

312/1
GEOGRAPHY
Paper 1
TIME 2³/₄ HOURS



Atika School

F r e e O n l i n e A c a d e m y

Geography
Paper 1
Time 2 ³/₄ Hours

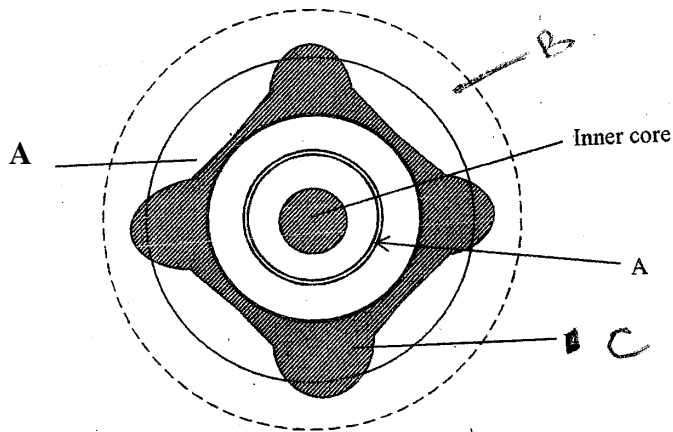
INSTRUCTIONS TO CANDIDATES:

- This paper has **two** sections **A** and **B**
- Answer all questions in Section **A**, In section **B** answer question 6 and any other **two** questions.
- All answers must be written in the answer booklet provided.

SECTION A

Answer all questions in this section.

1. a) The diagram below shows the internal structure of the earth. Name the layers marked **A**, **B**, **C** (3mks)



- b) Explain **two** ways to prove that the earth is spherical. (2mks)
2. a) Explain how the following can be obtained;
- i) Annual rainfall total. (1mk)
- ii) Mean daily temperature. (1mk)
- iii) Mean monthly temperature. (1mk)
- b) The time at station **C** on longitude 145° East is 1pm. What is the time at station **B** 30° East? (2mks)
3. a) How does land breeze occur? (2mks)
- b) State **three** effects of cold ocean currents on the adjacent land. (3mks)
4. a) What is natural vegetation? (2mks)
- b) State **three** characteristics of Mediterranean type of vegetation.
5. a) State **three** conditions necessary for the development of a karst scenery. (3mks)
- b) Give **two** reasons why there are a few settlements in karst landscape. (2mks)

SECTION B (75 MARKS)

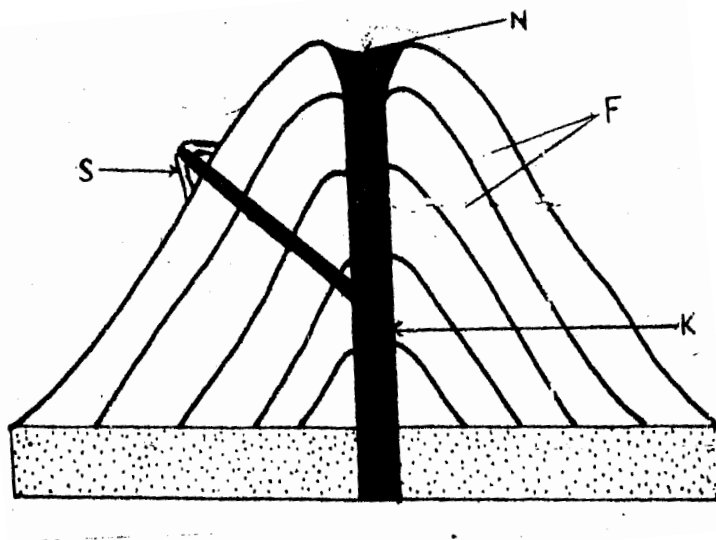
Answer question 6 and any other two questions from this section

