GEOGRAPHY
K.C.S.E PAPER 1 2005
MARKING SCHEME

SECTION A

1 . a)
-The passing star theory (2mk)
- The Nebula cloud theory

b) -Troposphere
-Stratosphere
-Mesosphere
-thermosphere (4x1 mks)

2 a) E – Surface run off
F – Evaporation
G – Condensation (3 x 1 mks)

b) a watershed is a ridge / high ground that separates two or more river basins, while a catchments area is the entire area from which a river draws its waters.

3. a) -They occur in layers called strata
-They contain fossils
-They are not crystalline in nature but are composed of particles of pre-existing rocks.

b) – Rock salt
- Gypsum
- Flint
- Travertine / trona
- Limonite
- Hematite

4. (a) Mount Kenya

(b) - Snow accumulate in pre- existing depression on the mountain side
- The snow action/ navigation/ alternating free-thaw action enlarges the hollow
- Plucking process steepens the back wall
- A deep armchair shaped depression called corries fills up with molt water forming a tarn
(4 x 1 = 4 mks)

5. (a) This is a type of vegetation that grows without interference and modification by human activity.

(b) - Mediterranean vegetation is composed of shrubs/ thickets/ bush/thorn bush
- Grasses dry off, during summers drought and winter
- Some trees are deciduous
- Some plants have fleshy leaves
- Trees have thick rough barks/many plant have waxy/ spiny/ small leaves
- Plants have long tap roots
- Many plants are evergreen

SECTION B

6. (a)
   (i) 1 cm represents ½ km or 1 cm represents 500m (1mk)
   (ii) 298938 (1mk)
   (iii) Thicket 3 x 1 = 3 mks)

   (b) (i)
   - Rivers
   - Dams/ lake
   - Water holes 2 x 1 = 2mks)

(ii)

Function	Evidence
- Health services center	- Dispensary
- Educational services	- School
- Religious services	- Church
- Commercial center	- Shop
- Transportation	- Roads

(Function ½ Evidence ½ x 4 mks)

(c) (i) & ii) – Cross – section – graph paper

(iii) Vertical exaggeration $= \frac{\text{Vertical scale}}{\text{Horizontal scale}}$

$= 1/2000 \div 1/50{,}000 = \frac{1}{2000} \times \frac{50{,}000}{1} = 25$ times

(d) (i) Reasons for a reconnaissance
- In order to be familiar with the area before the field study
- To establish contacts possible respondents for the study
- In order to help in preparing methods for data collection
- In order to determine the cast of the study
- To identify possible problems likely to be faced and their possible solutions (4 mks)

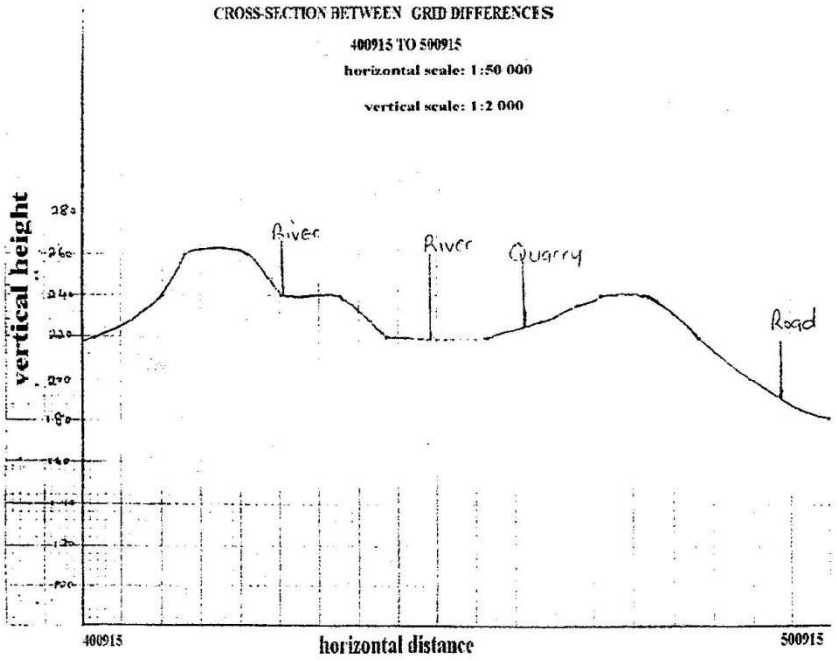
(ii)
- Sandy soil
- Clay soils
- Loamy soils
- Cotton soil (2mks)

7. (a) H - bay
   J- sand bar
   K – Tombolo
   L- Headland
   M- Estuary (5 mks)

   (b) (i)
   - The shore should be gentle for deposition to take place
   - The wave breaking must have a strong swash and weak backwash / be constructive wave
   - The sea should be shallow towards the coastline/ shone
   - The sea water should have a large load

(ii) Hydraulic action- the power of waves remove lose rock particles from the cliff/ rocks. The waves also enter.
Cracks / crevices of the rocks enlarging the crevices/ joints/ cracks by creating shock waves
Abrasion- the materials/ load carried by the waves scour coastal rocks making them smooth as they erode.
Attrition- the materials carried by waves constantly collide against each other and coastal rocks, thus, reducing in size.

Cross section between grid references 4000915 to 500915



Solution – the sea water dissolves and removes and removes materials in solution. This is common along limestone coasts (any 3 x 2 = 6 mks)

- Intense Compressional forces act upon rock strata resulting in a fracture along its axis
- The upper limb is pushed over the lower limb along the thrust plane
- Horizontal displacement of the limb occurs along the thrust plane

7. (a) Objectives
- To find out the type of depositional features along the Kenya coast
- To find out the factors influencing the formation of depositional features
- To find out the economic significance of coastal features of deposition
- To find out the process involved with formation of coastal features of Deposition
- To find out the location of depositional features along the coast of Kenya

(5 x 1 = 5 mks)

(b)
- Making notes
- Taking photographs/ videos
- Filling in tables/ tallying
- Field sketching
- Drawing maps (sketch) mapping

8. (a)

i. Asia - Himalayas (1mk)
ii. North America - the rockies / Appalachians (1mk)
iii. South America- the andies (1mk)

(b)

- Cuestas
- Escarpments
- Intermountain basins/ plateaus
- Synclinal valleys (4 mks)

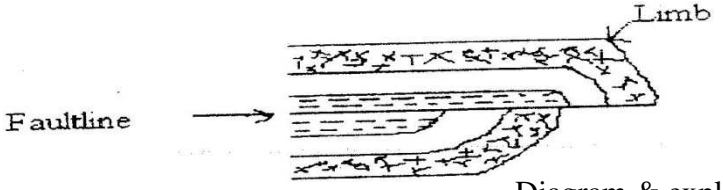


Diagram & explanation = 6 mks

(c) Effects of fold Mountains of human activities

- FoldMountains are water catchments areas. They trap rainfall which feed rivers that provide water for domestic use/ for irrigation/ for industrial use/ HEP generation
- Fold mountains are often forested and provide valuable timbers used in construction and building industry
- Some fold mountains have valuable deposition such a coal and petroleum
- Fold mountains attract tourists, thus earning countries foreign exchange
- Fold mountains influence transport systems either as barriers or as passes

(Any 4 x 2 = 8 mks)

(d) (i) – They would divide themselves into groups

- They would review secondary objectives and hypotheses for study
- They would formulate objectives and hypothesis for study
- They would conduct a pre – visit / reconnaissance to the areas under study
- They would prepare a working schedule for the study
- They would seek for permission from relevant authorities

(Any 3 x1 = 3 mks)

(ii) They would get first hand information about land forms in their districts

- It enables students to relate what has been learnt in classroom to what is in the field
- It allows students to use their observation skills to make conclusions
- It enables students to acquire appropriate attitudes towards the environment
- It breaks the classroom monotony for the students and teachers

(2 x1 = 2 mks)

9. (a) (i) Q- Polar cold climate/ tundra climate

(ii) Ocean currents R – Canary ocean current
S- Gulf stream (2 mks)

(b) T – Tropical equatorial climate
Characteristics

- Temperatures are high throughout the year at about 27^0C (5^0C)
- Experiences high rainfall of between 1,500mm and 2, 000mm evenly distributed throughout the year

- Experiences a double maximum rainfall region/ two rainy seasons caused by overhead sun twice a year
- The region also has high humidity due to heavy rainfall and high evaporation rates
- Major winds experienced are the south – East and North – East trade winds
- Experience low pressure all year round thus no distinct season.
- Rainfall is mainly convectional type usually accompanied with thunderstorms, highlands experience relief/ orographic rainfall(8mks)

9. (c) Factors influencing climate

(i) Altitude

- This is the height above sea level
- Lowlands are usually warmer than highlands because the atmosphere becomes thinner as altitude increases where the ground losses heat faster
- Atmospheric pressure decreases with increase in altitude. This is due to the weight of atmospheric air above highlands being less than in lowlands

(ii) Distance from the sea

- During hot seasons, coastal lands are relatively hotter than inland areas on the same latitude due to the existing effects of the sea breezes. By the time the sea breezes reach inland areas they have adapted to the temperature of the land over which they are passing.
- Coastal lands receive more rainfall that the interior of continents. This is due to the coasts receiving moist winds from the sea but by the time the winds reach inland areas they are usually dry. (3 x 2 = 6 mks)

(d) (i)

- The site should be flat and free from flooding
- It should be open to the surrounding landscape
- It should be far from obstacles such as tall trees and buildings
- It should be secure and free from intruders (2 x 1 = 2 mks)

(d) (ii) Stevenson screen

- Painted white to help in reflecting heat from the sun, thus maintaining shade/ room temperature in the screen (2mks)
- Has louvers to allow free circulation of air/ keep the screen well ventilated (2mks)

GEOGRAPHY

K.C.S.E PAPER 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 mked 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

2. (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)*

3. (a) Name the plants mked 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 difference longitudes
- It causes difference in atmospheric pressure on the surface of the earth

(Any 3 x 1 =3 mks)

4. (a) Name two scales used to measure the intensity of an earthquake
   - The Rossi – forrel scale
   - The Mercelli 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)*

5. (a) (i) Calculate the annual range of temperature for the town
$28^0 - 24^0C = 4$ (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- 28^0C
- The annual range of temperature is small / 4^0C
- Rain falls throughout the year / there is no mked 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) meters with the road to Nyeri and Nanyuki (B5) 114031 (2mks)

(ii) Calculate the bearing of point X from point Y
$-312 - 314^0$ (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)

(b) Citing evidence from the map, explain

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

- Availability of water from the nearby rivers fro 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 mket for the products

(Any 2 x 1 = 2 mks)

(c) 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 print 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 rock 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 tat 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 nave 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 diving 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 encourages 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 from
- 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 mked 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)

9.

(a) (i) Name the vegetation zones mked

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.

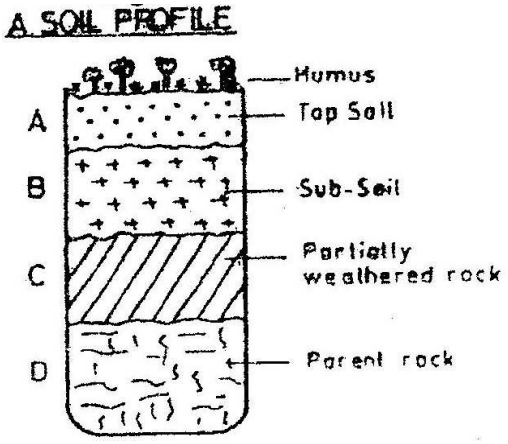
- Use as fodder
- Use for providing fruits/ roots/ vegetables/ food e.g. fruit
- Providing wood fuel/ charcoal wood
- Controlling soil erosion/ protecting catchments areas
- Use for ornamental/ Beauty/ aesthetics
- For cultural / rituals/ worship
- Production of building/ construction materials/ timber

(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



(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/ steep 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 forma 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)

GEOGRAPHY
K.C.S.E PAPER 1 2007
MARKING SCHEME

SECTION A

1. a) State two effects of the rotation of the earth. (2mks)
   - causes day and night
   - Causes the deflation of winds and ocean currents.
   - Causes the difference of an hour between two longitudes.

   (Any 2x1)

   b) Study the diagram below and answer the questions that follow

      i) Which movement of the earth represented by the diagram? (1mks)
      ii) Give two effects of the movement represented by the diagram (2mks)

   - creation of seasons
   - Causes varying lengths of day and night of different year.
   - Causes changes in the altitude of the mid-day sun at different seasons
   - Causes lunar eclipse

2 a) name two types of coastal deltas (2mks)
   - Arcuate delta
   - Birds foot delta
   - Estuary/estuaries (2x1)

   b) State two conditions that lead to deposition of silt at the mouth of a river. (2mks)

   - Overloading
   - Loss of velocity
   - Freezing of the stream
   - Slow moving bodies of water
   - Decrease of stream volume
   - Reduction of stream gradient
   - Present of barriers (Any 2x1)

3. The diagram below represents a barchan. Use it to answer question (a).
   a) Name
      i) The features mked x (1mk)
         - horns
      ii) The air current mked Y. (1mk)
         -eddy currents
      iii) the slope mked z. (1mk)
         -steep concave leeward slope

   b) Give two ways in which wind transports its load
   -suspension
   -saltation
   -surface creep (Any 2x1)

4. The diagram below represents the structure of the earth. Use it to answer questions

a) Name

i) The parts mked P and Q (2mks)

p- hydrosphere

Q- Core

ii) The discontinuity mked r. (1mk)

Gutenberg discontinuity (1mk)

b) State three characteristics of the mantle. (3mks)

-It's made up of liquid rock.

-It has very high temperature

-It has a light density

5 a) Name the two major types of earth movements that occur within the eath's crust (2mks)

- Horizontal earth movement/ original/lateral
- Vertical earth movement/epeirogenesis

b) Describe the origin of the continents according to the theory of Continental drift.

-there was one land mass called pangea.

-surrounded by an enormous sea called pantalassa. The Norther hemisphere was called laurasia and southern Godwana land

- Due to crustal forces led pangea to break into the present six continents drifting apart

(Any 6x ½)

SECTION B

6. Study the map in Taita Hills (1:50,000) sheet 189/4 provided and answer the following questions.

a) i) What is the bearing of peak of mwatunga hill in grid square 3214 from the water tank in grid square 2619? (2mks)

- 135^0

ii) What is the length in kilometers of the section of the Mwatate-voi railway line in the south-eastern part of the map (2mks)

b) Draw a rectangle measuring 16cm by 12cm represent the area enclosed by the Easting 24 and 40 and Northings 20 and 30. (2mks)

on the rectangle, mk and name the following features:

-Mgange hill (1mk)

-A rock out crop (1mk)

-All weather road, bound surface (1mk)

-River Ruhia (1mk)

-ronge forest (1mk)

c) using evidence from the map, explain three factors that may have favoured the establishment of the Teita sisal estates in the southern part of the area covered by the map. (6mks)

-Railway transport-provide transport

-Goods road network

-availability of labour from the settlement

-Gentle slope

-sparse population

-Low altitude

-cattle rearing –cattle dips

d) i) Describe settlement in the area covered by the map (5mks)
- Dense settlement along transport route.
-Dense settlement close to Teita sisal estates
-Scattered settlement on the s.E part/on the lower altitude part.
No settlement on the slopping areas
No settlement on the rock out crops.

ii) citing evidence from the map, give two economic activities carried out in the area covered by the map other than sisal farming. (4mks)

- Trading –shops
- Transport-roads and railway
- Mining-quarry
- Lumbering animals –national parks

6 b) Draw a rectangle measuring 16cm by 12cm to represent the area enclosed by the Eastings 24 and 40 Northings 20 and 30. (1mk)

7 a) Describe the following characteristics of minerals:
(i) colour (2mks)
-All minerals have their specific characteristics colour. Some change colour when exposed e.g gold is yellow, copper oxides are blue or green e.t.c

ii) Cleavage (2mks)

- Minerals have distinct cleavages. They have patterns in which they split or divide e.g mica split into thin layers. Plant and glass has distinctive facture.

iii) Hardness (2mks)

- Minerals differ in hardness depending on their chemical constituents and mode of formation. E.g Talc is soft, quartz is moderately hard and diamond is the hardest.

b) i) Give two types of igneous rocks (2mks)
-Intrusive/plutonic rocks
-Extrusive/hypabyssal rocks (2x1)

ii) Explain three conditions necessary for the growth of coral polyps. (6mks)
- Shallow water
- Well oxygenated
- Clear water i.e. silt free
- Warm water with temp 20^0C-29^0C (any 3x2)

c) **State four uses of rocks** (4mks)
- Valuable source of minerals like gold
- Store underground water i.e impermeable rocks
- source of income and employment
-tourist attraction sites.
- provide construction materials.
- Making of artifacts e.g soap stones

-Breakdodown into fertile soils (any 4x1)

d) You are planning to carry out a field study on the rock within your school environment. Give two secondary sources of information you would use to prepare for the field study. (2mks)

-journals
-maps
-magazines
-Newspapers
-extracts downloaded from the internetr
-statistical abstaracts
-books
-periodicals
-Census reports (any 2x1)

ii) state why you would need the following items during the field study:
-a fork jembe (1mk)
Marble – metamorphic
Sand- stone-sedimentary
Granite- igneous (2mks)

8 a) i) What is climate? (2mks)
Is the average weather condition of a particular place for a long period of time between 3o -35 years.

ii) Explain two effects of climate change on the physical environment. (4mks)

-High rainfall results to flood that will a proof vegetation
-High temperature- results to dying of vegetation
-Ice will melt leaving the mountation tops bear
-soul erosion to drying vegetation (any 2x2)

b) The table below shows rainfall and temperature figure of a station in Africa.

