

GEOGRAPHY PAPER 1 (312/1) 2006
MARKING SCHEME
SECTION A

1. (a) How does a sea breeze occur?
- During the day, the land heats faster than the sea
 - The air over the land rises
 - Cooler air from the sea blows towards the land to replace the rising air
 - The cool air from the sea is called the sea breeze (Any 2 x 1 = 2 mks)
- (i) Name the ocean currents marked H, J and K
- | | | | |
|---|---|--------------------|---------|
| H | - | Mozambique/Agulhas | (1 mk) |
| J | - | Benguela | (1 mk) |
| K | - | Guinea | (1mk) |
- (ii) State two effects of a warm ocean current on the adjacent land
- It warms up the adjacent land
 - It increases the humidity of the adjacent land
 - It may lead to rainfall on the adjacent land (Any 2 x 1 = 2 mks)

Give two processes involved in each of the following types of weathering

- (a) Physical weathering
- Pressure release/ offloading/ sheeting
 - Block disintegration
 - Exfoliation
 - Frost action/ frost shattering
 - Crystal growth/ crystallization
 - Slaking/ wetting and drying
 - Granular disintegration (Any 2 x 1 = 2 mks)
- (b) Chemical Weathering
- Hydrolysis
 - Solution
 - Oxidation
 - Carbonation
 - Hydration (Any 2 x 1 = 2 mks)

- (a) Name the plants marked F and G
- | | | | |
|---|---|---------|---------|
| F | - | Mars | (1 mk) |
| G | - | Neptune | (1 mk) |

- (b) State three effects of the rotation of the earth on its axis
- It causes the occurrence of day and night
 - It causes deflection of winds and ocean currents
 - It causes the rising and falling of the ocean tides
 - It causes variation in time at different longitudes
 - It causes difference in atmospheric pressure on the surface of the earth (Any 3 x 1 = 3 mks)

- (a) Name two scales used to measure the intensity of an earthquake
- The Rossi – forrel scale
 - The Mercalli scale (2 x 1 = 2 mks)
- (b) Give three causes of earthquakes
- Gravitative pressure
 - Collision of tectonic plates
 - Energy release in the mantle
 - Isostatic adjacent
 - Violent Volcanic eruptions
 - Nuclear explosions
 - Adjucent along fault lines
 - Building reservoirs
 - Magma movement within the crust (Any 3x 1 = 3 mks)

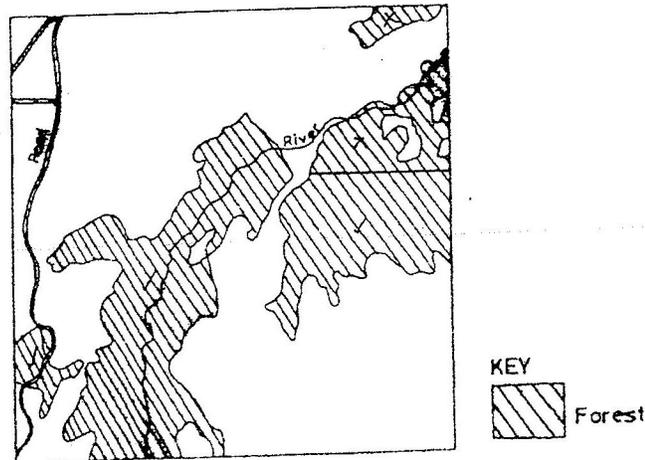
- (a) (i) Calculate the annual range of temperature for the town
 $28^{\circ} - 24^{\circ}\text{C} = 4$ (1 mk)
- (ii) Calculate the total annual rainfall for the town (1mk)

- (b) State two characteristics of the climate experienced in the town
- The town experiences high temperatures throughout the year 24- 28⁰C
 - The annual range of temperature is small / 4⁰C
 - Rain falls throughout the year / there is no marked dry season
 - The rainfall pattern has double maxima
 - The weather month is July/the driest months are December and January
 - Rainfall is high/ 1803mm
 - The hottest months are February to April/ coolest month is August
 (Any 2 x 1 = 2 mks)

