

## FORM 3 END TERM 3

### GEOGRAPHY (Marking Scheme)

#### PAPER 1

##### SECTION A

**1. What is the relationship between Geography and Physics? (2 marks)**

- Geography uses information from Physics to explain how heat from the sun is responsible for movement of air/evaporation of water/distribution of moisture in the atmosphere.
- Information from Physics about the earth's magnetic field/gravity/the vibrations of the earth are used to explain causes and effects of earthquakes in Geography.

**b) State three characteristics of Planet Saturn. (3 marks)**

- Has a ring round it (three major rings).
- Second biggest planet in the solar system.
- Distance from the sun is 1427 km.
- It takes 29 ½ earth years to complete one revolution.
- It has eighteen satellites revolving round it.
- It is gaseous in nature.
- The rings are made up of frozen rock particles.

**2. a) State two natural causes of earthquakes waves.**

- Collision of tectonic plates.
- Magma movement in the crust.
- isostatic adjustment.
- gravitational force.
- energy release from the mantle.

**b) Name three types of earthquakes. (3 marks)**

- Primary waves (P-waves)
- Secondary waves (S-waves)
- Surface longitudinal waves

**3. a) Give three examples of organically formed sedimentary rocks. (3 marks)**

- Limestone
- chalk
- coral reefs
- ironstone
- diatomite
- coal

**b) State two reasons why sedimentary rocks are dominant along Kenyan Coast.(2 marks)**

- The coastal plain is a lowland which has facilitated deposition of sediments.
- The shallow continental shelf has a conducive environment for the formation of coral rocks.
- Much of the coastal plain emerged from the sea where sedimentation occurred.

**4. a) Two factors considered when classifying clouds**

- Height
- Shape / form
- Appearance *(2 marks)*

**b) Three conditions for formation of fog.**

- Sufficient/ abundant moisture in the air
- There should be gentle air currents to help hold moisture water droplets in suspension (light wind / calm)
- Night should be clear / absence of clouds (to facilitate terrestrial radiation)
- The air must be cooled to below dew point.*Any 1<sup>st</sup> 3 x 1 (3marks)*

**5. a) What is hydrological cycle**

- This is the endless circulation of water from the water bodies to the atmosphere and back and to the land.*(2 marks)*

**b) State three factors which influence the occurrence of surface runoff**

- Presence of heavy rainfall (high density / amount of rainfall).
- Low rate of evaporation
- Presence of steep slopes / sloping ground.
- Presence of impervious rocks.
- Presence of bare surface / absence of vegetation cover.
- Presence of saturated soil surface. *Any 1<sup>st</sup> 3 x 1 (3marks)*

## **SECTION B**

6. Study the of map Kitale scale1:50000(sheet75/3) provided and answer the question that follow.

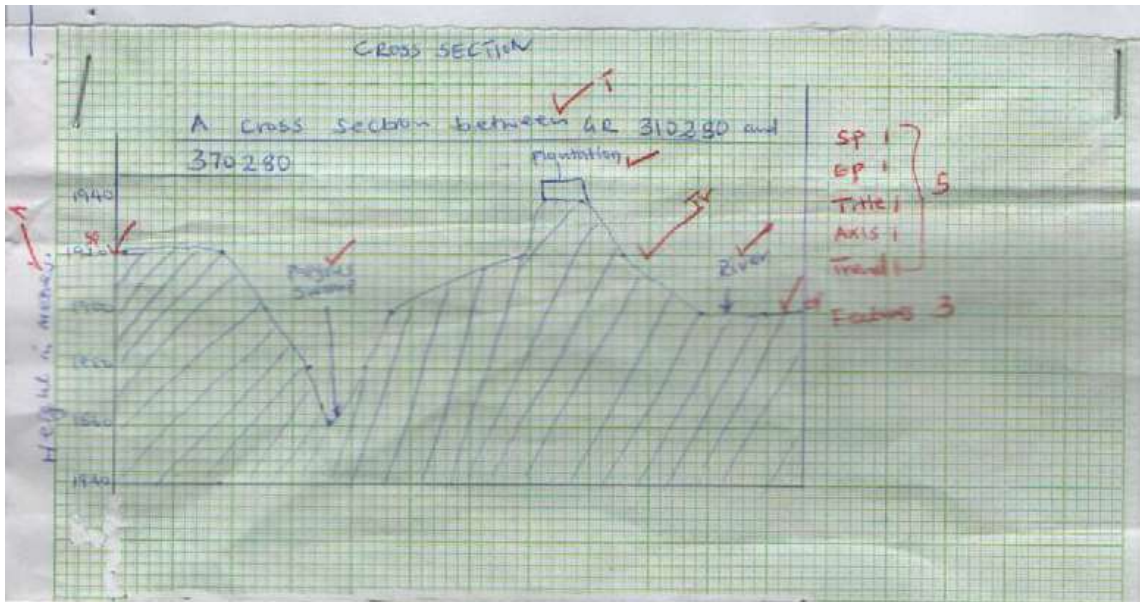
(i) Give the bearing of trigonometric station at grid square2823 from the water hole at grid square 2023.  
 $225^{\circ} \pm 1^{\circ}$  ( $224^{\circ} - 226^{\circ}$ ) (2 mks)