Months	J	F	M	A	M	J	J	A	S	O	N	D
Temp. in ^{0}C	24	24	23	22	19	17	17	18	19	20	22	23
Rainfall in mm	109		122	130	76	52	34	28	38	70	108	121	120

(i) On the graph paper provided draw a bar graph to represent the rainfall figures. (Use a vertical scale of 1 cm to represent 10 mm) (5 mks)

(ii) **Describe the rainfall pattern of the station** (4 mks)

- It receives high rainfall January to March and October
- Rainfall decreases from April to June then it increases from July to December
- It receives the maximum rainfall in march 130mm
- The lowest rainfall is received in the month of June 28mm

- The rainfall decreases with the decrease of temperature and increase with the increase in temperature. (Any 4 x 1)

(iii) **Calculate the average monthly temperature for the station**
(Show your calculations) (2 mks)

$24 + 24 + 23 + 22 + 19 + 17 + 17 + 18 + 19 + 20 + 22 + 23$

$= \frac{248}{12} = 20.66^0C / 20.67^0C / 21^0C$

(c) You are supposed to carry out a field study on the weather within your school compound
(i) Describe how you would use the following instruments during the filed study:
- The Hygrometer (3 mks)

- The wet bulb thermometer is wrapped in wet muslin and dipped into water to keep the muslin moist. This record the lowest temperature as the water evaporates from the muslin.
- Dry bulb thermometers is left in normal environmental to record the highest temperature. The difference between two readings is used to calculate the relative humidity.

- **The rain gauge** (3 mks)

- Insert the beaker on the ground
- Take the rain water collected in the jar or bottle
- Pour the water in a measuring or graduated cylinder
- Take the reading
- Record the readings in a book or table

(ii) **State two ways in which the information collected during the filed study would be useful to the local community** (2 mks)

- Know the type of crops to plant
- Know the type of animals breeds to rear
- Know the type of attire to wear
- Know the wind control measures (any 2 x 1 = 2 mks)

9. (a) **Give three processes that lead to formation of lakes** (3mks)

- Down warping/ tilting
- Tectonic movements
- Man- made lakes
- Lava dammed lakes
- Glacial erosion lakes
- Maraine dammed lakes (any 3 x 1 = 3 mks)

(b) (i) **Describe how lake Victoria was formed** (4 mks)
Formed when the earths surface downwarped and tilted forming a hollow depression that was fitted with water.

(ii) **Explain how lake Victoria influences the climate of the surrounding areas**
(6 mks)

- Heavy rainfall due to moisture from the lake
- High temperature due to low altitude caused by the depression
- Availability of water has attracted the industrial set up that pollute the environment

(c) (i) Apart from LakeMagadi, name two other lakes within the rift valley in Kenya that have a high level of salinity (2 mks)

- L. Natron
- L. Bogoria
- L. Elementaita

(ii) **Explain three causes of salinity in LakeMagadi** (6 mks)

- Lack of underground outlet
- Acidic volcanic rock layer on the lake bed
- Lack of surface outlet
- River entering the lake flowing on acidic rocks

(d) **Give four economic uses of lakes other than mining** (4 mks)

- Source of fish
- Irrigation
- H.E.P production
- Source of river
- Tourists attraction

10. (a) (i) What is the difference between weathering and mass wasting?(2 mks)

Weathering – is the breaking down and decomposition of solid rocks on the earth though physical and chemical processes without movement.

Mass wasting-down slope movementof the weathered material by the aid of gravity.

(ii) Apart from plants. Give three other factors that influence the rate of weathering (3 mks)

- Water
- Heat/ temperature
- Chemicals/ dissolved substances

(iii) Explain two ways in which plants cause weathering (3 mks)

- Plants roots e.g. trees grows into joints and cracks, they widen the joints and cracks as they grow causing rock blocks to disintegrated.
- Plants like algae, mosses and lichen retain water on rocks resulting to chemical weathering processes
- Decaying plant material produce organic acids. That reacts with some of the rock minerals causing it to decay.

(b) (i) List two types of mass wasting other than soil creep (2mks)

- Talus creep/ scree creep
- Solifluction

(ii) **Explain three factors that causes soil creep** (6 mks)

- Heating and cooling of soil
- Freezing of soil
- Ploughing down hill
- Shaking by earth quakes/ heavy tracks
- Alternate drying and wetting of the soil
- Trampling and burrowing of the ground

(c) **Explain four effects of mass wasting on the environment** (8 mks)

- Leads to loss of fertile soil
- Leads to loss of life and property
- It may block the river or stream
- Leads to displacement of people
- It may lead to destruction of infrastructure and buildings
- It may lead to formation of lakes

GEOGRAPHY

K.C.S.E PAPER 1 2008

MARCCKING SCHEME

SECTION A

1. a) Give three reasons why it is necessary to study the plate tectonics theory.
   - It explains the current position of the continents
   - It enables one to understand the creation of the structural land forms
   - It helps one to understand how the earth maintains balance/isostasy

- It explains the cause of earth quakes/volcanicy

b)

- Divergence/extension/constructive
- Convergence/compress ional/destructive
- Transform /conservative.

2. a) P- Mercury
   Q- alcohol/oil of Cleo salt
   R- Metal index.

   b) i) The diurnal range of temperature for Tuesday; 27-18 $=90^0$C

   ii) The mean temperature for Saturday

   $$\frac{29 + 21}{2} = 250C$$

3. a) -Coal
   -Petroleum
   -Diamond
   -carbon

   b) Because it is the hardest mineral/ it does not break easily

4. a) -Dust particles
   -Pollen grains
   -Gases
   -Salt particles/sodium chloride
   -Smoke Any 2x1 mks

   b) i) -Their height
   -Their shape/form
   -Appearance

   ii) -Cumulonimbus
   -Cumulus
   -Nimbostratus

5. a) V - The sun
   W - The moon

   b)

- The gradual emergence of a ship approaching the shore.

- Circumnavigation of the earth along a straight path leads one to the starting point from the opposite direction.
- The different times during which the sun rises and sets in different parts of the world.
- The appearance of the middle pole to be relatively higher than other poles placed along a straight line on a level ground at equal distances. (curved)
- The circular shape of the earth seen on photographs taken from satellites
- The circular shadow cast by the earth during a lunar eclipse
- The earth is a planet and all planets are sphere. Any 4x1 mks

SECTION B

6. a) i) -35^0 15' to 35^0 25'/ 10'

ii) Map scale 1: $\frac{50{,}000}{100{,}000}$ km

= 0.5 km

Statement scale is 1cm represents o.5 km / ½ km

iii) Just over 2120 m and below 2140m

iv) 10.5 - 11.0 km^2

b) i)

- Scrub
- Woodland
- Scattered trees
- Thicket
- Papyrus/papyrus swamp vegetation Any 3x1 = 3mks

ii) 305^0C ($304^0 - 306^0$) / N 55^0 (55^0- 56^0)

iii) All weather loose surface

iv) Dry weather road

v) Motorable tracks/main track

vi) Foot paths /other tracks.

c)

- There are few settlements/labour lines within the tea estates and forested areas
- To the north and west of Kericho-Lumbwa road, the settlements form a dispersed pattern
- To the north of Tugenon river, there are few or no settlements
- There are nucleated settlements in the mket/shopping centres/labour lines/villages
- Some areas with the steep slopes and river valleys have a few or no settlements
- Kericho town is the main settlement are/forms a large cluster of settlement
- Few settlement in the tea estate.

d)

- The high relief modifies temperatures making the area suitable for the growing of the area suitable for the growing of tea bushes.
- The relatively undulating slopes allow proper drainage of soils making it ideal for tea farming/allows mechanization
- Presence of forests/many permanent rivers show that the area receives high rainfall which is suitable for tea growing.
- The area has fairly dense settlements which indicates availability of labour needed in tea farming.
- The area is well served by all weather roads which are needed for the transportation of tea from the farms to the factory /transportation of labour

Any 3x2=6mks

7. a) Magma is the molten rock material which originates from the interior of earth, cools while below the earths surface (and has large crystals) while lava is the molten rock materials that has reached the surface. (Has solidified and has small crystals. (2mks)

b) E- Dyke
F- Lapolith
G- Sill

c) i) A crater

- Eruption of lava through a central vent causes building up of a

cone.
- The lava in the vent cools and contracts.
- The cool lava withdraws into the vent leaving a shallow depression of the cone
- Gas explosions may blow away surface rocks causing a crater

Examples
Mt Longonot
Menengai
Mt/suswa
Mt Marsabit

ii) A geyser
- Rainwater percolates down through cracks in the rocks.
- The water gets into contacts with hot igneous rocks
- The water gets into contacts with hot igneous rocks
- The water is super heated and gases/steam form
- Pressure builds up in the cracks.
- The pressure causes steam and water to be ejected explosively as jet to the surface intermittently.
- The water and steam are emitted intermittently as pressure level changes.

Example – LakeBogoria

iii) A lava plateau
- It is formed when magma reaches the surface of the earth through a series of vents/fissures
- The lava is extremely fluid/ultra-basic
- The lava spreads evenly over a large area
- The lava cools slowly and solidifies

Example
Yatta plateau
Uasin Gishu plateau
Laikipia plateau

d)
- Volcanic highlands/mountains are sources of rivers which provide water for domestic/agriculture/industrial use.
- Volcanic rocks weather down to form fertile volcanic soils which support agriculture
- Volcanic rocks are important building materials in the construction industry
- Volcanic features are tourist attractions which promote tourism.
- Volcanic mountains/highlands influence formation of relief rainfall which encourages agricultural activities.
- Volcanic highlands influence formation of relief rainfall which encourages agricultural activities
- Volcanic highlands/mountains modify temperatures making them making them attractive to human settlements
- Volcanic features such as steam jets and geysers provide suitable sites for geothermal power generation.

8. a) i) -Lake /swamp
-Melting ice/snow
-Springs
-Surface run off.

ii)

Youthful stages

- Rapids/water fall/cascades
- V-shaped valleys/canyons
- Potholes
- Plunge pools
- Interlocking spurs

Mature stage

- Meanders
- River cliff/bluff
- Wide v shaped valley
- Slip –off- siopes
- Alluvial fans
- Braids

Old stage

- Meanders
- Ox-bow lakes
- Braided channel/isels
- Flood plain
- Levees
- Devees
- Deferred tributaries
- River terraces
- Distributaries/deltas
- Bluffs
- Meanders scar

b) **Traction process**
The large and heavy loads of the river are rolled /dragged along the riaver by the force of the moving water and gravity.

Saltation
Some large fragments that cannot remain suspended in the water are momentarily lifted and dropped by water turbulence. The series of hops move the load down the river.

Suspension
Light insoluble materials such as sand and silt grains are carried and maintained within the water by river turbulence and transported downstream.

Solution process
The soluble minerals /materials are dissolved in river water and carried away

c) i) **Dendritic patterns**
- It develops in areas where rocks have uniform structures.
- The direction of flow is influenced by the slope of the land

- The tributaries converge on the main river forming a shape like that of a tree and its branches.

ii) **Trellis pattern**

- The pattern develops where soft and hard rocks alternate vertically
- The tributaries join the main river at acute angles.
- The consequent streams flow to the opposite direction of the main river
- The main river and its tributaries form a rectilinear pattern.

d) i)

- Observation/digging up the deposits to expose the inner layers
- Collecting samples
- Taking photographs
- Interviewing the people around the river.

ii)

- It enables one to collect first hand information
- It promotes development of practical skills
- It promotes application of acquired knowledge
- One is able to develop skills of data analysis.

9. a) i)

- Due to low temperatures, water vapour freezes and forms snow
- Snow falls and accumulates on the mountain top/higher slopes
- Snow continues pilling and new layers exert pressure on the lower layer
- Lower layers become compressed/compacted as air is expelled from the spaces by show particles
- The compacted layers are ice.

ii)

- Ice caps
- Cirque glaciers

b) i) **Temperature**

- Glaciers move faster in summer/when the temperatures are higher because the ice melts due to the warm conditions whereas in winter/ when temperatures are low, ice movement is slow due to cold conditions.
- The temperature of the bottom of the valley glacier rises with Pressure. Thereby thawing and enabling its movement down slope.

ii) **Width of a glacier channel**

- When the channel is wide ice movement is slow that is because ice spreads out forming a thin layers there is less pressure to cause thawing that would facilitate ice movement/vice versa.

c) i) **A corrie**

- Is a deep rock basin
- Has steep sides
- Is arm-chair in shape/semi circular
- Has a high back wall
- Has a reverse slope on the lower side

ii) **Fiords**

- Has steep walls
- Is a narrow sea inlet
- Is a U-shaped
- Has hanging valleys
- Has deep water shallower seawards/deeper landward

d) i) M- Hanging valley
N-Water valley
P-U-shaped valley / glacial trough

ii)
- A large block of rock stands on the path of oncoming glacier
- The moving ice plucks off/erodes weak rock fragments from the upper side of the rock
- As the ice moves round and over the resistant rock it carries the eroded materials to the lee side
- The lee side does not experience erosion.
- Eroded materials are deposited materials increase on the lee side.
- With time the moving ice smoothens the side of the on coming ice deposited materials increase on the lee side
- The resistant rock is the crag while the materials deposited on the leeward to form the tail.

10. a) i) H-Trough
J-Crest
K-Swash

ii) A backwash is the return flow of water down the beach to the sea after a wave is broken.

b) **Abrasion/corrosion**
- Rock fragments carried by waves are used as a tool to grind against the cliff . As waves break rock fragments carried by the back wash erodes the sea.

Solution/corrosion
- The solvent and chemical action of the sea water dissolves and removes the minerals that are found in the cliff/sea floor especially where there are limestone rocks.

Hydraulic action
- The swash/breaking waves hit against the cliffs shattering the rocks. The breaking waves compress air into the cracks/joints in the cliff face. This widens the cracks and parts of the rocks may break off.

Attrition
- Particles that are carried by waves are constantly colliding against each other and wears them into smaller sizes

c) i) **Gradient of the shore**
A show with a gentle gradient reduces the velocity/speed of the flow of the backwash causing the waves to deposit the load on the shore. Where the shore is steep, the velocity/speed of flow of the backwash will cause the materials to be moved from the shore back into the sea. (There will be little or no deposition)

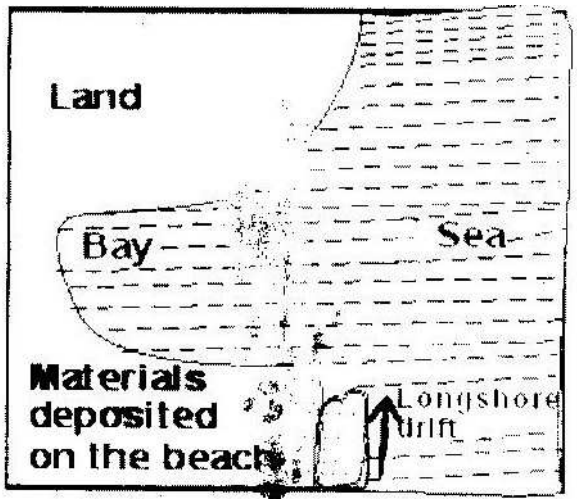
Gentle gradient 2 mks
Steep gradient 2 mks

ii) **Depth of the sea**
Shallow water causes waves to break thus encouraging deposition. Where the sea is deep, there is less deposition because the sea bed is not in contact with the waves carrying deposits.

