

**312/1  
GEOGRAPH  
PAPER 1  
FORM 4**

**MARKING SCHEME**

**SECTION A**

**1. a) Identify two forces responsible for the spherical shape of the earth. (2mks)**

- Force of gravity
- Centrifugal force
- Centripetal force

**1 x 2 = 2mks**

**b) Give three reasons why the interior of the earth is still hot (3mks)**

- Pressure exerted by overlying rock masses
- Radioactivity
- Heat retained during formation of the earth

**1x 3 = 3mks**

**2**

(i) Climate is the average weather condition of a particular place for a long period of time between 30 -35 years.

(ii) What are the negative effects of climate change on physical environment?

- Flooding of land /coast lands caused by increased temperature leads to melting of glaciers resulting to a rise in seal level / change in rainfall patterns / change in seasonal pattern / change in winds or air masses pattern
- Drought caused by increased temperatures resulting to high evaporation / change in rainfall pattern /change in seasonal pattern
- Disruption of natural ecosystems/ loss of biodiversity / abnormal growth of plants caused by change in seasonal pattern / rainfall pattern / global warming / increased ultraviolet radiation
- Drying up of water reservoirs (there by reducing their lifespan) may be caused by increased temperature.
- Soil erosion by water due to increase in rainfall / soil erosion by wind caused by change in wind /air masses pattern
- High ocean / sea waves / sea storms due to change in wind / air masses pattern when they blow more frequently and are more destructive (such as cyclones) any 3 x 1 = 3 marks

**3. (i) W - Rain forest (1 mark)**

X - Bamboo forest (1 mark)

Y - Heath and moorland (1 mark)

(ii) Name the temperate grasslands found in the following countries

- Canada - Prairies (1 mark)

- Russia - Steppes (1 mark)

**4. (a) It is a mass of cool air blowing from the land to the sea during the night.**

(2marks)

(b)

- It lowers temperature of adjacent areas
- It may increase rainfall

- It may increase relative humidity
- It moderates diurnal range of temperature
- It may lead to convectional rainfall

**5.**

**(2 x 1 = 2marks)**

- An area of limestone
- Thick layers of calcium carbonate rocks
- Moderate to abundant rainfall
- A low water table

(b)

- The areas are rocky
- They have thin soils
- They have poor vegetation
- There is inadequate water supply

### **6. Mapwork ( Compulsory )- Kijabe Scale 1:50,000**

a)i) Map title – Kijabe

**(1mk**

ii) Longitudinal extent

**(2mks**

36<sup>0</sup> 30<sup>1</sup>E to 36<sup>0</sup> 45<sup>1</sup>E

b) i) Three types of natural vegetation apart from forest

**(3mks**

- Thicket
- woodland
- Scrub
- Bamboo
- Scattered trees

ii) Approximate height of the top of Kijabe hill

**(2mks**

2661-2679M

c) i) a) Drainage of the area covered by the map

**(5mks**

- The main drainage permanent rivers in the map i.e Tongitongi /Maumau
- The Eastern part of the map has radial drainage pattern.
- The Eastern part of the map has dendritic drainage pattern
- Some rivers form parallel drainage pattern
- There is a water trough in grid square 2701

**(5 x 1 = 5mks )**

ii) Grid reference of a trigonometrical station 2610 on the Eastern side of the map extract