(ii) Give magnetic variation of the area covered by the map extract  
 $2^{\circ} 23'$  (1mks)

(b)Name three types of settlement pattern found on the map extract (3mks)

- Linear
- Dispersed/scattered
- Nucleated

(a) Draw a cross- section between 310280 and 370280



Title 1mk , trend 1mk, Axis 1mk , E.P=1mk, S.P=1mk, horizontal Distance -1mk, features 3mks, (Total 9 mks).

N.B Starting point should be labeled as 1900 and ending point 1890.

(ii)Name two methods used to represent relief in the area covered by the map. (2mks)

- Contours
- Secondary trigonometric stations

**(b) (i) Explain three factors that favour the growing of wattle in the covered by the map.**

- Availability of high rainfall evidenced by presence of many permanent rivers/Kiptaber forest
- Well drained soil evidenced by spaced contours that show that the land is gently sloping.
- Availability of labour for harvesting as evidenced by many settlements showing there are people to work in the plantation
- Availability of transport evidenced by dry weather road and all weather road loose surfaces for transportation of the logs. (3x2=6mks)

**(ii) Give evidences showing that the area receives high rainfall.**

- Presence of many permanent rivers.
- Presences of forest.
- Growing of wattle plantation
- Presence of swamps. (2 mks)

**7. a.i) What is the difference between masswasting and weathering? (2 marks)**

Weathering is the breakdown /decay and decomposition of rocks exposed to the environment while mass wasting is the movement of loose materials downslope under the influence of gravity.

**ii) Name two processes of chemical weathering.(2mk)**

- Solution
- Carbonation
- Hydration
- Hydrolysis
- Oxidation

b.i) identify the process shown above.(1mk)

Soil creep

**ii) Give three factors that cause the above type of mass wasting.(3mks)**

- Alternative heating and cooling.
- Removal of soil down slope.
- Rainwater.
- ploughing on slopes
- Freezing of soil water.
- External forces like Earthquakes

a.i. explosive

**ii) Explain three effects of above type of mass wasting on the environment. (6mks)**

- It pushes posts and fences from their original position making them inclined.
- As fine particles move down slope, the steep upper slopes are left bare and exposed.

- At the destination area at the base of a slope the soil particles accumulate causing deep soil.
- Over a long period of time soil creep leads to slope retreat, causing it to become gentler.
- c) With the aid of a diagram, describe the formation of an exfoliation dome.**
- In hot arid areas, rock mass are heated by high temperatures during the day causing the surface layers to expand.
- low temperatures at night result to cooling and contraction of the outer layers of the rock.
- Expansion and contraction is greater on the outer parts of the rock than the inside.
- This differential expansion and contraction causes stresses within the out parts of the rock mass.
- Eventually the outer layers peel off from the main rock mass, leaving behind a rounded mass of rock – exfoliation dome.(Explanation (3mks) diagram (1mk))
- d. Students from a school in Nairobi carried out a field study on mass wasting.**
- i) Objectives of the study. (2mks)
  - To identify different types of mass wasting.
  - To investigate the effects of mass wasting on the environment.
- ii) **Give three reasons why they needed to carry out reconnaissance.**
  - To assess the suitability of the areas for field study.
  - To identify different routes to be used.
  - To determine the suitable methods of data collection.
  - To familiarize themselves with the area of study.
  - To guide them formulate hypothesis and objectives.
  - To be able to prepare a work schedule.(2mks)
- iii) **State two problems they are likely to encounter. (3 marks)**
  - Harsh weather conditions e.g. rain/heat.
  - Inaccessibility due to steep slopes.
  - Accidents occurring from falling rocks/slipping on loose rocks.

**8. a) Differentiate between weather and climate**

- Weather is the atmospheric condition of a particular place observed over a short period of time (usually 24 hrs) while climate is the average weather condition of an area over a long period of time usually 30-35 years.