Shallow water 2 mks

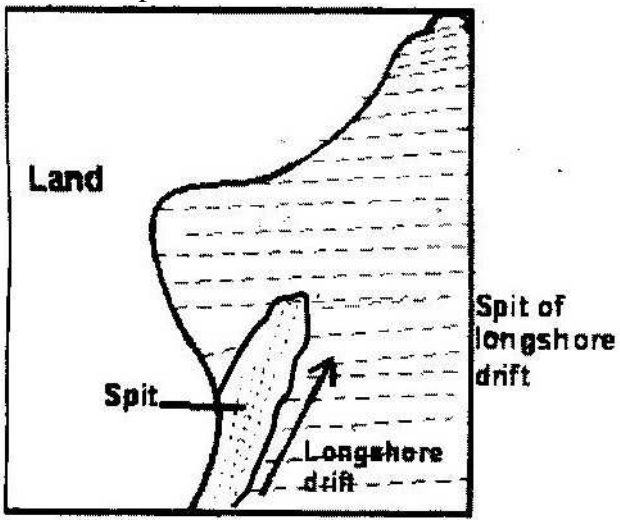
Deep water 2 mks

d) Using well labeled diagrams, describe how a bay bar is formed



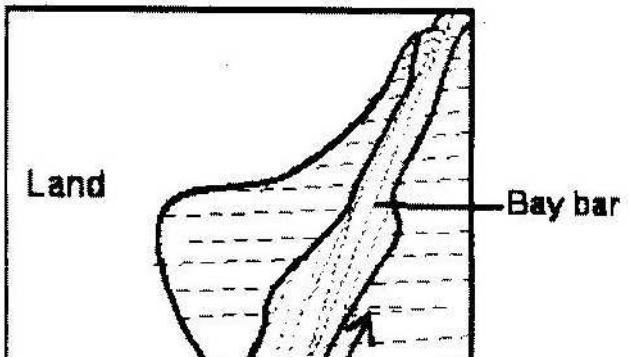
Stage 1

Longshore drift deposits materials at the entrance



Stage 2

A spit forms at the entrance of the bay



Stage 3
The alongshore drift continues to deposit materials and the spit extends towards the other end of the lagoon. Eventually the spit reached the other end thus forming a bay bar. Diagrams 3 mks

Text 3 mks

GEOGRAPHY
K.C.S.E PAPER 1 2009
MARKING SCHEME

SECTION A

1. (a) **Differentiate between the process of formation of plutonic and volcanic rocks**
   - Plutonic rocks form from magma which cool's slowly and solidifies within cracks and chambers in the earth's crust while volcanic rocks form from the lava that cools fast and solidifies onto the surface of the earth.

(b) For each of the following sedimentary rocks, name the resultant rock that forms after metamorphism

(i) Sandstone - Quartzite/ late
(ii) Limestone - Marble
(iii) Clay - Slate/ Schist

2. **Use the diagram below to answer the questions that follows**
(See the diagram in the questions paper)

- Outline the process through which moist winds shown go through to eventually become dry winds
- The moist air which is lighter (forced) ascends) the highland in/ the moist air is subjected to prographic force
- The force ascents leads to the expansion of the air
- The moisture in the air condenses forming clouds
- Descending air is dry wind

Any 5 x 1 = 5 mks

3. (a) **What is line of longitude?**
Line based on

It is the angular distance of a place east or west of the Prime Meridian (0^0) it is an imaginary line which is drawn on a map from Prime Meridian (0^0)

(2 mks)

(b) **What is the local time at Alexandra 30^0E when the local time at Malindi 40^0 is 12.00 noon?**

- The differences in degree of longitude between Alexandra and Malindi is 40^0 - 30^0 = 10^0
- The difference in time between 1^0 longitudes is 4 minutes
- So the total difference in time between the two towns is 10^0 x 4 minutes = 40 minutes.
- Alexandria is west of Malindi so it is behind in time by 40 minutes
- Therefore, the local time at Alexandria is 12.00 – 40 minutes = 11. 20 am

(2 mks)

4. (a) **Outline the steps followed when measuring humidity using a hygrometer**

- Read (and record) Temperature of the West bulb thermometer
- Read (and record) the temperature of dry bulb thermometer
- Calculate the difference in temperature reading of wet and dry thermometers.
- Use the conversation scale o determine the humidity/ interpretation of the temperature differences.

(b) **Give two factors that influence relative humidity**

- Distance from large water bodies/ sea
- Altitude
- Natural vegetation/ forests
- Latitude

- Temperature

Any 2 x 1 = 2 mks

5. **The diagram below shows types of folds. Use it to answer question (a)**
See the diagram on the question paper)

(a) Name the type of folds mked E, F and G

- E - Overfold 225
  F - Recumbent fold
  G - Over thrust fold/ Nape (1 mk)

(b) In which countries are the following fold mountains found

(i) Andes - Chile/ Peru/ Bolivia/ Argentina/ Equador

(ii) Cape Ranges – South Africa

(iii) Alps – Austria/ Switzerland/ Italy/ France

SECTION B

6. Study the map of Belgut 1: 50, 000 (Sheet 117/ 3) provided and answer the following questions.

(a) (i) **Name the three districts crossed by the all- weather road (bound surface) in the north – western part of the map extract**

- Kisumu district
- Homa bay
- Kericho

(ii) Using the marginal information, give the magnetic variation of the area when the map extract was drawn.

(iii) Measure the shortest distance along the loose surface road from the junction at Murumbasi (grid reference 286548) to the school at Chebirbei grid reference 344518). Give your answer in kilometers
0.1 km) 8.4 – 8.6 km

(iv) **What is the approximate height of the papyrus swamp to the north- east of Kabiaranga Farm Institute (grid square 3750).**
Between 1720 and 1780 in above sea level

(b) **Describe the characteristics of the long profile of river Yurith**

- It has two main tributaries, Itare and Kitoi
- River Kitoi flows from the north Eastern direction/ river Itare flows from the south / river Yurith flows westwards.
- The river has many meanders
- The river becomes wider from grid square 3247 just before the bridge
- There are interlocking spurs along the course.
- The river has many small tributaries that form a dendrite/ pattern along the course
- There are rapids/ waterfalls
- Some parts of the long profile have a steep gradient
- There are sand/ mud deposits downstream

- The river is permanent/ premier

(c) **Describe the relief of the area covered by the map**

- The lowest altitude is 1360/ highest altitude is 2020 m
- The land rises from the West to the North East
- the landscape is generally hilly/ has many hills
- There is a main ridge to the East of Sondo River
- There are many interlockings spurs along the river valley
- The landscape is dissected by many river valleys
- There are many, narrow river valleys
- There are numerous steep slopes to the west/ gently slopes to the east

(d) **Citing evidence from the map, explain three factors that favour growing of tea in Belgut area**

- The area experiences cool temperature that favour tea growing due to the high altitude as evidenced by contours that rise above 1700 meters above sea level
- The area receives high rainfall that is adequate for growing tea as evidenced by the presence of forests/ many permanent rivers
- The area has well drained soil suitable for tea growing this is due to the gently sloping, Terrain as indicated by moderately spaced contours
- The area has adequate supply of labour necessary for tea picking evidence by the high density of settlement/ labour lines
- The area has well development transport network for transporting tea leaves to the tea factory evidenced by road and tracts

7. **The diagram below shows a hydrological cycle**

See question paper

(a) (i) **What do the arrows labeled K, L and M on the cycle represents?**

K- Radiation/ half from the sun/ sun's rays/ in solution

L- Percolation/ Underground water

M Evapotraspiration / Evaporation/ water vapour

(ii) **Explain the factors that influence the occurrence of surface- off**

- Amount of water/ nature of rainfall- there should be sufficient rainfall to make the soil saturated in order to allow the excess water to flow on the surface/ intense rainfall accelerates the rate of surface run off be steep 15
- Gradient of the land- The gradient of the slope should be steep to allow flow of water by gravity
- Nature of rocks/ soils- The rocks/ soil should be responsible to allow for limited infiltration and percolation for the excess water to form surface run- off
- Water table/ level of saturation – the water table should be high to reduce infiltration and allows surface run- off

(b) (i) **what is mass wasting?**

- It is the movement of weathered/ rock material down the slope under the influence of gravity

(ii) **Give two processes of slow mass movement**

- Soil creep
- Talus creep/ screen creep
- Solifluction
- Rock creep

(iii) **State two physical conditions that may influence Landslides**

- Steep slopes which allow soil to move down slowly
- Presence of loose soil/ absence of firm rock which means that soils are easily destabilized
- Occurrence of earthquakes which interferes with stability of soils
- Heavy rain facilities movement of material/ down slope.

Any 2 x 1= 2 mks

(c) **Describe the following processes of mass wasting**

(i) **Rock Fall**

- It occurs where rocks are well jointed and with steep slopes. Rocks parts are detached from the steep slopes and fall rapidly at the base of slope/ frequent freeze-thaw action on steep slope/ produces particles which get detached and fall at the base of rock face.

(ii) **Subsidence**

- Subterranean weathering leads to formation of caves/ cavers. Where the roof is too heavy to remain suspended, it collapses vertically.

(iii) **Mud flows**- wet and loose soil materials saturated with water will move down the hill. (As the semi- liquid mud collects more materials it comes rest at the roof of the slope.

(d) **Explain the effect of mass wasting on the following**

(i)	Tourism	Features created through mass wasting are tourist Attractions
(ii)	Soil & Fertility	Mass wasting facilities soil leading to soil Degeneration/ may lead to formation of fertile soil where such soils are deposited.

8. (a) (i) **Name three type of faults**

- Normal fault
- reverse fault
- Tear/ shear fault/ slip/ transform/ wrench/ strike slip
- Thrust fault
- Ant clinical fault

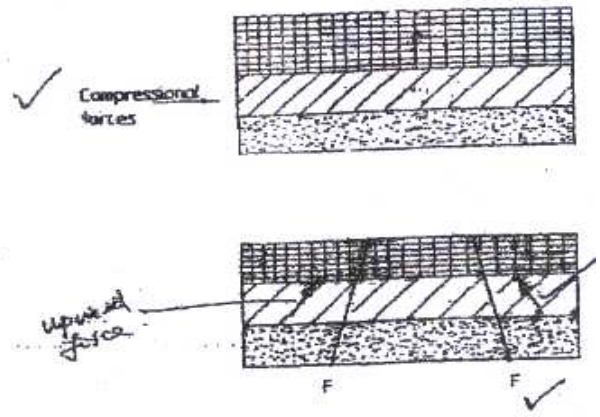
(ii) **Apart from compression forces explain two other processes that may Cause faulting**

- Faulting may be caused by force acting horizontally away from each other which cause tension in the crystal rocks. Due to tensional forces the rocks stretch and fracture causing faults

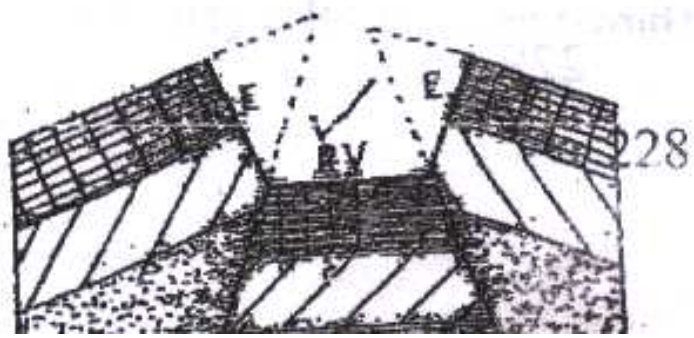
- Faulting may occur where horizontal forces act parallel to each other in the opposite/ same direction resulting in shearing
- Faulting may also occur due to vertical movements which may exert a strain in the rocks making them to fracture.

(b) With the aid of diagrams, describe how compression forces, may have led to the formation of the Great Rift Valley

- Layers of rocks are subjected to compression forces



Two parallel lines of weakness development and these reverse faults



Compression forces may push the outer blocks towards each other the outer ride over the middle block) the middle block sinks/ subside/ may remain stable

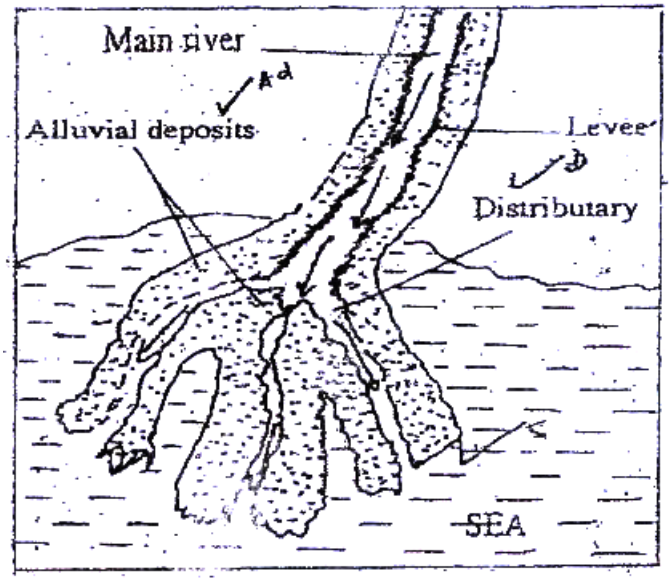
- The sunken middle part forms a depression called a rift valley
- Layer — Diagrams — 4 mks)
- Fault line — explanations — (5 mks)
- Compression
- Upward force
- Rift Valley

(c) **Explain five ways in which faulting is of significance to human activities**

- Faulting leads to formation of features that form beautiful scenery which attract tourists
- Faulting leads to formation of lakes that are important fishing grounds/ tourists sites / mining sites/ provide water for irrigation/ for domestic use/ industrial use.
- Faulting causes displacement of rocks which exposes minerals that are mined
- Faulting may lead to the formation of mountains/ horst which attract rainfall that give rise to rivers which provide water for industrial/ domestic/ agricultural use/ industrial use for production of H.E.P
- Block mountains formed through faulting lead to formation of relief rainfall on the windward side which favours agriculture/ and settlement / forestry
- Subsidence of land as a result of faulting may lead to loss of life and property
- Springs occurring of the foist of fault scarps attract settlements
- Faulting creates deep faults which are passages of stream jets which may be utilized for geothermal power production
- Rivers flowing over fault scarps may form waterfalls
- When faulting occurs across a ridge it may provide a dip which could form a mountain pass where transport and communication lines can be constructed/ may hinder development of transport.

9. (a) (i) **Apart from Bird's foot delta, name two other types of deltas?**
   - Arcuate delta
   - Estuarine delta
   - Cuspate delta

   (ii) **Draw a diagram to show a bird's foot coastal delta**



SHAPE birds foot

(ii) **Describe how a bird's foot delta is formed**

- It forms at river where waves, tides and currents are very week
- Deposition of large amounts of fine sediments occurs at the river mouth
- The deposits block the channel of the river
- The river divides into few distributaries

- Each distributary's continues to deposit its load maintaining levees as it extends into the sea.
- Some distributaries extended further than others creating the shape of a bird's foot

(b) **Explain four factors that influence the development of coasts**

- Climate of an area will determine the growth of coral polyps. Coral coats develop in tropical regions of the world/ fiord coats were formed as a result of ice erosion in areas that experienced very cold climates
- Nature of the coastal rocks will either encourage rapid erosion or reduce the speed of erosion. Hard rocks result in the formation of cliffs while less resistant rocks results in the formation of inlets/ bays
- The gradient of the coast slope of the coast influence the development of coasts steep coasts encourage wave erosion resulting in the formation cliffs and wave cut platforms/ gently sloping coasts because increased deposition resulting in the formation of beaches
- Alignment of the coast in relation to the prevailing winds will either cause wave erosion or deposition
- The rise in the level of the sea results in drowning features along the coast to give rise to new feature/ landforms the fall in the sea level exposes features that were once covered by the water
- Human activities interfere with the natural state and appearance of the coasts
- Nature of waves- where waves are destructive the West is characterized by erosion/ features/ where waves are constructive the coast is characterized by depositional/ features

(c)(i) **Differentiate between a barrier reef and a fringing reef**

- A barrier reef is formed a long distance away from the sore and is separated from the shore by a wide lagoon whereas a fringing reef is closer to the shore and is separated from the shore by a shallow lagoon

(ii) **The diagram below represents some coastal features. Name the features mked P, Q and R**

(See question paper)

P - Blowhole
Q - Cave
R - Cliff

(iii) **State three conditions necessary for the formation of a beach**

- A gently sloping land at the sea shore
- The shore should be shallow
- Strong swash/ constructive waves/ weak backwash/ wave deposition should exceed erosion
- Waves should carry a lot of materials to be deposited

10. **The diagram below represents underground features in a limestone area. Use it to answer question (a)**

See question paper

(a) (i) Name the features mked X, V and W

X - Stalactite

V - Stalagmite

W - Cave

(ii) **Describe how the features mked Y is formed**

- Solution of solution carbonate trickles down slowly through the roof of a cave/ cavern
- Solution droplets hang on the roof of the cave
- Water evaporates and calcium carbonate it is precipitated
- The precipitated calcium carbonate gradually builds downwards over a period of time as the solution continues to drip from the roof. This forms a stalactite
- The solution splashes on the floor and water evaporates
- The calcium carbonate in it precipitates and gradually builds upwards to form a stalagmite.
- Over time, the stalactite and the stalagmite join to form a pillar/ column

(b) (i) **What is an artesian basin**

- It is a saucer – shaped depression consisting of layer of permeable rock lying between two layers of impermeable rocks, with part of permeable rock exposed to the surface along the edges of the basin.