6. Study the map of Kitale 1:50,000 (sheet 75/3) provided and answer the following questions.
- a).i) What is the height of the top of **kaipos hill**? (1mk)
- ii) Name the planted vegetation in the area adjacent to Kitale municipality. (1mk)
- iii) What is the area of part of **west Pokot** district shown on the map? Give your answer in square kilometers. (2mks)
- iv) Calculate the bearing of the Air photo principal point (grid square 2329) from the air photo principal point (Grid square 2931). (2mks)
- v) Give the latitude and longitude of the south west corner of the map extract. (2mks)
- b).i) Identify **three** forms of land transport found to the north of Northing 28 and west of Easting 30. (3mks)
- ii) Citing evidence from the map, state **three** economic activities carried out in the area covered by the map. (3mks)
- c) Describe the distribution of settlement in the area covered by the map. (6mks)
- d) Describe the drainage of the area covered by the map. (5mks)
7. a).i) Define the term glaciation. (2mks)
- ii) Name **three** types of glaciers. (3mks)
- b) Describe how the following features found in upland glaciated landscape are formed:
- i) U-shaped valley. (5mks)
- ii) Pyramidal peak. (5mks)
- c) Explain **three** significance of upland glaciated features to human activities. (6mks)
- d) Suppose you were to carry out a field study of glaciated lowland:
- i) State **two** advantages of using oral interview to collect information during the field study. (2mks)
- ii) Name **two** features found in glaciated lowland that you are likely to study. (2mks)
8. **Study the climatic data in the table below and answer questions that follow.**

Month	J	F	M	A	M	J	J	A	S	O	N	D
Temperature in °C	23	23	23	21	18	17	16	17	18	20	21	22
Rainfall in mm	109	121	129	76	50	33	27	38	71	109	121	119

- a) i) On the graph paper, draw a bar graph to represent the rainfall figures (use a vertical scale of 1cm to represent 10mm) (5mks)
- ii) Describe the rainfall pattern of the station. (4mks)
- iii) Calculate the average monthly temperature for the station. (Show your calculation) (2mks)
- b) Explain how the following factors influence the climate of a region.
- i) Latitude. (2mks)
- ii) Aspect. (2mks)
- iii) Ocean currents. (2mks)

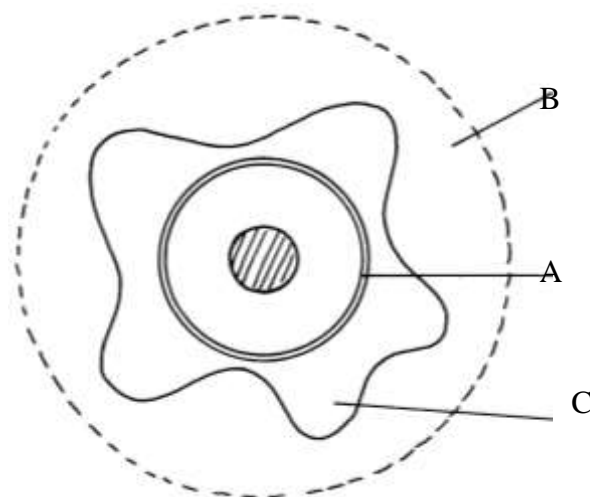
- c) Explain **two** effects of climate change on the physical environment. (4mks)
- d) Explain **two** problems associated with convectional rainfall in the lake region of Kenya. (4mks)
9. a).i) Give **one** type of desert surface. (1mk)
- ii) State **three** reasons why wind action is more effective in hot deserts. (3mks)
- b) With the aid of a well labelled diagram, describe the formation of the following desert landforms.
- i) Deflation hollows. (5mks)
- ii) Barchans. (5mks)
- c).i) what is aridity? (1mk)
- ii) Explain **three** physical causes of aridity and desertification. (6mks)
- d) State **four** measures taken by the government of Kenya to curb aridity and desertification. (4mks)
10. a) i) Define the term vulcanicity. (1mk)
- ii) Name **two** features resulting from intrusive volcanic activity. (2mks)
- b) Study the diagram below and answer the following questions;



- i) Name the parts labelled **F, K, N** and **S**. (4mks)
- ii) Describe how the volcano is formed. (4mks)
- c). Explain **four** economic importance of vulcanicity to human activities. (4mks)
- d) Suppose your class carried out a field study on vulcanicity,
- i) State **three** objectives of your study. (3mks)
- ii) State **three** follow up activities that you undertook. (3mks)

SECTION A

1. (a) The diagram below shows the internal of the earth.