*1 x 2 (2 marks)*

**b) Describe how air masses causes rainfall formation.**

- Air masses pick up moisture from one place and transfer to another place
- When the moist air rises it cools and condensation takes place forming cloud which eventually release rainfall.
- If the moist air mass rises / ascends over a relief barrier, it forms orographic rainfall / relief rain.

- If warm moist air rises as conventional currents, it results in conventional rainfall.
- If a warm moist air mass rises over cold air mass in a depression it forms frontal rainfall. (*Any 4x1 = 4 marks*)

**(c) How do the following factors influence climate.**

**(i) Altitude**

- Atmospheric pressure decreases with increase in altitude. This is because the highland supports a shorter column of air than the low altitude areas hence more weight being exerted by air in the low lands.
- Temperatures decreases with increase in altitude. This is because at high altitude the atmosphere is rarefied and so the ground losses heat to outer space faster.
- The atmosphere over low land area is full of obstacles and has more water vapour. This interferes with the outgoing terrestrial radiation keeping a lot of heat in the lower parts of the atmosphere.

*Any 2 x 2(4 marks)*

**(ii) Distance from the sea**

- In the high latitude during summer the coastal areas are relatively cooler than the continental interiors. This is because the sea takes longer to heat and so cold air from the sea blows to the coast lowering the temperature of the coast.
- In winter the land is cooler than the sea. Onshore winds blow from the sea to the coast area making coasts summer warmers than the continental interiors.
- Onshore winds carry with them a lot of moisture from the sea which causes conventional rainfall on the coastal land.

*Any 2 x 2 (4 marks)*

**(d) Describe the characteristics of tropical continental climate**

- Temperatures are high through the year, ranging between 21°C and 32°C.
- The annual range of temperature is as high as 11°C.
- It has two distinct seasons a cool season and a hot season.
- Rainfall is moderate ranging between 750mm and 1000mm in some parts.
- Rainfall is mainly convectional in type and falls during the hot season.

- The cool season is generally dry.
- Rainfall amounts decrease in places far away from the equator.
- The prevailing winds are mainly the trade winds.

*Any 6 x 1 (6 marks)*

**(ii) State five uses of Savanna Vegetation**

- Sources of wood fuel
- Sources of timber for building industry.
- Sources of food in terms of wild fruits and nuts.
- Some plants are a as source of medicine.
- Some plants produce tannin substance used in leather industry.
- Vegetation creates a micro-climate.
- Some vegetation have aesthetic value and creates places for recreation.

*Any 5 x 1 (5 marks)*

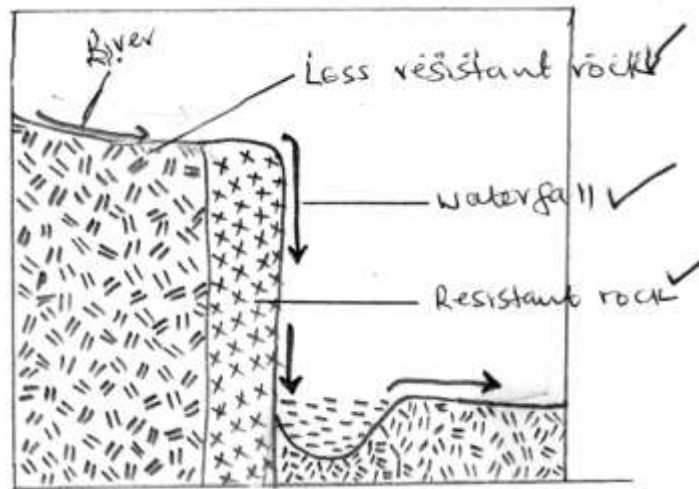
**9. a) Differentiate between a waterfall and a rapid.**

- Waterfall is a section in the river's course where a river bed has a sharp break in the gradient making vertical or nearly vertical drop from the higher level to a lower level while a rapid is a section in the river which is suddenly steepened, causing the water to suddenly flow swiftly.