(ii) **Explain three factors which influence the formation of features in limestone areas**

- The surface rock must be thick limestone to allow solubility by rainwater
- The rock should be hard and well jointed to allow water to percolate through the lines of weakness
- The climate should be hot and humid to facilitate chemical reaction/ weathering/ carbonation.
- The water table should far below the surface to allow for the formation of the features

(Any 3 x 2 = 6 mks)

(c) **You are supposed to carry out a field study of an area eroded by water**

(i) Give three reasons why you would need a map of the area of the study

- To show the extent/ delimit the area of the study
- To show the route to be followed during the study
- To show drainage features
- To be able to estimate distances
- To show the general nature of the terrain

(ii) **Name two erosion features you are likely to identify the field study**

- Exposed rocks
- Ridges / clients
- Gullies/ wades/ grikes/ dry river bed
- Earth pillars

(iii) **State three recommendations that you would make from your study to assist the local community to rehabilitated the recorded area**

- Building of gabions
- Constructing of terraces
- Planting trees
- Adapting farming methods that allow conservation of soil. i.e. planting of over crops / mulding/ strip farming.

Any 3 x 1 = 3 mks)

GEOGRAPHY

K.C.S.E PAPER 1 2010

MARKING SCHEME

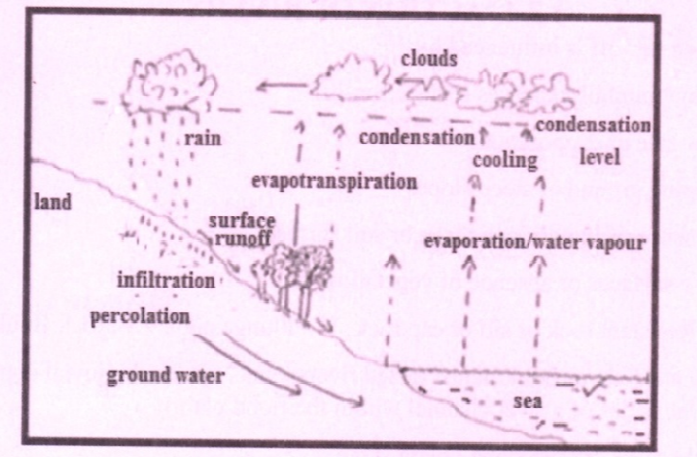
SECTION A

1. Give three components of the solar system.
   - the sun
   - the planets

- Asteroids
- meteors
- comets (Any 3 x 1 = 3 mks)

2. a) Identify two types of high level clouds
- Cirrus
- Cirro-cumulus
- Cirro stratus (any 2 x 1 = 2 mks)

b) Draw a well labelled diagram of a hydrological cycle.



Correctly drawn diagram
Clouds - 1 mk
Rain - 1 mk
Surface run off - 1 mk
Lad/ocean - 1 mk (max = 4 mks)

3. a) Give three causes of earthquake
- Growth low pressure
- Convergence/collision
- Movement of magma within the earth's crust/volcanic eruption (volcanicity)
- folding/faulting
- Isostatic adjustment
- Blasting of rocks/bomb any 3 x 1

b) Name two major earthquake/ones of the world.
- the Circum - Pacific belt
- the Tethyam - Mediterranean belt
- the Great Rift Valley belt
- Mid Atlantic Ocean belt (Any 2 x 1 = 2)

3. a) What is a rock?
- Any naturally formed solid aggregate/a naturally occurring solid material composed of one of minerals.

b) Give three characteristics of sedimentary rocks

- some sedimentary rocks contain fossils.
- The rocks have cleavage/are foliated/have planes
- The rocks horizontal layers/are stratified. (any 3 x 1 = 3 mks)

5. a) The diagram below shows some coastal features.
- Refer to question paper
Name the features P, Q and R
P - Headland
O - Spit
R - Stack (3 x1 = 3 mks)

b) State two conditions necessary for the forestation of a beach.
- Presence of abundant supply of materials to be deposited.
- Presence of a shallow shore/continental shelf.
- A relatively weak long shore current
- A weak backwash/strong wash/constructive wires.
- Gently sloping land at the sea shore. (Any 2 x 1 mk each)

6. Study the map of Homa Bay (1:50,000) sheet 129/2 provided and answer the following question
a) A pipeline is to be laid along the line mked X - Y
i) What is the length of the piping to be used? (Give your answer to the nearest 100m)
7km 100m/7100m
ii) calculate the bearing of point Y from point X
$225^0 \pm 1^0$ (224^0 - 210^0)

iii) Calculate the area of the part of Lake Victoria shown on the map excluding the marshy sections. Give your answer in square kilometres
$15km^2 + 1km^2$ (2 mks)

b) The rectangle below represents the area in the map extract bounded by Eastings 54 and 60 and Northings 25 and 40. Identify and name the features mked J, K, L and M.
J - Lala Dam
K - Magare School
L - Dry weather road
M - forest (4 mks)

c) i) Explain three factors which have influenced the distribution of settlement in the area covered by the map.
- There are mean settlements in the Eastern part of the area because the land is gently slopping.
- There are clusters of settlements where there are mkets/urban centres such as Homa Bay because there are social amenities and economic activities that attract settlements.
- The hilly areas around Ruri had few or no settlements because the lad is steep/
- There are no settlements to the south west because the area is set aside as a national reserve and it is forested.
- Shores of Lake Victoria have no settlement because they are poorly drained/marshy
- Homa Bay, Municipality area is the most densely settled because it has (Any 3 x 2)

ii) Citing evidence from the map, give two agricultural activities carried out in the area covered by the map.

- cereal farming - flour mills/maize control store
- cotton growing - cotton experimental farm/ginnery
- sisal farming - sisal factory (3 mks)

d) Describe the drainage of the area covered by the map.
- the main drainage feature is Lake Victoria
- the main river is River a keen/run off they drain into L. Victoria
- there are many short streams originating from Ruri Hills
- Some rivers for parallel pattern
- many streams disappear
- River Akech and its tributaries form dendtritic pattern
- The area has dams/water holes (Any 5 x 1 = 5 mks)

7. The map below shows some vegetation regions of the world. Use it to answer questions (a) and (b)
Refer to question paper

a) i) name the temperate grasslands mked D, E and F.
D - Prairies
E - Steppes
F - Downs (3 mks)

ii) Describe the characteristics of the natural vegetation found in the shaded area mked G.
- the forests consists of nixed variety of tree species.
- the trees shed their leaves at different times of the year/forests are evergreen.
- the trees are tall/with the trunks
- the trees have broad leaves/drip tipped leaves.
- the trees take long to manure
- the tree species are mainly hardwood
- the trees grow close to each other
- the forests have little or no undergrowth.
- the trees has numerous lianas/climbing plants/epiphytes.
- some of the trees have buttress roots.
- the forests have canopies
- the forest crowns form three distinct layers. (9 mks)

b) Explain how climate has influenced the existence of the following types of vegetation shown on the map.
i) Desert vegetation
- the area has scarce vegetation because it receives low rainfall/experience droughts.
- the long periods of drought causes seeds to exist in a dormant state only to germinate during the short rains,
- the higher rainfall along the margins of the region lead to more luxuriant vegetation in the areas.
- strong winds may uproot some of the plants leaving the ground bare/strong winds disperse seeds from one part of the region to another leading to establishment of plant species far and wide in the region.

Any 2 x 2 = 4 mks

ii) Coniferous forests
- the long cold winter and short summers make trees grow at a slow rate.
- Due to long cold winters and short summers the vegetation types consists of a limited variety of species of plants.
- The low rainfall received in the area/permanently frozen subsoil makes the trees develop shallow roots that spread widely to utilize the moisture in the top soil.
- precipitation in the region is mainly in form of snow. (4 x 2 = 8 mks)

c) You are required to carry out a field stuffy of the natural vegetation within your local environment.

i) apart from identifying the different types of plants, state three other activities you would carry out during the field study.
- Collecting samples of plants
- measuring distances
- estimating heights of plants
- drawing sketches/transacts
- recording/taking notes
- taking photographs of plants
- counting plants (Any 3 x 1 = 3 mks)

ii) How would you identify the different types of plants?
- by their appearance
- by their colour
- by their leaf size/pattern/type
- by their age
- by the texture of the leaves
- by their flowers (any 3 x 1 = 3mks)

iii) State two ways in which the information collected during the field study would be useful to the local community.
- It can be used to plan agricultural activities
- It can be used to help in the conservation of land/wildlife/soil/water
- It can be used to help in the rationalization of land use.
- It can be used for future reference.
- It can be used to determine the economic uses of plants/herbal medicine (Any 3 mks)

8. a) Describe plucking as a process in glacial erosion.
- pressure from the overlying mass of ice cause freeze thaw action
- melting water fills the cracks/joints in the bed rock.
- as water freezes it exerts pressure on the cracks enlarging them.
- the enlarged cracks lead to disintegration of the rock.
-

b) Explain three conditions that lead to glacial deposition.
- rising temperature lead to melting of ice thereby causing the ice to deposit its loads.
- change of gradient to relatively flat surface will reduce the velocity of the glacial.
- movement which will subsequently lead to deposition of glacial materials.
- alternating warm and cold periods lead to seasonal melting of ice which allows materials embedded in the ice to be released and deposited.
- Stagnation/accumulation of glacier leads to pressure at the base of the glacier which in turn leads to melting of ice at the base.

- The melt water then carries and deposits materials underneath which loosens the heavy materials beneath the mass of ice and subsequently deposited.
Condition 1 mk
Explanation 1 mk (any 3 x 2 = 6 mks)

c) The diagram below shows features resulting from glacial on a lowland area.
Refer to question paper

i) Name the features mked X, Y and Z.
X - Drumlins
Y - A river/melt water
Z - kettle lake/lake (3 mks)

ii) Describe how terminal moraine is formed
- moving ice carries solid materials
- moving ice stagnates
- melting ice releases its load
- gradually the load piles into a ridge
- over time the ridge forms a horse shoes shape/block of solid materials called terminal moraine.
(4 mks)

d) Explain four positive effects of glaciation in lowland areas
- Glacial till provides fertile soils which are suitable for arable farming.
- Ice sheets in their scouring effect reduce the surface which may expose the minerals making them easy to extract.
- Out wash plains comprise of sand and gravel which are used as building materials.
- Glacial lakes found in lowland areas can be exploited for various economic uses such as fishing transportation.
- Glaciation forms features such as drumbing eskers which are tourists attractions.
- Glaciated lowlands are generally flat and ideal for establishment of settlements/development of transportation network. (8 mks)

9. a) Differentiate between river rejuvenation and river capture.
- River rejuvenation is the renewal of the rivers erosive activity while river capture part of the river with more than that of the neighbouring river. (2 mks)

b) Give three features resulting from
i) river rejuvenation
- knick point/waterfall
- river terraces
- incensed meanders
- river gorges/rejuvenation gorges
- valley within a valley
Aberdare meanders

ii) River capture
- wind gap/dry river valley
- elbow of capture
- pirate stream
- beheaded stream/misfit/captured river (3 mks)

c) Explain the four ways through which a river transports its loads.
- The fine particles such as silt are carried in suspension because they are light and can be maintained within the turbulence of the water/some of the light materials float on the surface of the water.
- The fairly heavy particles/pebbles are lifted and bounce over short distances by the turbulence of the water. This process is known as siltation/hydraulic lift.
- The large and heavy particles are slide along the river bed. The process is known as traction/welling.
- Soluble materials are dissolved in water and carried in form of solution.
W - L
C - 4 (8 mks)

d) You are planning to carry out a field study on the lower course of a river.
i) - give three reasons why you would require a route map.
- to help identify the direction to flow.
- to help prepare a work schedule
- to help identify location of features for study
- to help estimate distances to be covered
- to help estimate the time the field study is likely to take. (3 mks)

ii) State three characteristics of a river at the old stage that you are likely to observe during the field study.
- the river flowing at a low speed
- the river carrying silt in suspension/the water is brown
- the river braids as a vent.
- the river meandering in the flood plain
- Distributions
- Dispersal to form
iii) Give three follow up activities you would be involved in after the field study.
- Reading more on the topic.
- Displaying photographs/items collected
- Asking/answering questions
- Writing reports
- Discussing with the rest of the class
- Analyzing/assessing the information collected against the hypothesis. (Any 3 x 1 = 3 mks)

The diagram below represents a well developed soil profile. Use it to answer question (a)
Refer to question paper
a) i) Describe the characteristics of horizon B
- it is the accumulation zone for leached minerals from horizon A.
- the soil texture is clay in nature
- the zone sometimes forms the hard pan/murram/lateric duri crust. (Any 3 x 1 = 3 mks)
ii) Apart from humus, name three other components of soil air/soil
- water/soil water
- rock particles/weathered materials
- living organisms (any 3 x 1= 3)
iii) state three ways in which humus contributes to the quality of soil
- it helps improve soil texture
- it provides essential minerals to the soils from the decomposed plant matter/humification and nitrification.

- it enables soil to retain moisture
- it facilitates aeration of the soil
- humus in a source of food for micro-organisms (3 mks)

b) i) Differentiate between soil structure and soil texture
- soil structure is the way the individual soil particles are arranged into aggregate compound particles while soil texture is the degree of fineness or coarseness of the soil particles.
(2 mks)

ii) Explain how the following factors influence soil formation
- Topography
valley bottoms encourage formation of deep fertile due to depositional/accumulation of weathered materials.
- steep slopes encourage of the top soil thus slowing down formation of soil/they have thin soil/have poorly developed soils.
formation (Any 3 x 2)

Time
- where soil formation processes takes a short duration the soils are generally immature/where the process has taken a long period of time soils are generally well developed/mature.
- Young soils retain the characteristics of the parent rock because they have not been exposed to the factors that may cause change/mature soils may not display the characteristics of the parent rock. (Any 2 x 1 = 2 mks)

c) Explain how the following farming practices may lead to the loss of soil fertility
i) Overgrazing
It leads to removal of vegetation cover thereby imposing soil to agents of erosion.(2 mks)
ii) Frequent ploughing
- this weakens soil structure making it easy for agents of soil erosion to carry it away.
- It increases oxidation which results in loss of organic matter. Any 2 x 1 = 2 mks

iii) continuous irrigation
It causes leaching of soil nutrients making the top soil deficient of soluble minerals/causes salinity (2 mks)

GEOGRAPHY
K.C.S.E PAPER 1 2011
MARKING SCHEME

SECTION A

1. a) Name the parts of the earth's surface mked J and K
J- North pole
K-South pole

(b) Give<u>two</u> reasons why the intensity of the isolation Is higher at M than at N

-There is a higher concentration of heating at M than at N because the surface area at M is small than at N.
- The angle of incidence of the sun's rays at M is higher than at N hence the variation in intensity
- At N the sun's rays travel over a longer distance than atMthus losing the heat resulting to low intensity

2 (a) weathering is the breaking down /disintegration and decomposition of rocks at or near the Earth 's surface by physical or chemical procces.

(b) climate
Nature of the rock
Topography
Living organisms
Human activities
Time

3 (a)
P - crater
Q - lava layers
R - dyke

(b) - pressure is reduced causing the magma from the interior of the earth to fail to reach the volcano.
-The conelet is the parasitic cone
- form a conlet on the side of the composite volcano
- the successive outputting of magma through the side vent build alternate layers of ash and lava

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

(b) - it lowers temperature of adjacent areas
- it may increase rainfall
- it may increase relative humidity

- it moderates diunal range of temperature
- it may lead to convectional rainfall

5. (a) E - traction / surface creep
F - saltation
G - suspension

(b) - rock pedestals
- zeugens
- yardangs
- ventifacts/elnkanters
- mushroom blocks

6.

(a) (i) latitude $-0^{0}00$ and
Longitude -37^{0} 45 E

(ii) - contours
- Trigonometrical stations
- Depression symbols

(iii) relief feature found at the top of kirui hill
Depression

(iv)
- Medical services
- Educational services
- Commercial Services
- Religiousservices
- Communication
- transportation

(b) (i) 7.0 + 0.1
-
6.9 -7.1

(ii)
- The rugged relief which may necessitate road cuttings many_road bend..
- Many rivers/river Valleys' may leadto the construction of many bridge/culverts.
- The high density of settlement may lead to high cost of compensation
- The presence of Rurie swamp/swamps may lead to detouri ng of roads/tracks.