Name the layers marked A,B

A- Gutenberg discontinuity

B- Atmosphere

C- Sial (continental crust)

(b) Explain two ways to prove that the earth is spherical

- Circumnavigation
- Sun rise and sunset
- Approaching ship
- Earths curved horizon
- Aerial photographs
- The planets are spherical

(2mks)

2. (a) Explain how the following can be obtained

(i) Annual rainfall totals

- Adding monthly rainfall total for the twelve months of the year

(1mk)

(ii) Mean daily temperature

- Adding the minimum and maximum temperature for one day and then dividing by two

(iii) Mean monthly temperature

- Adding all the daily means of the month and dividing the sum with the number of days in that month

(1mk)

(b) The time at station C on longitude is 1pm. What is the time at station B 30° East

$$\text{Difference in longitudes } (145-30)^{\circ}$$

$$= 115^{\circ}$$

$$\text{If } 15^{\circ} = 1\text{hr}$$

$$115^{\circ} = \frac{115 \times 1}{15} \text{hrs}$$

$$= \frac{23}{3} \text{ or } 7 \frac{2}{3}$$

$$7\text{hrs} \times \left(\frac{2}{3} \times 60 \right)$$

$$= 7\text{hrs } 40\text{min}$$

$$1\text{pm into } 24\text{hrs} = 1.00 \times 12 = 1.3\text{hrs}$$

$$\text{Difference} = 13.00\text{hrs} - 07.40 \text{ hrs}$$

3. (a) How does land breeze occur?

- It develops at night
- At night the lands cools rapidly while the sea remains relatively warm
- The air becomes colder and heavier over the land than the sea
- High pressure develops over the land and low pressure develops over the sea
- This forces the lighter warm air over the sea to rise and the cooler heavier air from the land blow towards the sea as land breeze (2mks)

(b) State three effects of cold Ocean currents on the adjacent land

- Lowers the temperature of the land
- Leads to the low rainfall or aridity
- High atmospheric pressure build on the land
- Result into dry cold wind
- May result to foggy condition (3mks)

4. (a) What is natural vegetation?

- This is a type of vegetation that has established and developed itself without interference and modification by human activity. (2mks)

(b) State three characteristics of mediterranean vegetation

- Have any taproots in order to reach underground water
- Some species are ever green
- Many of the trees are deciduous
- Some plants have fleshy leaves to reduce water loss
- Trees have thick backs
- Vegetation is scrub like in drier areas
- Some of tree species are oak, olive (3mks)

5. (a) State three conditions necessary for the formation or development of a karst scenery

- Thick limestone which is well jointed
- Soluble rocks
- Deeply situated water table
- Hot and humid / high rainfall and high temperature (5mks)

(b) Give two reasons why there are a few settlements in karst landscape

- Bare rugged rocks or outcrops
- Several deep steep sided dry valleys
- Absence of surface drainage or rivers
- Soils are thin thus not suitable for agriculture
- Construction of roads is difficult (2mks)

6. (a)

(i) 2358m (1mk)

(ii) Wattle (1mk)

(iii) $20.5\text{km}^2 + 0.5(20-21)\text{km}^2$ (2mks)

(iv) $250^0 + 1 (249- 251)^0$ (2mks)

(v) $1^000^1\text{N} , 35^0 00^1\text{E}$ (2mks)

(b) (i)

- All weather road (worse surface)
- Dry weather road
- Main track (motorable)
- Either trucks or foot paths (3mks)

(ii) Economic activity

- Transportation
- Cattle rearing

Evidence

- Roads eg B10/2/maintracks (motorable)
- cattle dip (Gs2826 and Gs 2732)

- Forestry Kiptaber Forest -Forest nursery (Gs2612)/forest eg
- Plantation farming / wattle farming estate -Esates / farms eg swiwa farm/ makey (3mks)

(c) Distribution of settlements in the area covered by the map.

- There are few settlements /labour lines within the wattle plantations / there are no settlements in plantation estate. There are no settlement in Kiptaber estate. There are no settlements in Kaptaber forest
- There are dense settlement in the south east
- There are no settlement in the swamps
- There are few / disperse settlement on the ridge eg at SITAMA
- There are nucleated settlement in the villages
- Kitale municipality/ town is the main settlement area /form a cluster of settlement
- There are scattered settlement to North east of Delgancy farm
- Some area such as makoy Estate have no settlement (6mks)

(d) Drainage of the area covered by the map.