SECTION B

- (a) (i) Give the six grid reference of the junction where the road to Ndaragua (D388) meets with the road to Nyeri and Nanyuki (B5) 114031 (2mks)
- (ii) Calculate the bearing of point X from point Y
 $-312 - 314^{\circ}$ (2mks)
- (iii) Name three physical features found along the line XY
- River
 - River valleys
 - Scarp slope/ escarpment/ scarp face
 - Gentle slope
 - Seasonal swamp
 - Woodland vegetation (Any 3 x 1 = 3 mks)

(b) (i) & (ii)



(c) Citing evidence from the map, explain

(i) Two physical factors that may have influenced the location of Nyahururu Town

- Availability of water from the nearby rivers for domestic and industrial use
- The high altitude (over 2300m) which makes the area experience cool climate which makes the area ideal for settlement
- The gently sloping terrain/ flat land which is ideal for settlement and construction of roads as shown by contours wide apart
- Presence of the Thompson's falls which are a tourist attraction encourage settlement
- Availability of building stones, for construction of houses from the nearby areas/ quarries

(Factors, evidence & explanation must be mentioned to score)

(ii) Two factors that favour Saw milling in the area covered by the map

- Presence of extensive forests to provide raw materials
- Availability of transport by roads and the railway for transporting sawn timber and logs
- Large population shown by settlements provide market for the products

(Any 2 x 1 = 2 mks)

(d) Describe the drainage of the area covered by the map

- The area has many rivers/ high density of rivers
- The water courses are generally permanent
- The rivers form dendrites patterns
- There are water sheds along Gitunda and Ol Ngarua road
- There are many reservoirs/ dams along the water courses
- Some of the rivers end in swamps
- There are swamps, papyrus and seasonal swamps
- There are rapids near; Thompson's falls

- Some of the rivers disappear underground especially in the north-west
- There are some artificial drains/ drifts especially in the south-western and southern parts of the area
- The rivers flow to different directions (Some to the north, others north- west wards and others north – eastwards)
- There is a pond (020130)
- There is parallel drainage pattern along the escarpment
- Short disappearing rivers (Any 6 x 1 = 6 mks)

7. (a) (i) Name the process that takes place at
- Point P: deposition (1 mk)
 - Point Q: erosion (1mk)
- (ii) Name the feature formed at point R
- A cliff / bluff (1 mk)
- (iii) Describe how an ox-bow lake is formed
- An ox – bow lake forms when a river starts to meander on a flood plain
 - Lateral erosion dominates on the outer side of the bend while deposition takes place on the inner bank
 - Lateral erosion results in the reduction of the neck of land between adjacent bends
 - Deposition on the meander side, especially during floods blocks off the meander
 - The river abandons the meander and follows the newly short cut that was the neck of land
 - The abandoned meander with its water forms an ox-bow lake (any 5 x1 = 5 mks)
- (b) State five characteristics of a flood plain
- They have a gently sloping gradient/ flat surface
 - They have thick alluvial deposits/ silt/ fertile soils
 - They have levees on either side of the river banks raised river beds
 - Some flood plains have marshes/ swamps
 - Some flood plains have braided channels
 - Some have deferred tributaries
 - Flood plains have river bluffs
 - They have meander/ bends and some have Ox- bow lakes at their edges
 - Some have wide river valleys
 - Some have deltas/ distributaries (Any 5x1=5mks)
- (c) Explain three causes of river rejuvenation
- A fall in sea level which increases the velocity of the river, thereby increasing the erosive power of the river

- Regional uplift which creates negative sea level moment and thus makes the river to renew its erosive activity.
- Vertical erosion by the river may expose resistant rock which creates a knick point thus renewing the rivers erosive power.
- Presence of a lake along the river flow out of the lake, its erosive power increase
- Increase in river discharge due to increase in precipitation of river capture may cause a river to renew its erosive power
- Unequal regional subsidence of land along the river course increases the gradient and therefore the erosive power of the river. (Any 3 x 3 = 6 mks)

(d) Your class is required to carry out a field study of a river

(i) What would be the advantage of dividing the class into groups According to the stages of the long profile of the river?