(c) - the presence of scrub and scarttered trees show that there is natural pasture for cattle
- Sources of many rivers show that there is adequate water for cattle
-The area has high altitude which provides cool condition suitable for cattle
- the many cattle dips for treatment of cattle show that there is access to veterinary services .
- dense settlements to provide mket of cattle
- availability of extension service to the farmers as shown by farmers training center

d)

- The main drainage feature are rivers.
- The other drainage features are lakes and seasonal swamps.
- There is a high density of/many rivers in the area.
- The rivers are permanent.
- Most rivers originate from forest
- Most rivers from the forest flow Eastwards.
- Most rivers form a dentritic pattern,
- The main rivers, are Kithinu and Thingithu.
- Most rivers are in the youthful stage.
- Some, rivers are bending

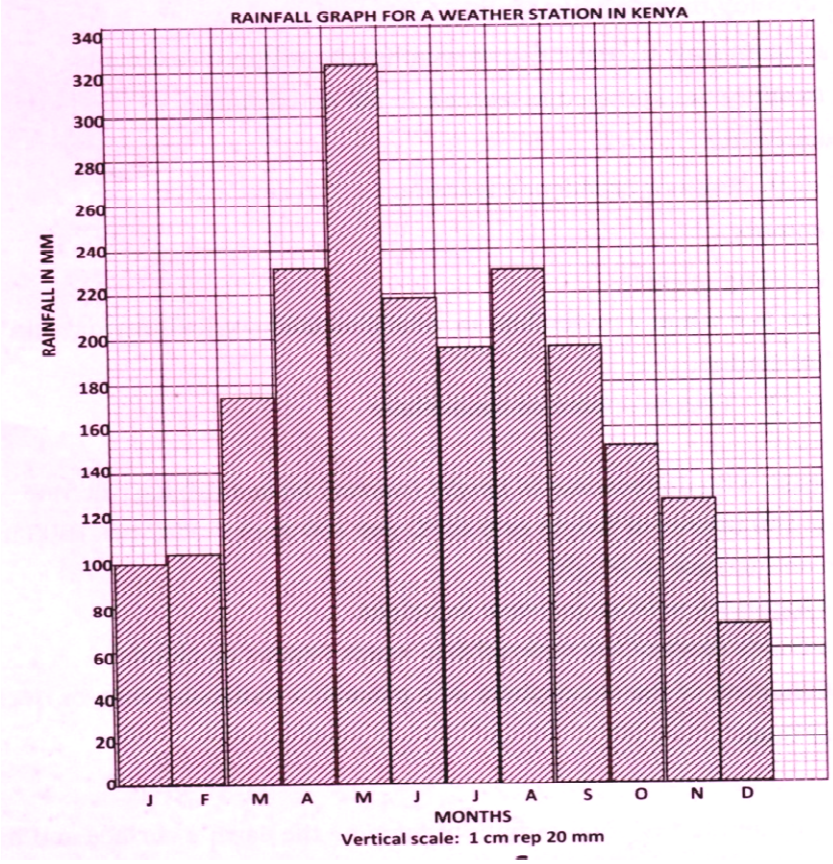
7(a) (i) Their should be away from buildings/trees
The ground should be free from flooding
The area should have a wide view / open space
The area should be secure.
The ground should be gently sloping

(ii)

- it enables farmers to plan their farming
- It help s people to choose the clothing for the day
- It influences design of houses
- It guides in the timing of sporting/tourist activities
- It helps in averting natural disaster. related to weather
- It guides in landing and taking off of aircrafts

(b) (i) the mean -16.1^0 C/ 16.075^0C/ 16.08^0C
(ii) annual range temperature -2.1^0C

NB: Not drawn to scale



C(ii) - The climate conditions are generally cool
- The station receives high rainfallI/2125mm;
- The lowest rainfall *(71 mm)* is received in December/the highest rainfall (323 *mm)* is received in May
- The temperature ranges from *15.0^0.to* 17.1 ^{0} C in March/April /''The annual range of temperature is small /2.1 ^{0} *C.*
- The area receives rainfall throughout the year .There is no dry month.

d(i) - Observation
- Interviewing
- Reading from secondary sources
- Administering questionaries
- Taking measurements (rainfall

(ii) - It enables students to collect fast hand information .
- It helps students to develop manupurative skills
- it enables students to learn how to use weather recording instruments
- it enables students to apply the knowledge learned in the classroom
- it makes leaning more interesting

8 (a) P- Andes
Q- Appalachian

R- Atlas
S - Himalayas

b(i) synclinal valleys
rolling plains
ridges
intermontane basins
intermontane plateaus

(ii)
- Extensive shallow depression s called geosynclines develop on the earth's surface.,
- Prolonged and extensive erosion occurs on the surrounding higher grounds
- Sediments are deposited in the geosynclines forming thick layers
-The weight of sediments causes subsidence of the geosynclines leading ro accu mulation of more sediments to great thicknesses,
- Further subsidence of the g ecosyncli e triggers off compressional forces which cause The sediments to fold
- The folded layers of sediments in die geosyncline are thrust upwards to form fold Mountains

(c)
* fold mountains are sources of rivers that provide water for generation of H.E.P / domestic use/irrigation /industrial use.
* Fold mountains are often forested and provide timber which is used in the building" and construction industry/medicinal/aesthetic/wildlife habitat.
* Some fold mountains have exposed valuable minerals deposit which are mined
* Fold mountains are tourist attractions /snow covered slopes encourage sporting activities thus earning countries foreign exchange.
* The wind ward slopes of fold mountains receive heavy precipitation which enhances agricultural activities //
* The rugged nature of some fold mountain landscapes hinder human sefllemeAfagii-cultural activities.
* The leeward slope of some fold mountain create rain shadow effect which result into aridity discouraging crop farming
* Some fold mountains may act as barrier to transport and communication make the construction of transport and communication lines difficult / expensive

9. (a) (i) Tides are the periodic rise and fall in the level of ocean as a result of the gravitational attraction of the Sun and moon

(ii) differences in ocean water density /salinity
Differences in ocean water temperature
Winds blowing over the ocean
Shape of coastal land mass
Eath's rotation

(iii)

Benguela
Guinea
Cannary

(b)(i)

- The coasts have broad shallow indentation estuaries
- The coasts have several creeks
- The coast shave extensive marshes/mudflats exposed
- broad continental shelf

(ii) - The duration exposure of the coast to wave erosion- The longer the exposure to coastal waves, the higher the rate of erosion.
- The degree of exposure of the coast to wave erosion. The exposed coasts are eroded, more than the sheltered coast hence reducing the rate of erosion .
- The nature / supply of material .Heavy materials / have a higher erosive power than fine materials
- The nature / structure of the coastal rock .A coast made up of soft rocks wears away easily when subjected to sea waves / when rocks are well jointed

(c) - Waves attack both sides of a head land at right angle
- The waves erode through abrasion and hydrauric actions forming waves on both sides of the headland
- Continued wave erosion and weathering leads to elaption of the waves to the headland
- The isolated heahland is the stack
- The roof of the arch collapses leading to isolation of the part of the headland on the seaward side

10.(a) (i) depression

(ii)

challa
paradise
simbi
sonanchi
crater on central island in l. Turkana

(b)(i) corrie lake

- Snow accumulates in a depression on the mountain side
-Snow gets compacted into ice forming a cirque graciers
- Frost action /alternate freez –thaw action enlarge the hollow
-Plucking process sleepens the back wall
-Eventually a deep arm – chair shaped depression snow as corie is formed
- When the corrie fills up with melt water it forms a corrie lake

(ii) oasis
- A pre existing depression formed through faulting or otherwise is exposed to wind erosion
-Wind eddies remove un consolidated materials through deflation
-Futher deflation leads to depression reaching the water table
-Water oozes out of the ground and collects into the depression to form a lake known as an oasis

(iii) lagoon
-Sand / single are deposited along indented / irregular coast
-The deposits accumulate forming a spit
-The continued deposition elongate the spit eventually blocking the mouth of of the bay forming a bay bar
- The bay bar separates part of the sea water from the open sea
- The encloses sea water is the lagoon

(c) (i) They lack outlets to the sea
- Some have salt bearing rocks on the lake bend
-High temperature in the surrounding area lead to high evaporation
-Heavy deposition of mineral salts into the lakes by the surface run off
- Underground seepage of water that is rich in mineral salts

(ii) deforestation
- It exposes soil which is eroded and carried into the lake causing siltation
- It destroys catchment areas which reduces water fed into the lakes

Industrialization

-Establishment of industries had led to disposal of waste /pollution / contamination of lakes
-Establishment of industries had led to increased water use which has lowered water levels

GEOGRAPHY
K.C.S.E PAPER 1 2012
MARKING SCHEME

1 a) The relationship between Geography and Mathematics?
- Mathematics principles/formulae are used in Geography to calculate distance/area/ population density.
- Geography information can be analysed / presented accurately through the application of mathematical techniques.
- Geographical concepts are applied in calculating direction /bearing in mathematics

(b) **State <u>four reasons</u> why it is important to study Geography.**
- It helps to develop skills.
- It enables learners to understand/appreciate different environmental influences.
- It encourages international awareness/co-operation.
- It helps learners to appreciate important social values.
- It promotes positive attitudes towards protection/ of resources.
- It leads to development of career opportunities.
- it helps learners to manage time properly
- it enables learners to explain the origin and formation of the earth and the landforms.

2. (a) Name the two layers, of discontinuity that make up the interior structure of the earth. 2x1=2 mks
-mohorovicic/moho/mohor
- Gutenburg

(b) State three characteristics of the outer core in the interior structure of the earth.
-outer core is composed of molten rock material .
- it is made up of iron and nickel
- it is estimated to be about 2100km to 2890km thick.
- it has temperatures ranging from 3700°C to 5000°C.
- it has an average density of 10.0gm/cc to I2/3gm/cc.

Any first 3x1

3. (a) **Name two forms of precipitation that commonly occur in Kenya.**
-rain.
-hail.
- dew.
- fog/mist.

(b)**What is a Stevensons screen?**
It is a white wooden box in which meteorological instruments are kept at a weather station.
(2 mks)

4.Identify two causes of earth movement.
- magma movement within the crust.
- gravitational pull/ gravitative pressure
- convectional currents in the mantle.
- isostatic adjustment. any 2 x 1-2 mks

(b) Identify-

(i) the angle **mked J.**

- Hade.

(ii) **the features mked.**

-K- tilt block.

- L - fault scarp /escarpment.

5. (a)Identify two sources of water found in a lake.

- rainwater;
- rivers;
- underground water;
- glacial melt waters.

(b)Give three characteristics of lakes formed due to faulting.

- most are narrow;
-most are steep-sided; ,
-most are deep;
- most of them are salty;
- most of them are long**.**

Any1st3x 1

6. Study the map of Kitale 1:50,000 (sheet 75/3) provided and answer the following questions.

(a) (i) identify two human made features found at the grid square 2320.

- bridge/me call's bridge.
- All weather road loose surface. 2x1=2 mks

(ii) **What is the altitude of the highest point in the area covered by the map?**

2362 metres.

(iii) Give three types of natural vegetation found in the area covered by the map.

- forest
- scrub
- woodland
- scattered trees
- riverine trees ,
-papyrus vegetation
- thickets any 3 x 1 = 3 mks

(b) (i) What is the bearing of the Air Photo Principal Point at gridsquare 3426 from the air photo principal point at gridsquare 2931?

132° (131-133) (2 mks)

(ii) Measure the distance of the dry weather road (C640) from the junction at point M (345142) to the junction at point N (416201). Give your answer in kilometres.

12.1km ± 0.1 (12.0-12.2) (2 mks)

(c) (i) Using a scale of 1cm to represent 40 metres, draw a cross-section from grid reference 410180 to grid reference 500180.

(ii) On the cross-section mk and name the following:

- A dry weather road.
- River Kaptarit.
- A ridge. (3 x 1 mks)

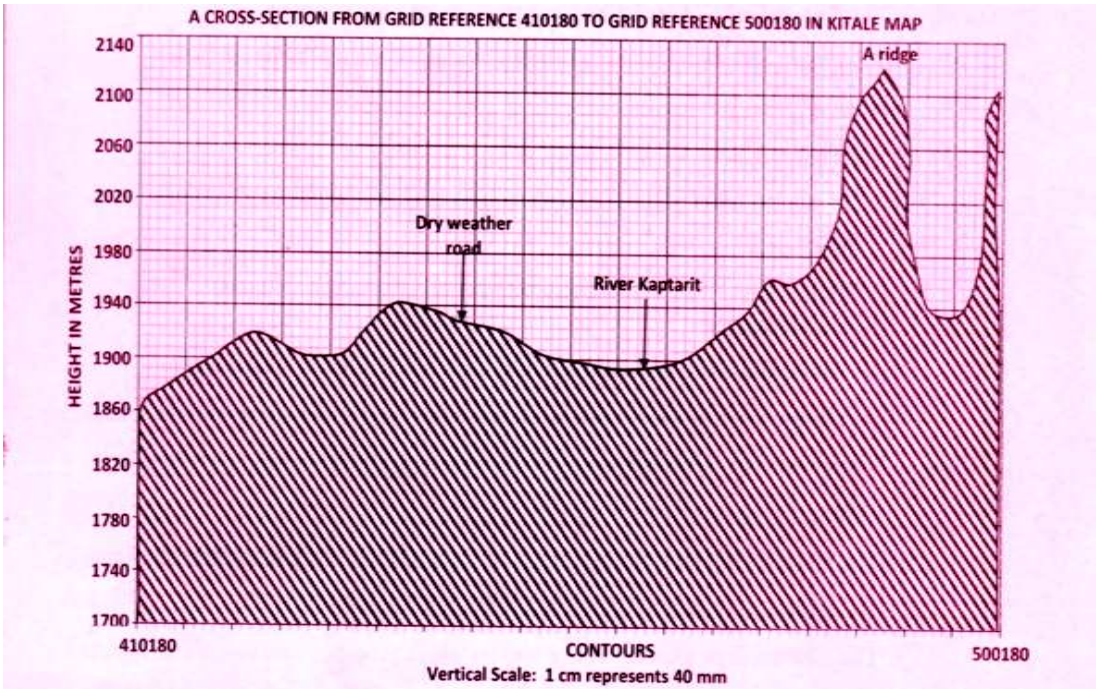
(iii) Calculate the vertical exaggeration (VE) **of the section.**

$$VE = \frac{VS}{HS}$$

$$VE = \frac{1}{4000} \div \frac{1}{50,000}$$

$$= \frac{1 \times 50,000}{4000 \quad 1}$$

$$= 12\frac{1}{2} / 12.5$$



Citing evidence irons **the map, identify** five **social** services offered in **Kitale Municipality.**

Service	**Evidence**
Health/medical services	Presence of hospital
Recreational services	Sports club/KitaJe Club/Golf Course
Religious services	Church
security services	police station
Housing	Built-up areas/huts
Water supply	Water tower/tank

Burial services Cemetery

5 x 1 (5 mks)

7. (i)What is a mineral?

Mineral is an inorganic substance with a definite chemical composition at/ beneath the surface of the earth /a solid inorganic substance occurring naturally

ii) Describe the following characteristics of minerals.

- **Lustre** - minerals differ in their brightness depending on the nature of their reflective surf aces (Smooth surfaces are shiny whereas rough surfaces are dull)

- **Colour** - different minerals display different colours. (Minerals that have iron/magnesium have dark colours/ (2-mks)

Density - minerals have different Weight per unit volume of water.

(b), (i) Name <u>two examples</u> of extrusive igneous rocks.

-Basalt	- Rhyolite	- tetra
- Pumice -	- obsidian	-phonolites
- Tuff	- Andesite	- Trachytes

(ii) Describe three ways in which sedimentary rocks are formed.

Mechanically formed sedimentary rocks - rock fragments are transported by wind/water/ice They are deposited in layers. Over a long period of time, they are compacted into a hard rock?

Organically formed sedimentary rocks - remains of plants/animals are deposited in layers. Over a long period of time, the remains are compacted forming a hard rock.

Chemically formed sedimentary rocks - dissolved minerals are transported into water bodies They are then precipitates /evaporates over a long Period ; time, the precipitates/evaporites are then compacted to form a hard rock .

3 x 1 = 3 mks

c). Explain the significance of rocks to the economy of Kenya under the following:

(i) **Tourism:** Some rocks form unique features that attract tourists earning the country foreign exchange/income.