(2mks

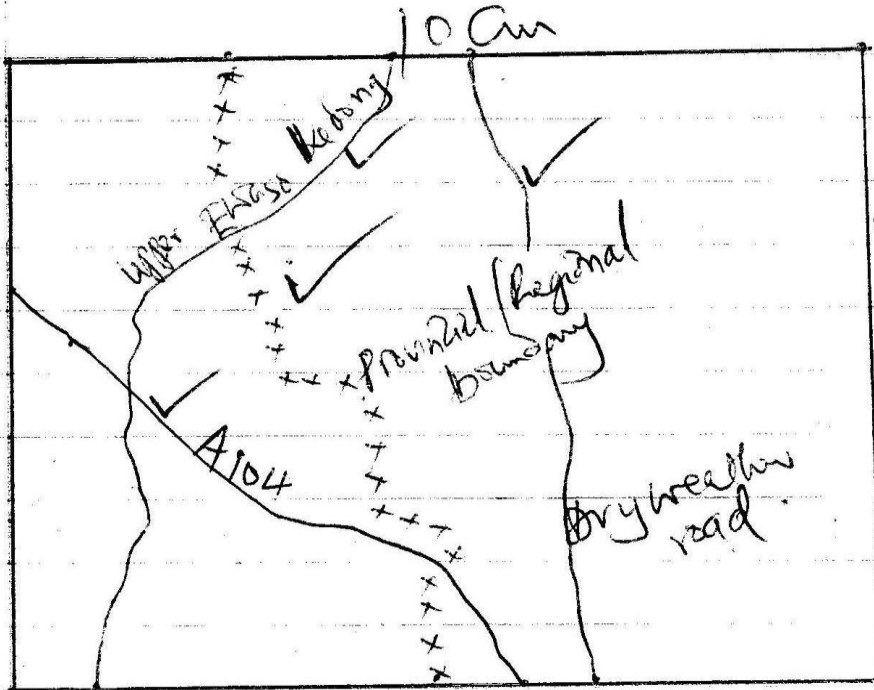
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d) i) Four economic activities in the area covered by the map

(4mks)

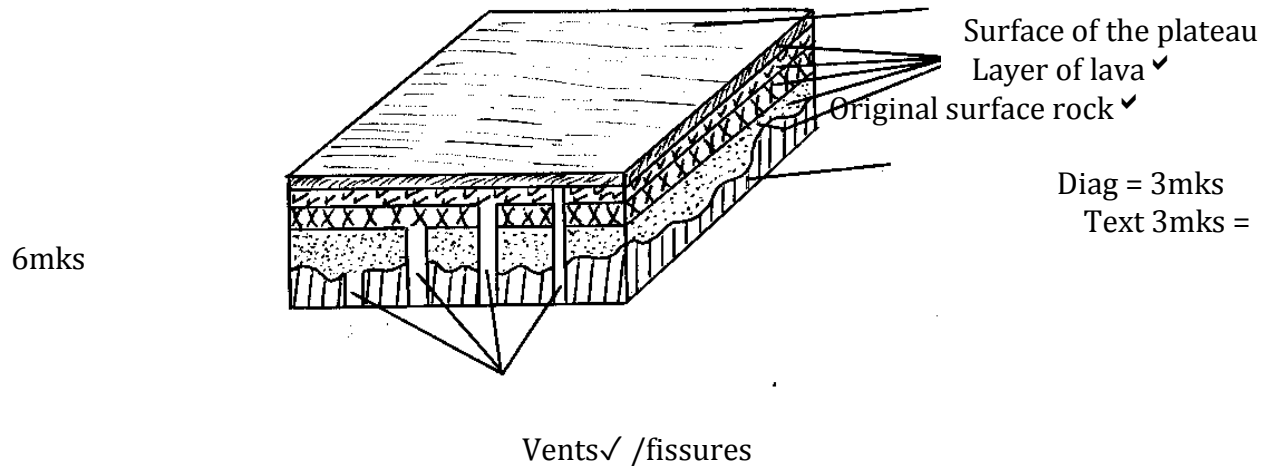
Economic activity	Evidence
Transportation	Road/Railway/Motorable track
Forestry	Forest/Forest station/Forest guard post
Trade	Shops/Petrol station
Communication	Post Office
Quarrying	Murram pit/Quarry
Lumbering	Saw Mill
Cattle rearing/keeping	Cattle dip/water trough
Dairy farming	Dairy
Manufacturing/processing	Kagwe cabacid plant
Crop farming	Plantation

(2)



Total 5mks.