- The class will be able to study the entire course of the river
- It will enable them to obtain detailed information on each stage of the river
- It will save on time
- It will enable the study to be carried out in an orderly way
- It will encourage participation of all the members of the class/ encourage individual roles
- It will facilitate interaction among the group members

(Any 4 x 1 = 4 mks)

(ii) What would be disadvantages of using secondary methods of Collecting data in this kind of study?

- Recorded data could be out of date
- Conditions under which such data was collected may be changed
- Obtaining records on the particular river was collected may be difficult

(Any 2 x 1 = 2 mks)

8. (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 experience high temperatures under which ice-sheets cannot form
- Most parts of Kenya have low altitudes
- Kenya is found at low latitudes (Any 2 x 1 = 2 mks)

(ii) Explain three factors that influence the movement of ice from the place of accumulation

- Gradient of the land- Ice moves faster when the slope is steep
- Temperatures/ seasonal changes-Higher temperatures result into 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
- Size/ thickness of glacier – large masses of ice exert pressure which lead to melting of ice underneath. This increases the speed of ice movement (Any 3x2 = 6mks)

(b) Describe how an arête is formed

- Two adjacent cracks/ hollows exists on a mountain side
- The two hollows/ cracks are filled with ice
- The ice erodes the sides through plucking and deepens the hollow through abrasion
- Through erosion, the back walls of the hollows slowly recede
- Eventually the hollows/ ciques are separated by a knife- edged ridge
- The ridges called an arête (Any 4 x 1 = 4 mks)

(c) (i) Name the types of moraines marked S, T and V

- | | | | |
|---|---|----------|---------|
| S | - | Medial | (1 mk) |
| T | - | Lateral | (1 mk) |
| V | - | Terminal | (1mk) |

(ii) Explain four positive effects of glaciations in lowland area

- Glacial till provides fertile soils for arable farming
- Ice sheets, in their scouring effect reduce the land surface and depth to expose mineral seams which become easy to extract
- Outwash plains comprises of sands and gravel which are used as materials for building and construction
- Lakes formed though glaciation can be exploited for various economic uses such as fishing, transportation or as tourist attraction.
- Ice melts into rivers exploited for domestic use
- Glaciated features are tourists attractions
- Glaciated lowlands are generally flat due to erosion and deposition and are ideal for construction of buildings and communication lines (Any 4 x 2 = 8 mks)

(a) (i) Name the vegetation zones marked

- | | | | |
|---|---|---------------------|--------|
| W | - | Rain forest | (1mk) |
| X | - | Bamboo forest | (1 mk) |
| Y | - | Health and moorland | (1 mk) |

(ii) Describe the characteristics of the Savannah vegetation

- Savannah vegetation consist of trees and grass

- Wetter areas/ near the forests the vegetation consists of tall scattered trees similar to those found in the forest/ woodland
- The wetter areas also have fall thick grass
- Gradually, away from the forest, the trees become fewer and shorter
- The grass also becomes shorter
- In drier areas the trees are short and more scattered
- Some trees are deciduous type
- Most of the trees are umbrella- shaped
- The most common trees species are the acacia and other thorny trees.
- Where rainfalls is lowest, grass is tufted and coarse/ scrub
- There are scattered baobab trees and other drought resistant trees
- Along river valleys there are tall trees/ riverine trees and thick bushes (any 6 x 1 = 6 mks)

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

- Canada - Prairies (1 mk)
- Russia - Steppes (1mk)
- Australia - Downs (1 mk)