(ii) **Energy**: Some sedimentary rocks contains fossils fuels which are sources of energy for domestic/industrial use

(iii) **Water:** Some rocks act as storage for water which Can be supplied for domestic / industrial / agricultural use.

8.(a) **Explain the following processes of weathering**:

(i) **Hydration**: In hydration certain rock minerals absorb water thus expanding this causes internal stress in the rock and it eventually disintegrates.

(ii) **Oxidation** :takes place in rocks that contain iron .
The iron combines with oxygen forming iron oxides
Such rocks change colour and crumble easily

(iii) Frost action

- In temperate/high mountain areas, water may occupy cracks in the rocks during the day.
-At nigh the temperatures drop below freezing point causing the water to freeze and expand.
-This is alternate freeze-thaw action weakens the rock causing it to disintegrate.

(3 mks)

(b)Describe how an exfoliation dome is formed.

- In arid/semi and areas, there is large diurnal ranges of temperature.
- During the day, a homogenous rock, intensely heated/at night the rock looses heat rapidly.
- The differential heating causes the outer layer to expand/contract faster than the inner layer. ∨
- When this expansion and contraction takes place repeatedly, stress develops in the outer layer of rocks. Cracks appear on the surface layer.
- Eventually, the **outer** layer peels off .
-The peeling off leaves behind a rounded mass of rock known as exfoliation dome.

any 6x1=6 mks

(c) **Explain three physical factors that enhance movement** of materials along a slope **due to gravity.**

(i) Nature of materials

- Heavy and large materials move faster on a slope as they are more likely to be overcome by gravity/thinly bedded layers have a tendency to move faster.

ii) Angle of slope

- The steeper the slope, the faster the rate of movement/where rocks are dipping steeply, movement is faster.

iii)Climatic factors/amount of water.

- The more saturated the rock/soil materials is, the more likely it is to move as water adds weight and lubricates/alternate freezing and thawing encourages movement.
- Bare surfaces are more likely to experience mass wasting because there is no vegetation to bind the materials together

(iy) **Earth movements.**

- Earthquakes/volcanic eruptions/isostatic adjustments cause vibrations which may trigger widespread movement of weathered rock materials

d)(i) **Give** two **processes, of** rapid mass **movement.**

- landslides.
-mudslides/mudflow
- eathflows/ eathslides

(ii) State four indicators of occurrence of soil creep in an area.

- Telephone/fence poles that are inclined down a slope/bent tree trunks.
-Accumulated soil at the foot of a slope/behind obstacles such as walls/on roads/railways
- Existence of bare rock/exposed upper slope.
- Presence of a ribbed/stepped pattern across the slope.
- Presence of dipped rock strata in the direction of the slope.
- presence of overhanging banks above roads/rivers.
- presence of a slope retreat

9.a)(i) Outline two factors that influence the development of drainage patterns.

- Direction of the slope of the land.
- Difference in rock resistance /hardness.
- The arrangement of rock layers/rock structure 2 mks

(ii) **Outline five characteristics of a river in its youthful stage.**

- the river has a steep river gradient.
- the river **channel** is narrow.
- the river has deep/steep-sided/V-shaped valley
- the river flows at a high speed/high stream velocity.
- the vertical erosion/down cutting is dorminant.
- the river channel **is generally** winding
- Erosional featuresare common rapids/waterfalls/cataracts/cascades/ interlocking spurs/potholes/ plunge pools/
- the type of flow is torrential.
- the river has a small load
- the river has a small volume of water

b) Describe the following processes of river erosion.

i)Attrition: As rock materials are transported downstream, they constantly collide against each other.

The materials gradually wear down/reduce in sizes

Corrasion : As solid rock materials are transported downstream, they are hurledagainst the banks and draped along the river bed

The rock materials chip off pieces of rock from the channel and the river bed,

Eddy currents rotate pieces of rock around the hollows breaking/ grinding the river bed.

c)Explajn three negative effects of rivers to the human environment.

-When rivers flood, they destroy a lot of property/crops lead to loss of human life.
- Wide/deep rivers are a barrier to transport especially where bridges have not been constructed.
- River water can be a medium of spreading water-born diseases, since flood waters may spread chemicals from farms/human waste which contaminates sources of water
- Some rivers are habitat to dangerous animals which may attack human beings/destroy crops.

(d) Your class is **planning to** carry out **a field study of a river in *its* old stage,**

(i) State **three reasons why it would be necessary to pre-visit the area of study.**

- It helps to draw up objectives/hypothesis for the study,
- It helps to prepare a route map.
- it helps to design a working schedule.
- it helps to identify the probable problems/how to solve problems.
- it helps to asses the suitability of the study area

(ii) State three activities you would carry out to determine why deposition occurs at this stage.

- Measuring of gradient.
- Finding out the nature of the load.

- Finding out the amount of the load.
- Establishing the velocity of the river.
- Observing obstacles in the stream channel/distributaries.
- Measuring of the width of the river. any 3x1=3 mks

10.(a) (i) **Define the term soil.**

It is a naturallyoccurring thin layer of loose/unconsolidated materials which , overlies the crustal rocks and on which plants grow

(ii) Give two factors that determine soil leaching?

- nature of soil/solubility of minerals.
-amount of rainfall
- nature of the slope. any 2x1=2 mks

(b) Explain how the following factors influence soil formation.

(i) Parent rock

The nature of rock influences the rate of weathering in that soft rock weather hard rock are resistant and weather slowly.

The parent rock determines the soil texture in that large/coarse grained rocks produce large/coarse grained soils.

The type of minerals in the parent rock are transferred to the soil during formation.

any 2x2 = *4* mks

(ii) Biotic factors

- Micro organisms in the soil assist in plant/animal decay to form humus.
- The micro organisms mix and aerate the soils
- The roots of plants, penetrate the soil enabling it to become porous.

(c) **(i) state three characteristics of desert soils**

- The soils contain little of no humus.
- the soil are of sandy/stony texture.
- the soils are saline/contains a lot of salts/high lime content.
- the soils lack moisture.
- the soils may be light colored.

(ii) Give two economic uses of soil.

- It is used as raw material in industry/pottery/ glass making/ brick making.
- Soils support agriculture/development of forestry.
- Some soils contain valuable minerals.
- some soils have medicinal value./are food
-it is used in building/construction

(d) You are supposed to carry out a field study of an eroded area.

(i) **What information would you collect through observation that would indicate that the area is severely eroded?**

-gullies/deep trenches
- lack of or little vegetation.
- little/absence of topsoil/thin soils
- exposed plant roots. any 2 x 1

(ii) Identify three **methods**you **would use to record the observations.**

- photograph taking
- video recording.
- note taking.
- field sketching.

(iii) **State three recommendations you would give to control soil erosion.**

- construction of gabions.
- construction of **check** dams.
- afforestation/reafforestation.
- filling in the gullies.
- construction of drainagetrenches. / any 3 x 1=3 mks

GEOGRAPHY

K.C.S.E PAPER 1 2013

MARKING SCHEME

1.

(a) (i)

P - Mesosphere (1 mk)

Q - Thermosphere/lonosphere (1 mk)

(ii) R - Tropopause (1 mk)

(b) - Temperatures decrease with an increase in height/normal lapse rate / the rate decrease is 1°C for 160 metres of height/0.65^{0}C per 100 m/6.5 per 1000m
- Pressure falls with an increase in height.
- The speed of wind increases with an increase in height.
- It contains most of the atmospheric water vapour/clouds.

Any 2 x 1 = 2 mks

2. **five** factors that influence mass wasting.
- Seismic/earth quake shocks lead to the movement of materials down slope.
- Increased overburden/deeply weathered thick/thinnly bedded rock materials are likely to move down slope.
- Increase in moisture lubricates the soil.
- Lack of vegetation reduces the ability of the soil to hold together.
- Under cutting of the slope by excavation/mining/quarrying/construction.
- Rearrangement of soil particles by living organism in the soil.
- The angle of slope determines the movement of the material.
- The nature of the underlying rock.

3. (a)

S - ox-bow lake (1 mk)

T - alluvial deposits (1 mk)

(b) **three** conditions that are necessary for the formation of the feature mked **S**.
- Presence of pronounced meanders in the flood plain.
- Heavy load being carried by the river.
- A reduction in the river gradient/reduction in the river energy to erode vertically/ low velocity.
- Presence of obstacles in the river channel.
- Laterial erosion on the outer side of the river banks.
- Deposition on the inner side of the river banks.
- Periodic flooding to cut off neck of pronounced meander.

Any 3 x 1 = (3 mks)

4. (a) What is the difference between an ice sheets and an ice berg?
- Ice sheets is a continuous mass of ice covering vast areas of land while an ice bergs is a large block of ice (broken from ice sheets) floating in seas/oceans. (2 mks)

(b) Name **three** types of glacial moraines.
- Laterial moraine
- Medial moraine
- Terminal moraine
- Ground/subglacial moraine
- Recessional moraine
- Englacial moraine
- Push moraine. Any 3 x 1 = (3 mks)

5. (a) Give **two** types of soil degeneration.
- Physical degeneration.
- Chemical degeneration.
- Biological degeneration.

(b) State **three** economic benefits of soils.
- They provide the base for crop/forest cultivation.
- Some are sources of valuable minerals.
- They are raw materials for ceramic / pottery / sculpture industries.
- They are used for building houses / roads / bridges.
- Organic soils such as peat serve as fuel resource.
- Salt licks are livestock feeds.

SECTION B

Answer **question 6** *and any other* ***TWO*** *questions from this section.*

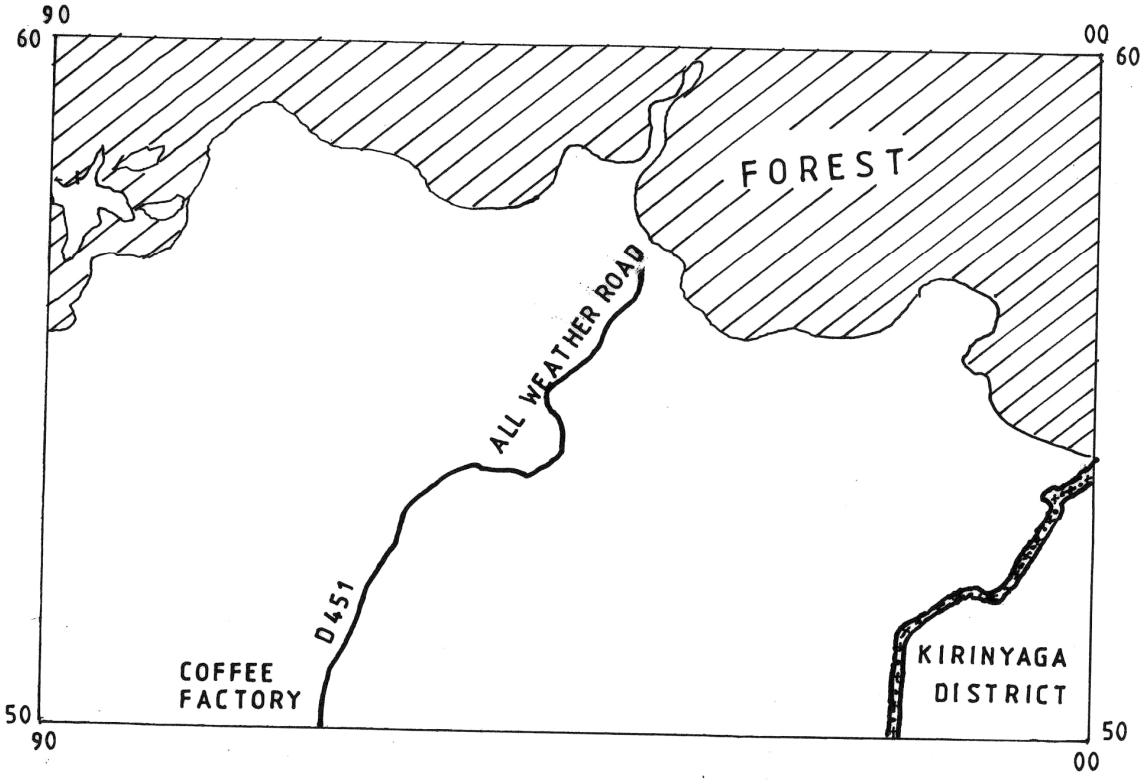
6.

(a) (i) 8559

(ii) 304° ± 1° ($303^0 – 305^0$)

(iii) 13.3 km ± 0.1 - (13.2 - 13.4 km)

(b)



Rectange 1
District 1
Road 1
Forest 1
Coffee factory 1

(c) Describe the distribution of the natural vegetation in the area covered by the map.

- The high altitude / mountain area is covered by thick forest/bamboo.
- The forest mainly covers the Northern/North Eastern part of the area covered by the map.
- There is a few patch of forest in the Southern/South Western part of the area covered by the map.
- Woodland covers the North West, North/Eastern part of the area covered by the map.
- There is papyrus swamps vegetation found in the Southern/Southern Eastern part of the area covered by the map.
- There are riverine trees along river Nairobi/Kaduni/Sagana.
- Scrub vegetation covers the South Western part of the area covered by the map.
- Scattered trees cover the West/North Western part of the area covered by the map.

(NB/. Vegetation type must be located to score)

(d) Identify **two** social functions of Karatina town.

- It is an educational centre.
- It is a residential centre.

- It is a religious centre.
- It is a health centre.
- Water supply.
- Electricity supply.
- It is a security/administration centre.

(e) Citing evidence from the map, explain **three** factors that favour trading in the area covered by the map.
- The presence of numerous mket centres / trading centres / shops which provide opportunities for trading (e.g Karatina, Tumu-Tumu, Kimahuri and Kagumo).
- The area has a well developed transport network for delivery of goods and services evidenced by all weather roads to Kerugoya, Sagana and Embu.
- The area is economically productive which provides goods as evidenced by tea/coffee factory, fisheries department/fisheries centre/research/cattle dip/murram pit.
- There are numerous settlements which suggests availability of mkets for the Variety of goods and services.

7. (a) Name the first **two** planets of the solar system. (2 mks)
- Mercury (1 mk)
- Venus (1 mk)

(b) Explain the origin of the earth according to the Nebula Cloud Theory. (8 mks)
- The explosion of the stars led to the formation of a huge cloud of gases (hydrogen and helium), dust and ice particles.
- This cloud whirled, cooled and condensed to a disc shape.
- The gravitational attraction within the materials increased cause the particles to compact. Some particles broke from the edge of the disc and whirled.
- The compacted particles swirled faster towards the centre of the disc in different directions. As they whirled they cooled or solidified to form the planets.
- This swirling caused particles to collide losing a little energy at a time.
- The middle of the spinning disc condensed to form the sun while the material spinning around condensed into large chunks of materials called planetoids.
- The planetoids collided and coalesced into large bodies called planets.
- The earth is one of the planets.
- The centre of the disc formed the sun.

(c) (i) Name:
the continent mked **W** - Asia.
the ocean mked **X** - Atlantic.
the line of longitude mked **Y** - Prime/Greenwich meridian. (3 mks)

(ii) Give **two** reasons why the earth has a spherical shape.
- The earth experiences the force of gravity pulling towards the centre which creates a rounding effect on its shape.
- The North and South poles experience centripetal force which constantly pull towards each other causing the flattening at the poles.

- At the equator the earth experiences the centrifugal force which causes the bulge.

NB: F can score on its own. "S' must be tied to "F" to score.

(iii) State **four** effects of the rotation of the earth on its axis.
- It causes the occurrence of day and night /apparent movement of the sun from East to West.
- It causes difference in time between places over the earth's surface.
- It causes deflection of winds / ocean currents.
- It causes differences in atmospheric pressure on the surface of the earth.
- It causes ocean/sea tides

(d) Describe the structure of the earth's crust.
- It's rocks are generally brittle/solid.
- The earth's crust extends between 6 to 80 km.
- It is divided into two layers - sial (continental crust) and sima (oceanic crust).
- The sial rests on the sima
- The sial contains mainly silica and aluminium.
- The sima contains silica, magnesium and iron.
- The sial is lighter/has a density of 2.65 to 2.70 gm per cc.
- The sial has mainly granitic rocks.
- The sima has basaltic rocks.
- The sima is heavier/has a density of 2.7 to 3.0 g/cc
- The sima is fairly flexible

8. (a) What is volcanicity?
It is the process through which gaseous / liquid / molten rock / solid materials are forced into the earth's crust and / ejected onto the surface.

(b) (i) Apart from a sill, name **three** other intrusive volcanic features.
- Dykes/dikes
- Laccolith/laccolites
- Batholith/bathyliths
- Lopolith
- Phacolith/phacolite

(ii) Describe how the following features are formed:
I a sill;
- Below the earth's crust the rocks are at very high temperature and high pressure. If the pressure becomes less, the hot, solid rock material may become semi-fluid / Magma under high pressure enters crustal rocks.
- The semi-fluid rock / magma forces itself into horizontal cracks/ fissures.
- The magma cools and solidities in horizontal cracks or bedding plane.
- This horizontal sheet/layer of igneous rock is called a sill.

