil.
* When plants and animals die, they decompose/ decay to form humus/organic matter in the soil.

 (2 X 2mk)

c) The diagram below represents a well developed soil profile. Use it to answer question (c)



1. Name the three layers of horizon A (3mks)
* A00
* A0
* A1
* A2
* A3

(3 x1mk)

1. Describe the characteristics of horizon B (3mks)
* It is the accumulation zone for leached minerals from horizon A
* The soil texture is clay in nature
* Soils are generally dark/red/brown in colour
* The zone sometimes form the hard pan/murram /lateritic duricrust
* It is divided into B1, B2 and B3

(Any 3X1mk)

d) i) State three economic benefits of soil (3mks)

* Soil provide the base for crops/forest cultivation
* Some soils are source of valuable minerals
* Soils are raw materials for ceramic/pottery/sculpture industries.
* Soils are used for building houses/roads/bridges
* Organic soils such as peat serve as fuel resource.
* Salt licks are livestock feeds.

(Any 3X1mk)

ii Describe the following types of soil erosion

* Sheet erosion (2mks)
* It occurs on gentle slopes which are bare
* When heavy rains falls water spreads over a large area
* As water moves, it removes the top layer of soil evenly/uniformly over the area

(Any 2X1mk)

* Gully erosion (2mks)
* It occurs on steep slopes
* Rain water cuts deep grooves/channels/rills on slope
* The channels are widened and deepened to form gullies through which soils are curried away

(Any 2X1mk)