(b) Explain the causes of the decline of the areas under forests in Kenya

- Fire; often areas of forests are destroyed by accidental and sometimes intended fire. Such forests take long to recover
- Diseases caused by pests and parasites attack mainly the planted forests causing many trees to die
- Human activities/ settlements/ charcoal burning/ farming/ logging have destroyed many forest areas many of which are transformed into farms or grasslands
- Over – exploitation leads to depletion of certain tree species such as Meru, Ork, Camphor and Elgon teak. These trees take long to mature.
- Government policy of degazetting of some forests made people free to clear many forested areas.
- Prolonged droughts lead to degeneration of forests some of which take long to recover (Any 3 x 2 = 6 mks)

(c) (i) state three reasons why it would be necessary for you to visit the area before the day of the study

- To familiarize in order to design the appropriate research method
- To prepare the working schedule
- To be able to formulate the appropriate objectives and hypothesis
- To be able to identify relevant equipment for data collection
- To identify suitable areas for study to meet the people who will provide information during the study
- To seek permission from the owners of the land/ authorities

(ii) Give four uses of vegetation you are likely to identify during the study.

- Use as fodder
- Use for providing fruits/ roots/ vegetables/ food e.g. fruit
- Providing wood fuel/ charcoal wood
- Controlling soil erosion/ protecting catchments areas
- Use for ornamental/ Beauty/ aesthetics
- For cultural / rituals/ worship
- Production of building/ construction materials/ timber

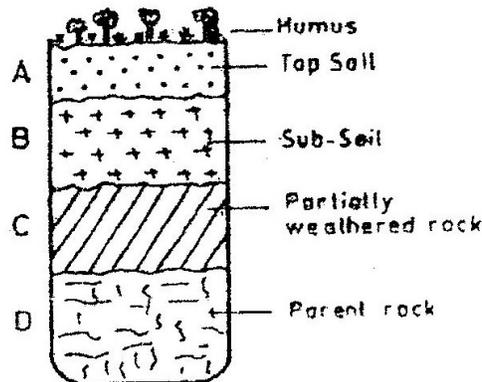
(Any 4 x 1 = 4 mks)

10. (a) (i) What is soil catena?

Soil catena is the sequence of different soils from the same parent rock on a slope (2 mks)

(ii) Draw a labeled diagram to show a well developed soil profile

A SOIL PROFILE



(iii) State three characteristics of soils found in the arid regions of Kenya

- The soils are light in colour
- They are saline
- They are sandy/ stony
- They are loose in texture
- They are thin
- They have low moisture content

(Any 3 x 1 = 3 mks)

(b) Give three factors that determine the colour of soil

- The type of parent rock
- The amount of organic matter/ humus
- The chemical composition/ the degree of concentration of iron oxides/minerals
- The amount of water in the soil/ the drainage of the soil

(any 3 x 1 = 3 mks)

(c) Describe how laterization occurs

- During the season, mineral salts in the top layer of the soil dissolve in rain water

- The dissolved minerals percolate/ seep downwards from the top soil to the sub- soil (Silica and bases)
- The dissolved minerals move/ are deposited further downwards to the lower layer
- Insoluble minerals such as iron and aluminium accumulate on the top layer to form a crust of laterites (Any 3 x 2 = 6 mks)

(d) Explain how the following farming practices causes soil erosion

(i) Burning

- Burning destroys micro- organisms which are essential for the formation of humus which binds soil particles together
- Burning destroys vegetable matter that protects the soil against erosion/ form humus hence less protection
- Burning destroys the nitrogen fixing bacteria making the soil less fertile and therefore few plants and less protection of the soil
- Burning loosens the soil making it susceptible to erosion/ leaching which drains away soluble minerals nutrients (Any 2 x 1 = 2 mks)

(ii) Continuous application of fertilizer on farm lands

- This increase the acidity of the soil/ changes the pH of the soil. The acidity destroys the micro- organisms in the soil / fungi/ bacteria which could have helped in the formation of humus/ leaf binds soil particles
- Acidic soils are unsuitable for a variety of crops which would protect the soil from erosion

(iii) Monoculture

- Monoculture leads to exhaustion of certain minerals from the soil making it infertile and bare leading to its erosion
- Monoculture leads to loosening of soils particles thereby encouraging soil erosion (Any 1 x 2 = 2 mks)