II hot springs;

- Rainwater enters the crustal rocks through cracks / fissures.
- The water reaches a zone of hot igneous rocks.
- The water is (super) heated.
- The super heated water changes into water vapour.
- The vapour is under high pressure and so forces its way up heating the ground water.
- The heated water under pressure flows out continuously/to form hot springs. (5 mks)

III A caldera.

- Lava pouring out of a central vent forms a volcanic cone.
- The vent may be sealed when lava solidifies in it.
- The solidified plug block the gases and steam beneath from escaping.
- There is pilling up of pressure below the plug.
- The pressure leads to a violent eruption that blows off the top of the cone forming a depression.
- The resulting large circular depression on the top of the (now lower) volvano is called caldera.

OR

A subsidence caldera

- Lava pouring out of a central vent forms a volcanic cone.
- The magma resevoir below the crust is left empty/has a void/cavity.
- With time the weight of rocks of the volcano exerts pressure on the crustal rocks below.
- The pressure/earth movements cause cracks to develop making the volcano unstable.
- Over time the middle portion of the volcano subsides/collapses into the void forming a depression.
- The resulting large circular depression on the top of the (now lower) volcano is called caldera.

OR

Outward collapsing

- Volcanic eruption of ash and cinder/pyroclasts throough a central vent forms a volcanic cone.
- Several eruptions results to a high, steep and unstable volcano.
- The weight of the upper materials exerts pressure on the ones beneath causing instability on the lower part.
- The material at the base begin spreading outwards.
- The top of the volcano collapses inwards forming a depression.
- The resulting large circular depression on the top of the volcano is called caldera.

(c) Explain **four** negative effects of earthquakes.

- Violent motions resulting from earthquakes damage structures from their Foundations leading to loss of life and property.

- When earthquakes occur faults may develop which damages infrastructure.
- During an earthquake on the sea floor vertical displacement occur leading to development of tsunami leading to floods of coastal areas/disrupts human activities loss of life/property.
- Earthquakes may lead to landslides which destroy agricultural land/loss of life/ damage of infrastructure..
- Strong vibrations from earthquakes may cause damage to nuclear plants which Pollute the environment and affect human health.
- Earthquakes may cause panic/emotional shock/fear.

any 4 x 2 = (8 mks)

9. (a) What is vegetation?

It is the total mass of plant life that occupies a given area.

(2 mks)

(b) Explain how the following factors influence the distribution of vegetation:

(i) relief

- High altitude areas have low temperature which encourage scanty / no vegetation / low altitude areas have moderate temperature which encourage dense vegetation.
- Gently sloping areas are well drained hence encouraging dense vegetation growth / steep slopes experience excessive drainage that discourage plant growth.
- Flat areas tend to be water logged hence covered by swampy plant species.

(ii) soils.

- Fertile soils have a variety of nutrients which encourage the growth of dense vegetation/infertile soils have insufficient nutrients leading to scanty vegetation.
- Medium textured soils are well drained thus support a variety of plants /dense vegetation / coarse / fine textured soils are poorly drained leading to scanty / no vegetation.
- Deep soils enable the penetration of long roots thereby supporting trees / thin soils support vegetation of shallow roots thereby supporting grass vegetation.

Any 2 x 2 = (4 mks)

(c) Describe the characteristics of the savanna vegetation region.

- Vegetation is a mixture of trees and grass.
- The dominant type of vegetation is grass.
- In the wetter areas the vegetation consists of tall scattered trees, woodland.
- The wetter areas have a continuous cover of long thick grass.
- In the drier areas trees are shorter, fewer and scattered.
- In the drier areas the grass is short and coarse/tuft.
- Most trees are umbrella shaped crown.
- Most trees are acacia.
- Along the river valleys there are tall trees, thick bushes.

- Most of the trees are decidious/shed their leaves.
- Grass withers/turns brown during the dry season.
- Grass sprouts with onset of rains.
- Some trees have small/waxy/shiny/thin leaves/thony spines.
- Some trees have a thick bark/stem
- Some trees have long roots/tap roots.
- Most seeds are domant during dry seasons.

Any 6 x 1 = (6 mks)

(d) You are planning to carry out a field study in a forest.

(i) Give **four** reasons why it is important to seek permission from the school administration.

- It is an official requirement.
- To enable the administration arrange for transport/lunch/meals.
- To enable the administration take care of the disruption of the school programme that will occur
- To enable the administration to provide entry fee if required.
- To enable the administration to provide essential tools for use.

Any 4 x 1 = (4 mks)

(ii) List **three** sources of information you are likely to use before the actual field study.

- Relevant textbooks
- Journals / magazines
- Internet / electronic media
- Newspapers
- Professionals / botanists / forest officers
- Geography notes
- Photography/video tapes
- Maps

Any 3 x 1 = (3 mks)

(iii) Identify **four** challenges you are likely to encounter during the field study.

- Attacks by wild animals / insect / snake bites
- Adverse weather conditions/too wet/too cold.
- Thick/thorny vegetation/rugged terrain may hinder movement within the forest.
- Tiredness due to walking long distances.
- Inadequate time for data collection.
- Getting lost/loss of direction to follow.
- Uncooperative/absent respondent.
- Injuries

Any 4 x 1 = (4 mks)

10. (a) (i) Name **two** major deserts found in Africa.

- Sahara
- Kalahari
- Namib

Any 2 x 1 = (2 mks)

(ii) Name the features mked **U** and **V**.

U - Furrow (1 mk)

V - Ridge/yardang/zeugen (1 mk)

(b) Describe the **three** processes through which wind transports its load.

Saltation

It is where coarse grained sand particles are transported through a series of bouncing / jumping along the surface. (2 mks)

Suspension

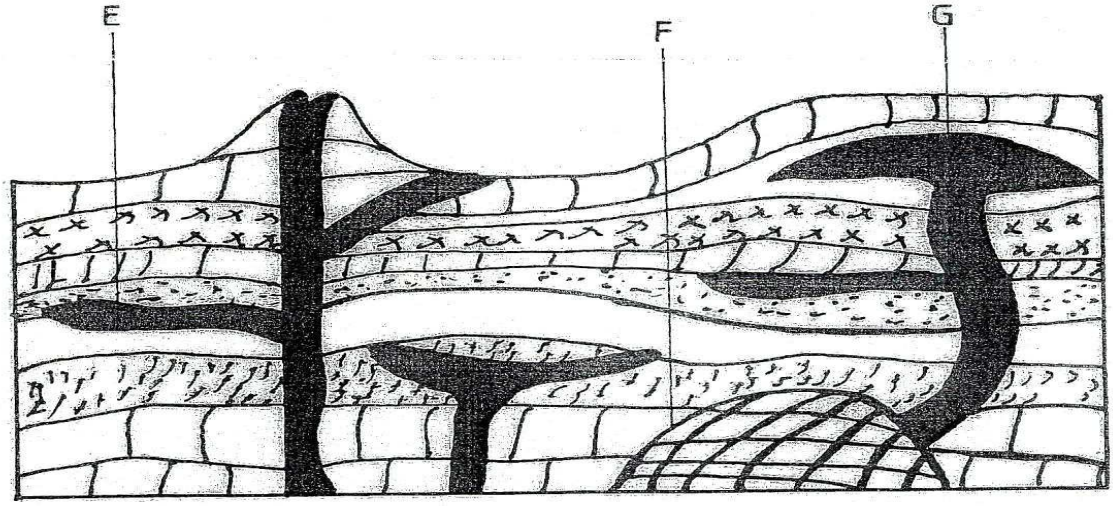
It is where very fine material is picked by wind raised high and blown over long distances.

GEOGRAPHY
K.C.S.E PAPER 1 2014
MARKING SCHEME

SECTION A

1. Name **two** types of hypabyssal rocks
   Dolerite
   Porphyry
   Dibase
   Lamprophyre

2a)The diagram below shows intrusive volcanic features 2mk



Name the features marked E, F and G.
E-A Sill
F-A Batholith
G-A laccolith /Bacholith **3mks**

b) Name **two** active volcanoes in Kenya
Longonot
Teleki
Lkaiyu / Likaiu
Suswa
Menengai

3a) Give **three** processes in the hydrological cycle
Evaporation / evapotranspiration / moist air rising
Condensation / most air cooling

Infiltration / percolation
Surface runoff / overland flow
Precipitation / rainfall / snow fall any 3 x 1 = 3mks

b) State**four** factors that facilitate deposition in rivers.

Reduction in river gradient decrease the velocity of water
Freezing of river water leads to embedment's of the load in the ice.
River entering a large water body reduces the speed of the river flow.
Presence of obstacles on the river course which blocks some of the load
Reduction in river volume which reduces the strength of the river
Increase in width of the channel makes water to spread over wide area
Increase the amount / size of the load. **4 x 1 = 4 mks**

4a) Explain**two** reasons why wind is the dominant agent of erosion ion arid areas
The areas have scanty / no vegetation which exposes the land to erosion
The areas experience strong tropical winds which erode the materials
The areas have dry unconsolidated soils / materials which are easily eroded.
Any 2× 2 = 4 mks

b) Identify two features formed as a result of wind deposition in arid areas.
Sand dunes
Loess
Drass / draas

Q5 (a) Describe podzolization as a process of leaching
-It occurs in areas with high rainfall and low temperatures / cool and wet conditions / Cool temperate regions / humid temperate regions / coniferous forest covered areas
-Slow decomposition of vegetative matter results in formation of humic acid
-Minerals such as calcium / iron / magnesium / aluminium / potassium / salts / bases/ carbonates in the soil are dissolved and moved / translocated from horizon A to B.
-This leaves the soil extremely acid/ humic /ash grey / light in colour / grey / brown / red – yellow / white. Any 4 x ½ = 2max

b) State **three** ways in which mulching helps in soil cause
Plant materials used decompose increasing soil humus
It protects the soil against erosion
It helps to increase infiltration rate of water into the soil
It helps reduce water loss from the soil
Soil aeration Any 3 x 1 = 3 mks

SECTION B

6. Study the map of Migwani (1:50:000) Sheet 151/1 provided and answer the following questions

a) i)Give the longitudinal extent of the area covered by the map

$38^{0}.01^{1}$ E-38^{0} 13^{1}E / 38^{0} 00/ 39^{11}E-$38^{0}13^{1}30^{11}$ / $12^{1}\pm30(11^{1}-12^{1}30^{11})$ 2mks

ii)What is the magnetic variation of the map?

$2^{0}23^{1}$ 1mk

iii)Give the six figure grid reference for the junction of the roads D503 and D507.

119707 / 119708 2mks

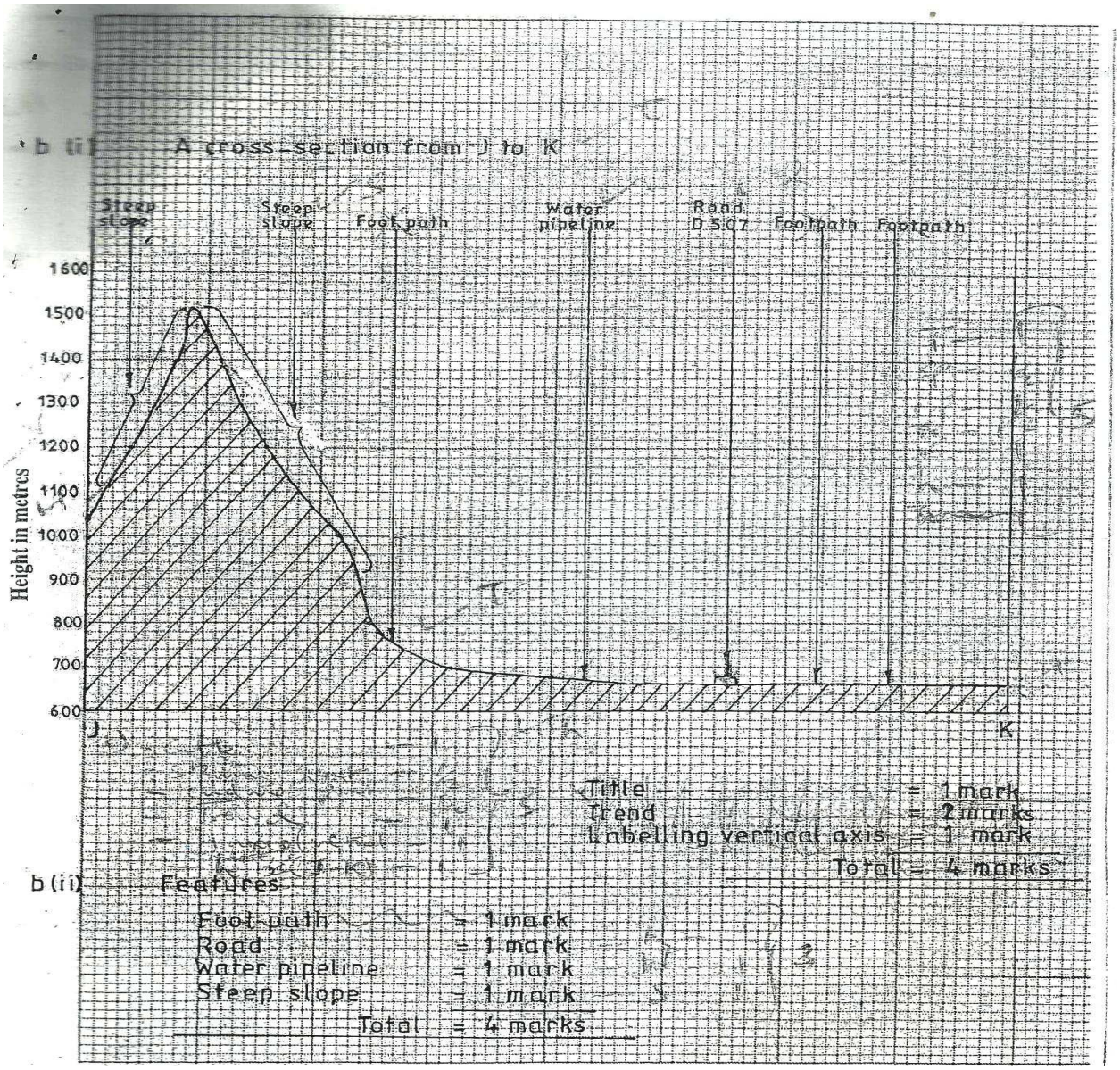
b) i)Using a vertical scale of 1cm to represent 100 metres, draw a cross section along the line mked J-L 5mks

ii) On it mk and label the following

Road	**1mk**
Water pipeline	**1mk**
Steep slope	**1 mk**

Features

Footpath	**1mk**
Road	**1mk**
Water pipeline	**1 mk**
Steep slope	**1mk**



iii) Calculate the vertical exaggeration of the cross section

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

$$= \frac{1}{10{,}000} \div \frac{1}{50{,}000}$$

$$= \frac{1}{10{,}000} = \frac{150{,}000}{1}$$

$$= 5$$

c)Citing evidence from the map, give **three** economic activities carried out in the area covered by the map

Transport as evidenced by presence of many roads
Trade evidenced by presence of many shops
Communication evidenced by post office

d) Explain how relief has influenced the distribution of settlement in the area covered by the map

There are manysettlements in the north western part because the land is gently Sloping
There are no settlements in Mutito forest because the slope is very steep
There are few settlements on Kitui hills as the land is rugged / steep

7a)i)Describe the solar system

It is the sun, planets and other celestial bodies held together by the force of gravity

II) The local time at Manau, 60^0C is 11.30.am. What is the time in Nairobi 37^0E?