- 7 (a) i) What is vulcanicity (2mks)
- This is process by which Solid, liquid and gaseous materials are forced out either on the surface of the earth or into the sub-crustal layers of the earth.
- (ii) With the help of a diagram describe how a lava plateau is formed. (6mks)



A lava plateau is formed when basic / basaltic lava spreads out from several fissures. Because lava has low viscosity it may spread covering great distances /wide area before cooling and solidifying. Successive eruptions makes lava to form different layers on top of each other resulting to formation of a fairly level land called a lava plateau

Nb.last point must be mentioned to score all marks (5 max. 3mks).

- (iii) Distinguish between a crater and a caldera (2mks)
- A crater is a funnel-shaped volcanic depression at the mouth of a volcanic vent while a caldera is a very large basin shaped depression surrounded by steep sides /cliffs on top of a volcano.(2mks)
- (b) Explain four negative influences of vulcanicity and associated features to human activities in Kenya (8mks)
- Recent weathered volcanic materials like ashes and granites form infertile soils. These soils fail to support farming as they are poorly developed e.g on slopes of Mt. Longonot.
  - Some volcanic features create barriers that make building of transport and communication lines difficult and expensive.
  - The rugged nature of some volcanic landscapes discourages economic activities like agriculture and settlement.
  - Mofettes and Solfatara which are associated with vulcanicity emits poisonous gases that are harmful to human beings and livestock as they cause pollution.
  - Volcanic mountains like Mt. Kenya create rainshadow effects on their leeward sides which cause aridity in such areas. (Any 4 x 2 = 8mks)
- (c) Suppose you have been asked by your Geography department to carry out a field study of volcanic activities around your school.

- (i) Design a working programme (schedule) you would use during the day of the study. (3mks)

Time	activity
6:00-7:00 am	Assemble equipments
7:10 am	Depart from school to the field
7:30	Arrive at the area of study
8:40-12:00	Embark on data collection
12:20p.m	Report to the school

(Any relevant 3 x 1 = 3mks)

Nb. The time and activity must be indicated to score

- (ii) State three follow-up activities you may have been involved in after the field study (3mks)

- Report writing
- Class discussions
- Asking /answering questions
- Reading more about the topic
- Displaying collected specimens
- Analysing photographs /tape recorded work.( Any 3 x 1 = 3mks)

8.(a) (i) Name the conditions necessary for wind deposition to take place in hot deserts.

- Presence of an intervening obstacle. e.g. scrub, grass or rock on the path of wind.
- Reduction in the velocity of the wind.
- Increase in the amount of load transported by the wind. (3 x 1 = 3 marks)

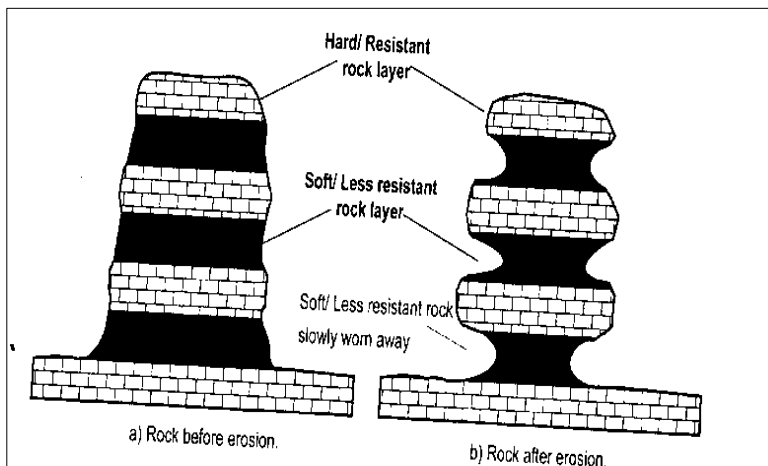
(ii) State three mechanisms of wind transportation in hot deserts.

- Suspension- where light materials such as dust are picked up and transported in the turbulence of wind.
- Saltation. Where by medium sized particles are lifted and carried by rolling and bouncing on the ground.
- Surface creep – where the heavier materials like gravel and pebbles are rolled along the ground.

(3 x1 = 3 marks)

- (b) With the aid of labelled diagrams describe how the following features are formed.