*1 x 2 (2 marks).*

**(b) Using a well labeled diagram describe how presence of a resistant rock across a river channel cause formation of waterfall.**

- (i) A waterfall may form where a layer of resistant rock, like a dykes, lies vertically across a river channel.
  - The river first forms rapid as it flows over the resistant layer.
  - Its speed increases and it starts eroding the less resistant rocks on the downstream side vigorously.
  - The valley on the downstream side is deepened side is deepened by vertical erosion creating a sharp break
  - Eventually the river drops over **the wall of resistant rock to form a waterfall. (dyke).**

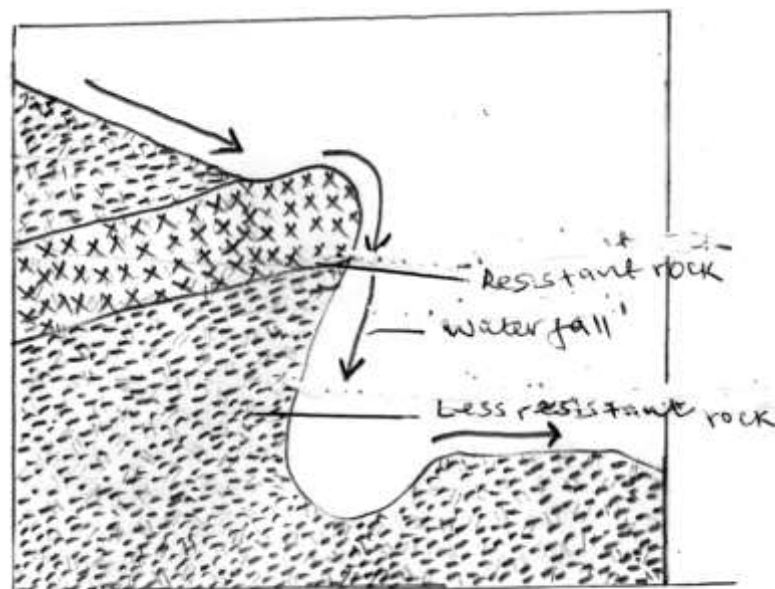


OR

(ii) A waterfall can form where a layer of resistant rock like a dyke or a sill dips gently upstream across the river channel.

- As the water encounters the resistant layer a rapid forms.
- The resultant increase in the velocity of the river results in increased erosive power (by hydraulic action / abrasion).
- The rocks on the downstream side are eroded faster and the channel is deepened by vertical erosion creating a sharp break.
- Eventually water drops from a higher level instead of flowing smoothly and waterfall is formed.

**Diagram (inclined dyke)**

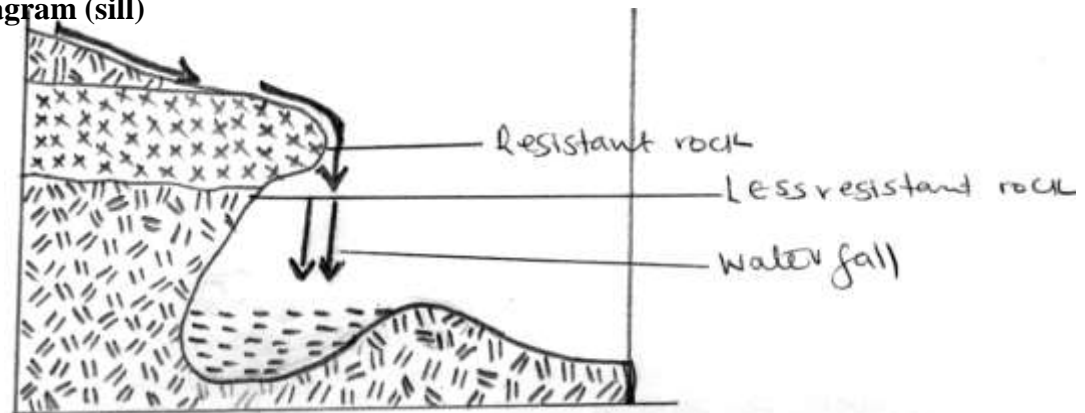




(iii) A waterfall may form where a layer of resistant rock lies horizontally across the river channel.

- Such a layer could be hard still.
- The river's velocity increases as it flows over the resistant layer.
- The less resistant rocks on the downstream sides are eroded fast.
- The valley is deepened and a sharp break occurs in the level of the land.
- Water then drops from the high region to a low region forming a waterfall.

**Diagram (sill)**



**Any of the above**

**Text 4, Diagram 3 = 7**

**c) What is a marine delta**

- A marine delta is a low lying tracts of alluvial deposits mostly formed at the mouth of a river where it empties water to the sea. (2 marks)

**(ii) Explain 3 conditions necessary for formation of a delta**

- The river must be carrying a large load of sediment which it would deposit at the mouth the river catchment area should be large and erosion very active in the catchment area.
- The river course should be free from obstacles such as lakes and swamps these would tend to reduce the amounts of sediments in the river which are required to form a delta at the mouth.