The difference in longitude is 60 + 37 = 97^0
1^0 = 4 minutes
$97^0 \Rightarrow \left(\frac{97x4}{60}\right)$ hrs
= 6 hrs 28 mins

Time in Nairobi = 1130
+638
1758 hrs or 17.58
5.58 pm

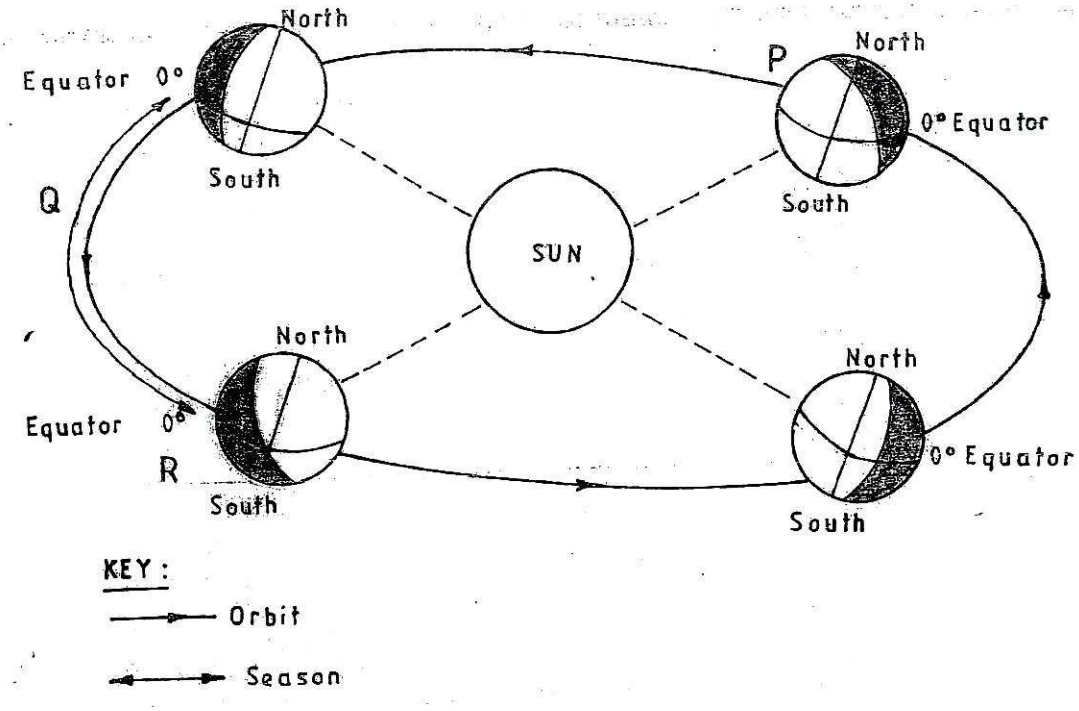
bi) State **five** characteristics of the mantle in the interior structure of the earth

The mantle is divided into two parts mainly the upper mantle and the lower mantle
It is about 2900 km thick
The average density is between 3.0-4.0 gm/cm3
The upper mantle has a lower temperature than the lower mantle
The upper mantle is in semi solid state
The lower mantle is composed of rocks in viscous fluid state
The dominant minerals are iron and magnesium

ii) Outline the evidence which support the theory of continental drift

The fossils of plants / animals found in Africa are also in other continents
Adjacent continents have similar coastlines
There exists similarity in animal species /plants species in the continents
Southern continents seem to have experienced large scale glaciations at the same period
Recent volcanic eruption in mid-Atlantic ridges fills the gaps left by drifting continents.

The diagram below represents the revolution of the earth



i) Name the solstice mked p

Winter solstice (1mk)

II) Identify the season represented in the region mked Q

Spring (1mk)

iii) Describe the climatic conditions in Europe when the earth is in position R.

High temperatures are experienced

There are long hours of sunshine

There is precipitation in form of rainfall / wet conditions

There is high humidity

There is low pressure

There is convergence of winds

any 3 x 1 mks

d) With the aid of a well labeled diagram, describe the occurrence of the solar eclipse.

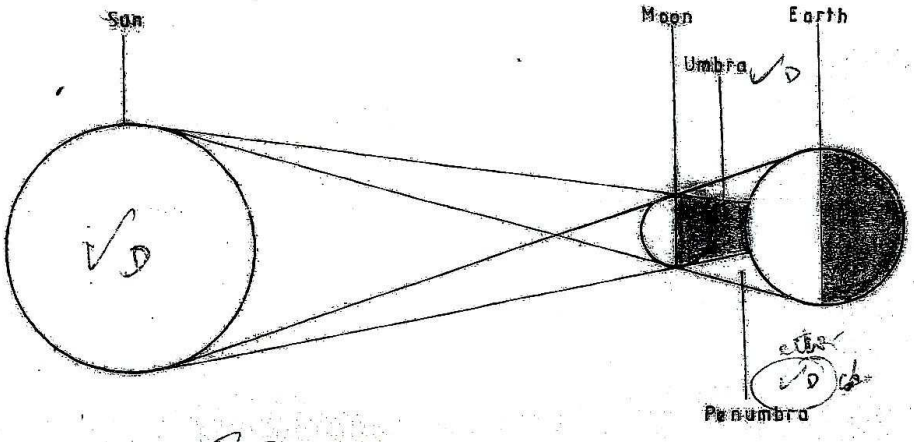
It occurs when the moon lies between the earth and the sun

The shadow of the moon is cast on the earth surface

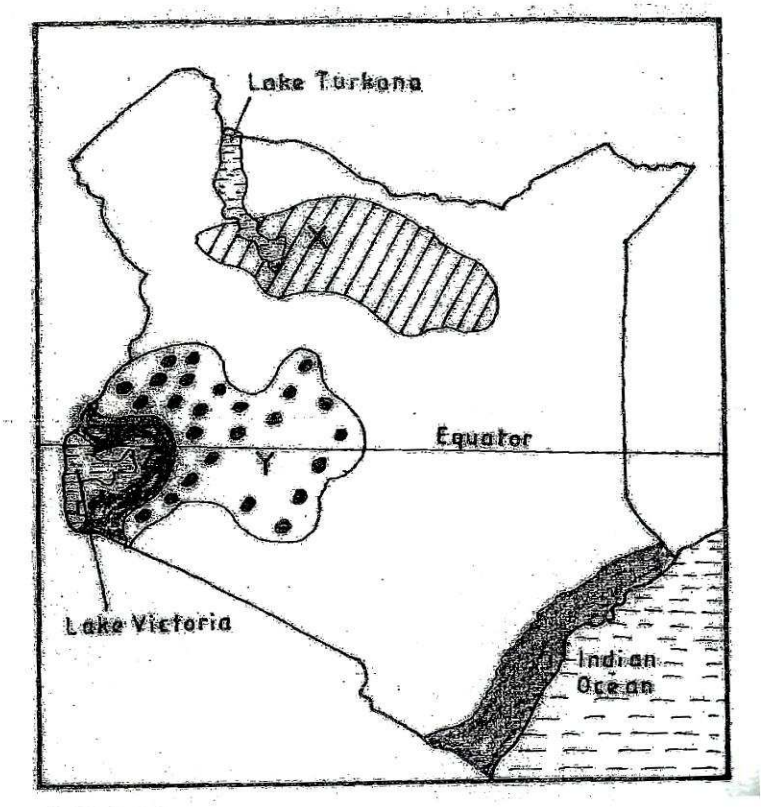
The shadow has two parts namely the umbra and penumbra

The umbra shadow causes total solar eclipse

The penumbra causes partial solarexcise.



8. The map below shows some climatic regions of Kenya. Use it to answer question (a)



Ai) Name the climatic regions mked X and Y 2mks

X-Desert climate
Y= Modified tropical climate

ii) State three characteristics of the climatic region mked Z

It has a mean annual temperature of between 20^0C and 32^0C
Rainfall ranges between 750 mm and 1500 mm per year, with no distinct dry month
The relative humidity is high 80%
It has double maxima regime
The area receives conventional type of rainfall / rain mainly falls in the afternoons
any 3 x 1= 3 mks

b) Explain how each of the following factors influence climate

i)Altitude

-Temperature decreases with increasing height above sea level / decreases at 0.6^0C for every 100 metres rise because the heat loss is greater at higher altitude than lower altitude.
-Atmospheric pressure is higher at lowaltitudeandlower at high attitude. This is because the weight of atmospheric air at low altitude is more than at high altitude
-The temperature is higher at low altitude because the air is heated form below and not directly from the sun

8.bii)Ocean currents

-Onshore winds blowing over a warm ocean current are warmed and upon reaching the coastland they cause a warming effect
-Onshore winds blowing over cold ocean currents are cooled and on reaching the adjacent coastland they cause a cooling effect
-Onshore winds blowing over warm Ocean currents are warmed absorbing more water vapour and on reaching the adjacent coastland result to increased rainfall, and increased humidity
-Onshore winds blowing over cold ocean currents are cooled and condensed resulting to rain falling over the ocean and on reaching the adjacent coastland result to little or no rain / fog/ mist

8c) 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 2 = 6 mks

d) Students visited a weather station to study recording of weather elements

i) State three qualities in the construction of a Stevenson screen they would have observed during the study

It is a wooden box

It is raised on stilts / paced on a stand, about 121 cm above the ground level

It is painted white

It has a double roof

The sides are lourved (to allow free circulation of air) 3 x 1 =3

ii)Identify three types of data they are likely to have collected during the study

Types of weather measuring / recording instruments

Statistical data on previous weather records

Diagrams / photographs on instruments

Information on weather forecasting 3x1=3mks

9a) i) Name two types of submerged highland coasts

Longitudinal

Ria

Fiord / 2x1 = 2mks

ii)identify two resultant features of the emerged highland coast

Raised cliffs

Raised wave cut platforms

Raised beaches

Raised caves

Raised notches

b) State three factors influencing deposition by ocean waves

The existence of gentle sloping shore

Presence of shallow water along the coastline

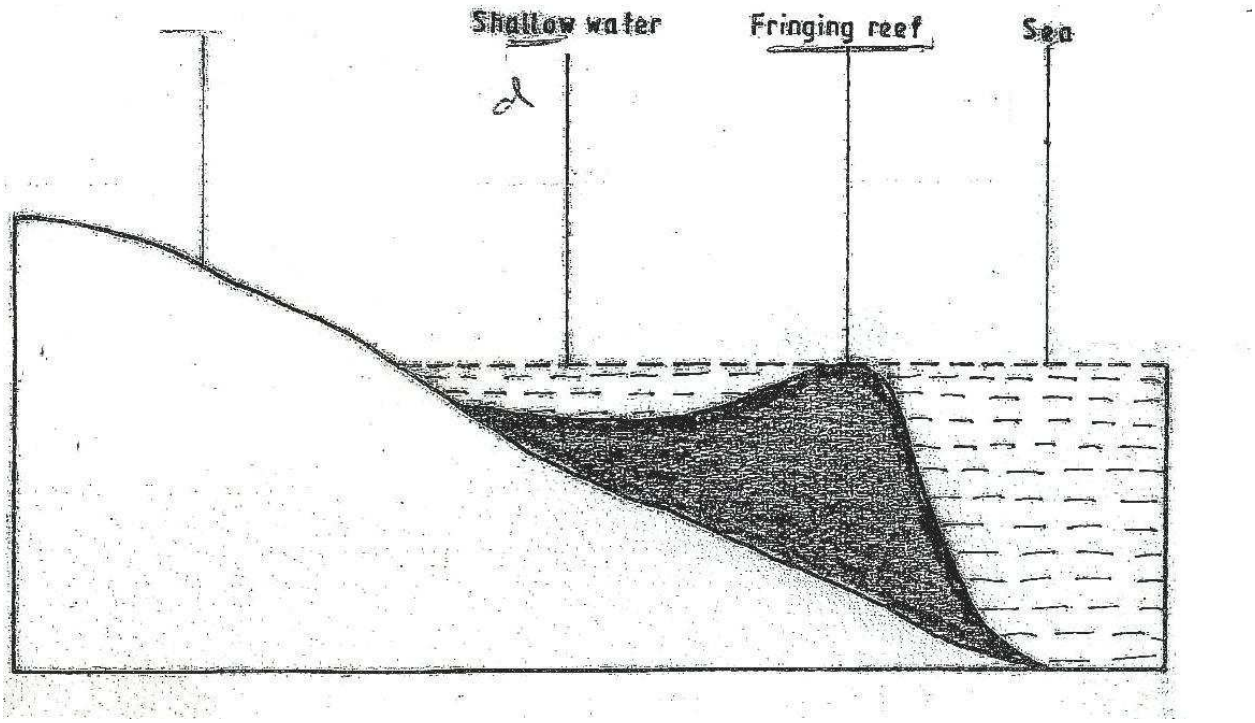
The occurrence of a strong swash and weak backwash

The existence of indented coastline 3 x 1 = 3mks

c) With the aid of labeled diagrams describe the formation of the following coastal features

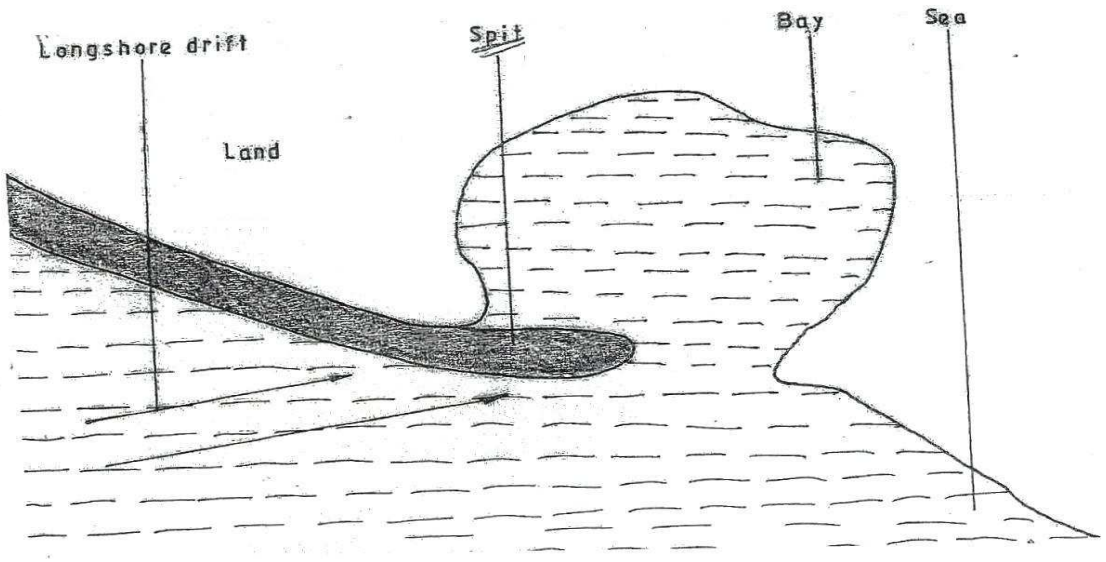
i) Fringing reef

It is formed when coral polyps start accumulating near the shore extending seawards
The rate of accumulation is faster seaward than towards the shore
The reef therefore becomesteeper seaward than towards the shore



ii)Spit

A spit develops when materials moved by longshore drift are haltered
The material are held landward by the growth of vegetation
More materials are piled up forming an elongated low lying ridge towards the sea
The elongated low lying ridge is known as a spit



d) Explain the significance of oceans to human activities

Oceans modify the climate of the adjacent lands thus enhancing agricultural activities
Oceans are used by water vessels thereby enhancing transport / communication
Oceans provide sites for recreational activities thus promoting tourism
Oceans are habitats for aquatic life hence providing food / income to humans
Oceans habour minerals which are extracted for economic development
Ocean waves / tides are harnessed which generate electric power for industrial / domestic use

10a (i) Name two mountains in East Africa which are ice capped

Mt Kenya
Mt Kilimanjaro
Ruwenzori mountains 2 x 1 = 2mks

ii) Identify three ways in which ice moves

Plastic flowage
Basal slip
Extrusion flow
Internal shearing 3 x 1 = 3mks

b) Describe the formation of the following glacial features

i)Hanging valley

It is formed in glaciated highlands where there is a main river valley and a tributary river valley
The two valleys get filled with ice.
As the ice gets heavy / thick it begins to flow down the slope
The main river valley is deepened and widened more than the tributary valley
When ice melts the tributary valley is left at a higher level

The tributary valley above the main valley is known as hanging valley

ii) Pyramidal peak

Ice accumulates in several shallow pre-existing depressions on the mountain sides
As the ice moves, it plucks the rocks on the sides of the hollows / depressions
Continued erosion , deepens and widens the hollows
Adjacent hollows (Cirques) continue to erode until they are separated by narrow steep ridges
Where aretes converge at the top of the mountain they form a sharp-steep sided peak
The steep sided peak is known as a pyramidal peak

c) You are required to carry out a field study on erosional features in glaciated lowland area

i) Give two reasons why you would require a working schedule

It enables the planned activities to be carried out systematically
It allows for proper use of available time
It enables the assessment of the progress of the fieldwork
It enables the estimation of a time required for the study.

ii) Namethree erosional features you are likely to observe during the field study

Depressions
Crag And Tail
Ice Eroded Plain
Roche Mountonee 3 x 1 = 3mks

iii)Give three follow up activities you would undertake after the field study

Sketching the features
Note making / writing field reports
Answering questions / quiz
Discussing the findings
Displaying photographs
Analyzing data collected
Reading more about the topic
Drawing conclusion 3 x 1 = 3mks