**Rock pedestal**

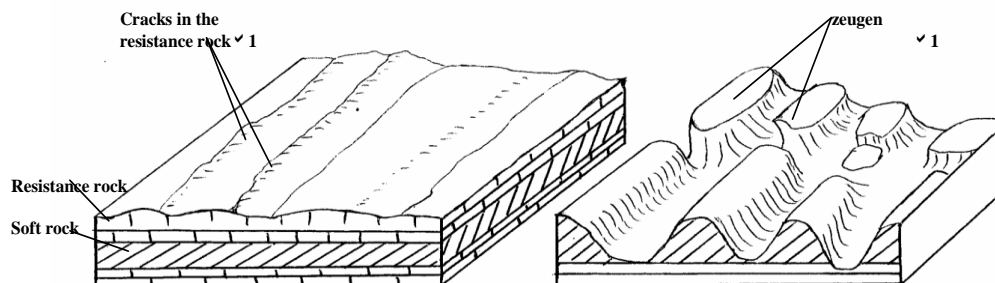


- It is formed where there is a rocky mass consisting of alternate layers of hard and soft rock, lying horizontally in the path of wind.
- The rocky mass is attacked by wind loaded with debris.
- Through wind abrasion the soft layers are eroded faster than the resistant layers.
- Abrasion is greater at the ground level due to heavier material transported by wind.
- This leads to the formation of an irregular rock pillar called a rock pedestal.

**Diagram 2 marks**

**Text 4 marks**

**Total 6 marks**



- Formed where the desert surface has a layer of resistant rock underlain by a layer of weak rocks.
- Weathering opens up the joints on the top resistant layer.
- Wind abrasion slowly erodes the open joints
- With time a ridge and furrow landscapes are formed.
- The ridges are the zeugen (must mention the last statement to score maximum.)

**Diagram 2 marks**

**Text 4 marks**

**Total 6 marks**

(c) You are supposed to carry out a field study of a semi-arid area in Kenya.

(i) Name **two** Counties which you would visit for your study.

- *Wajir, Mandera, Marsabit, Turkana, West Pokot, Moyale, Garissa.* . (Any 2 x 1 = 2 marks)

(ii) What information would you collect through observation that would indicate that the area is turning into a desert?

- *Information on the density of vegetation/ number of plants. Scanty plants cover will indicate desertification.*
- *Information on height of plants stunted growth will indicate desertification.*
- *Occurrence of plants species.*
- *Foliage/ leaf coverage.*
- *Presence of drought evading plants*
- *Productivity of the soil e.g crops grown.* (Any 2 x 1 = 2 marks)

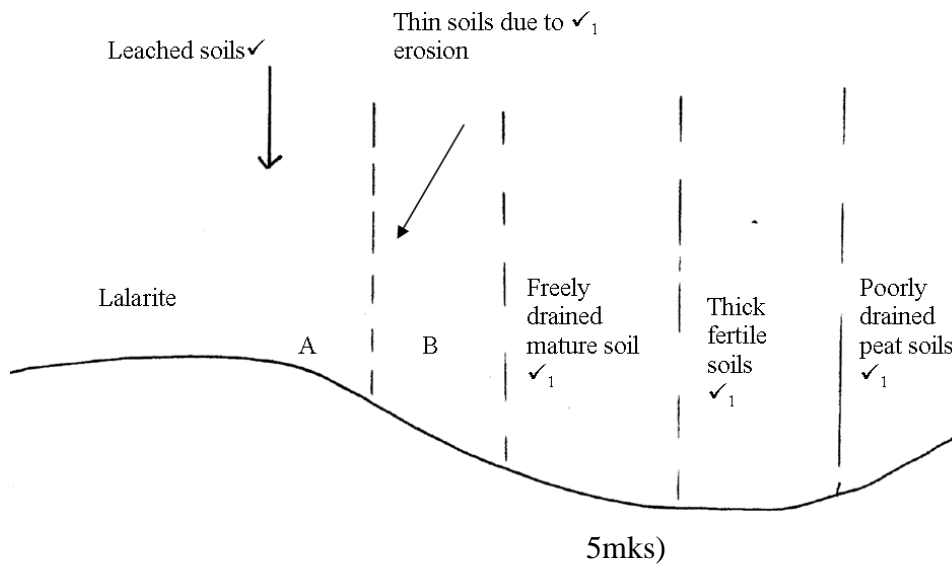
(iii) State **three** measures you would recommend to combat desertification in the area.