- The river should be slow-flowing at the mouth. This means the river's gradient should be gentle towards the mouth to ensure slow deposition.
- The deposition of sediments should be faster than the rate at which the sediments are removed by sea currents and tides.
- The shore around the river mouth should be shallow to facilitate faster deposition (*Any 1<sup>st</sup> 3x2 = 6 marks*)

**d) Explain 4 significance of a river's deposition features (8 marks)**

- The variety of deposition features such as deltas attract tourists who visit to see them, this brings the country financial income.
- Many flood plains contain fertile alluvial soil which support crop farming. A variety of crops are grown on these plains and even livestock is reared.
- The gentle nature of the flood plains is suitable for settlement.
- The river beds and valleys have river deposits such as smoothed gravel and sand which are used in the building and construction industries.
- Some alluvial deposits may contain valuable minerals like gold and diamonds. These are exploited for financial gain. (*any 4x2 = 8 marks*)

**10. a) i) Three physical factors which contribute to the development of deserts.**

- Insufficient rainfall which doesn't support luxuriant growth of vegetation.
- High temperature / very low temperature lead to aridity due to little precipitation / drought.
- Relief barrier / rain shadow effect.
- Influence of wind system
- Cold ocean currents
- Continentality *any 3 × 1 = 3 marks*

**ii) Describe two processes of wind transportation**

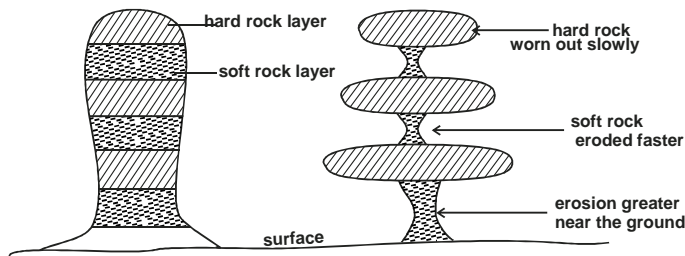
- *Saltation*  
This is where coarse grained sand particles are transported through a series of bouncing / jumping along the surface.
- *Suspension*  
It is where very fine materials is picked by wind raised high and blown over long distances.
- *Surface creep / rolling.*  
It is where large / heavy materials are rolled / pushed forward by wind along the surface.  
*any 2 × 2 = 4 marks*

**b) i) Three factors that facilitate wind deposition in the deserts.(3mks)**

- Desert surface with water surfaces or moist grounds forces the wind to deposit its load.
- Obstacles - presence of obstacles like rocks, bushes on the path of wind forces the wind to drop some of its load.
- Strength of the wind - when the wind slackens it begins to drop some of its load / collision of wind blowing from different directions cause wind to drop some load.
- When sudden showers start falling in the desert some of the suspended materials in the air are washed down.
- If the wind is carrying too many particles they constantly collide causing some of them to be dropped. *any 3 × 1 = 3 marks*

**c) Describe how a rock pedestal is formed**

- Wind abrasion attacks a rock outcrop with alternating layers of hard and soft rocks (heterogeneous)
- The softer rocks are eroded faster than hard rocks.
- Wind abrasion is more effective nearer the ground surface where abrasive materials are heavier.
- This leads to the formation of rock outcrop of different shape called rock pedestal.



Text

3mks

Diagram

2mks

Total

5 mks

**d) Explain three effects of desert features on human environment.**

- Desert features form good sites for tourist attraction, thereby earning foreign exchange.
- Wind deflation hollows/ oases are sources of water for domestic/agricultural use.
- Wind deposited sand / loess form fertile plains for farming.
- Salty flats are economically used for salt production

- Desert sceneries are ideal for film making
- Vast sand seas are ideal for military training / nuclear testing.
- Loes are curved into caves in China as dwellings.
- Shifting sand dunes hinder transport activities.

*any 3 × 2 = 6 marks*

**e) State two objectives of their study**

- To find out the main desert landforms.
- To find out the human activities carried out in the area.
- To investigate the problems faced in the desert.
- -To find out the main agents of erosion and deposition in the desert.

*any 2 × 1 = 2 marks*

**ii) Two problems they encountered during the study**

- Adverse weather condition like vey high temperatures during the day.
- Poor transport network
- Attack by wild animals like snakes /scorpions
- Dust storms leading to poor visibility.
- Difficulty in identifying some features.
- Insecurity /attack by badits.
- Tiredness/fatigue
- Getting lost in the desert.

*any 2 × 1 = 2 marks*