- *A forestation programs.*
- *Land reclamation through irrigation*

- Planting drought resistance crops
  - Controlled grazing.
  - Controlling soil erosion.
- (Any 3 x 1 = 3 marks)

9(a)(i) Soil profile is the vertical arrangement of soil particles in layers while soil catena is the horizontal arrangement of soil on a mountain slope. (2mks for well differentiated )

(ii)



(Total

- (b) (i) 3 factors that influence soil formation
- Topography
  - Climate
  - Time
  - Living organisms / biotic factors
  - Nature of parent rock

(Any 3x1=3mks)

- (ii) Two components of soil
- Soil air,
  - organic matter
  - Soil water,
  - mineral particles

- (c) 4 methods that helps in soil conservation
- Crop rotation – reduces the rate of soil exhaustion as difference crops require different minerals.
  - Contour ploughing – reduces surface run-off and trap soil along contours to control soil erosion.
  - Strip cropping – reduces both wind and water erosion.
  - Intercropping – provide cover over soils balances minerals in the soil.(4x2=8mks)

- (d) 3 reasons why they need a route map.
- Estimate the distance of the area of study
  - Avoid getting loss in the field / on the way.
  - Help them identify the shortest route so as not to waste time on the way.
  - To know the general nature of the terrain to the area of the study.

(3x1=3mks)

- (e) Tools they would carry for use.
- Jembes / pangas / spade
  - Bags / paper bags / baskets (2x1=2mks)

10. (a) (i) What is an ice sheet?
- It is a continuous mass of ice covering a large area surface (2mks)
- (ii) Give two reasons why there are no ice sheets in Kenya.
- Kenya is located along tropical areas and experienced high temperatures therefore ice sheets cannot form.
  - Most parts of Kenya have steep gradient / are highlands thus discouraging accumulation of ice.
  - Kenya is found at low latitudes and experiences high temperatures.

(2x1=2  
mks)

- (iii) Explain the factors which influence the movement of ice sheet from the place of accumulation
- Gradient of the land – ice moves faster when the slope is steeper than gentle gradient.
  - Temperature / seasonal changes – Higher temperatures results in to Thawing leading to faster movement of ice.
  - Nature of the surface When the surface on which ice is moving is rough It causes friction lowering the speed of the movement of ice. Smooth / even surfaces enlarge faster ice movement.
  - Size / thickness of glacier .Large masses of ice exerts pressure which lead to melting of ice underneath. This increases the speed of ice movement.

(Any3x2=6mks)

- (b) Describe how an arete is formed
- Two adjacent cracks / hollows exist on mountain side.
  - The two hollow / cracks are filled with ice.
  - The ice erodes the \sides through plucking and deepens the hallow through abrasion.



- Through erosion, The back walls of the hollows slowly recede.
- Eventually the hollows (acquires) are separated by a knife –edged ridge of a rock.
- The feature is called an arête

N/B The last point must be mention for one to score a maximum of

4.(4x1=4mks)

(c) Name the types of moraines marked S,T and V. see the question on the question paper

S – medial

T –Lateral

V – Terminal

(iii) Explain four effects of glaciations in lowland area.

- Glacial till provides fertile soils for arable farming
- Ice sheet, in their scouring effects lower land surface and depict to expose minerals which becomes easy to extract.
- Out wash plains comprise of sand, and gravel which are used as materials for building and construction.
- Lakes formed through glaciations can be exploited for various economic uses such as fishing transportation or as tourist attraction.
- Glaciated features are tourists attractions which earn foreign exchange.
- Glaciated lowlands are generally flat due to erosional and deposition and are for ideal for construction of building and communication lines.

(Any 4x2=8mks)