- The main drainage feature are rivers
- The other drainage features are season swamps, dams, water holes. The are has dams/waterholes
- There is high density / many rivers e.g in the North – East
- The rivers are permanent
- Most rivers originate from Kiptaberr forest
- Most rivers flow from Kiptaberrforest south wards
- The main rivers are kiptabos, Noigameget, Kaptarit, Saiwa etc
- The river flows to different directions (some to the south East / North/South etc)
- Most rivers eg within kaptaber forest are in their youth full stage
- Some rivers are bending / winding along their courses eg Noizameget
- Some rivers end in swamps
- Some rivers disappear abruptly
- There are papyrus swamp along some rivers (5mks)

7. (a) (i) Definition f glaciation

- Glaciation refers to the action of moving ice /process by which glaciers change the landscape on large scale (2mks)

(ii) Types of glaciers

- Valley glacier
- piedmont glacier
- Cirque glacier
- Continental glacier
- Nicher glacier (3mks)

(b) (i) Formation of U-shaped valley

- A pre existing v-shaped valley is filled with ice/glacier
- The glacier erodes the v shaped valley by abrasion and plucking process vertically and laterally
- The valley is deepened and widened by vertical erosion and lateral erosion
- The end spurs are truncated /trimmed /cut
- The ice melts away leaving a u-shaped valley (5mks)

(ii) Formation of apyramidal peak

- Initially ice collets in several hollows on the maintain side
- The ice exerts pressure on the hollows/cracks
- The plucking action of the ice enlarges the hollows so that more ice collects in them

- Freeze thaw action of the ice leads to the expansion of cracks/ hollows making them large basin which are cold cirques
- Nivation into the backwalls of the hollows making them recede into the mountain side/ the cirques recede towards each other.
- Steep sided , knife edged ridges called aretes are formed and they separate the cirques
- Eventually three or more of these ridges/ aretes converge at the top of the mountain forming a jagged peak called a pyramid peak /horn (surrounded by corries cirques)
(5mks)

(c) Significance of upland glaciated features to human activities.

- The warm glaciated valleys are suitable for farming/ cultivation /glaciated uplands provide suitable grazing lands as they form fine benches on which summer pasture grows eg in Switzerland
- Glacial uplands form magnificent features that encourage recreation/ sporting activities eg mountaineering, ice skating, skiing / encourage tourism eg features like pyramidal peaks, aretes etc
- Glaciated mountains discourage human settlement hence the growth of the forest and therefore lumbering is practiced
- Water falls formed by rivers in glaciated highlands provide suitable sites for hydro electric power production
- Corrie lakes/ tarns offer suitable areas for sports, fishing
- The U- shaped valleys / glacial troughs form natural routes eg roads / railway
- Fjord coastlines form deep and well sheltered natural harbours as well as good fishing grounds
(6mks)

(d) (i) Advantages of using oral interview to collect information during the field study

- It gives first hand information
- The interviewer can seek clarification on any ambiguities
- The interviewer creates a good rapport with the interviewee
- The interviewer can elicit more information by initiating further discussion
- The method is useful in collecting information from people who can not write and read
NB Accept other relevant advantages
(2mks)

(ii) Features found in a glaciated low land.

- Depressions / glacial lakes
- Roche moutonnée
- Crag and tail
- Drumlins
- Erratics
- Boulder train
- Kames
- Terminal moraine
- Till plain/ glacial till/ boulder clay train
- Outwash plain
(2mks)

8. (a)

(i) see graph properly attached

Title 1mk

X-axis (months) 1mk

Y-axis (Rainfall in mm) 1mk

Highest bar – 1mk

Lowest bar 1mk

Total =5mks

(ii) Description of rainfall pattern of the station

- There is rain throughout the year / no dry month
- The highest rainfall is received during the hot months / from January to March / October to December

- The lowest rainfall occurs during the coolest months / may to September
- The wettest month is march with 129mm
- The dries month is july with 27mm
- The total annual rainfall is 1103mm/ moderate rainfall
- The station experience one long wet season/ one short dry season (4mks)

iii. Avarage monthly temperature $\frac{239}{12} = 19.91^{\circ}\text{C}$

2mks

(b) (i) Latitude

- Areas near the equator are hotter than the the far away from the equator. This is due to a higher concentration of the suns rays per unit area at the equator /the amount of solar radiation decreases polewards since it passes through a longer distance of atmosphere leading to low temperature at the poles
- Also the suns rays strikes the earths surface at a right angle / 90° at the equator leading to intense heating / the angle of the suns rays is lower /acute at the poles leading to less intence heating (2mks)

(ii) Aspect

- In the Northern hemisphere, outside the tropics, the north facing slopes are colder than the south facing slope because they don't receive direct solar radiation
- The reverse is true of the southern hemisphere
- Windward slopes of high mountains /hills are generally wetter than leeward slopes because the moisture laden winds rise and drop their moisture on this side first (2mks)

(iii) Ocean currents

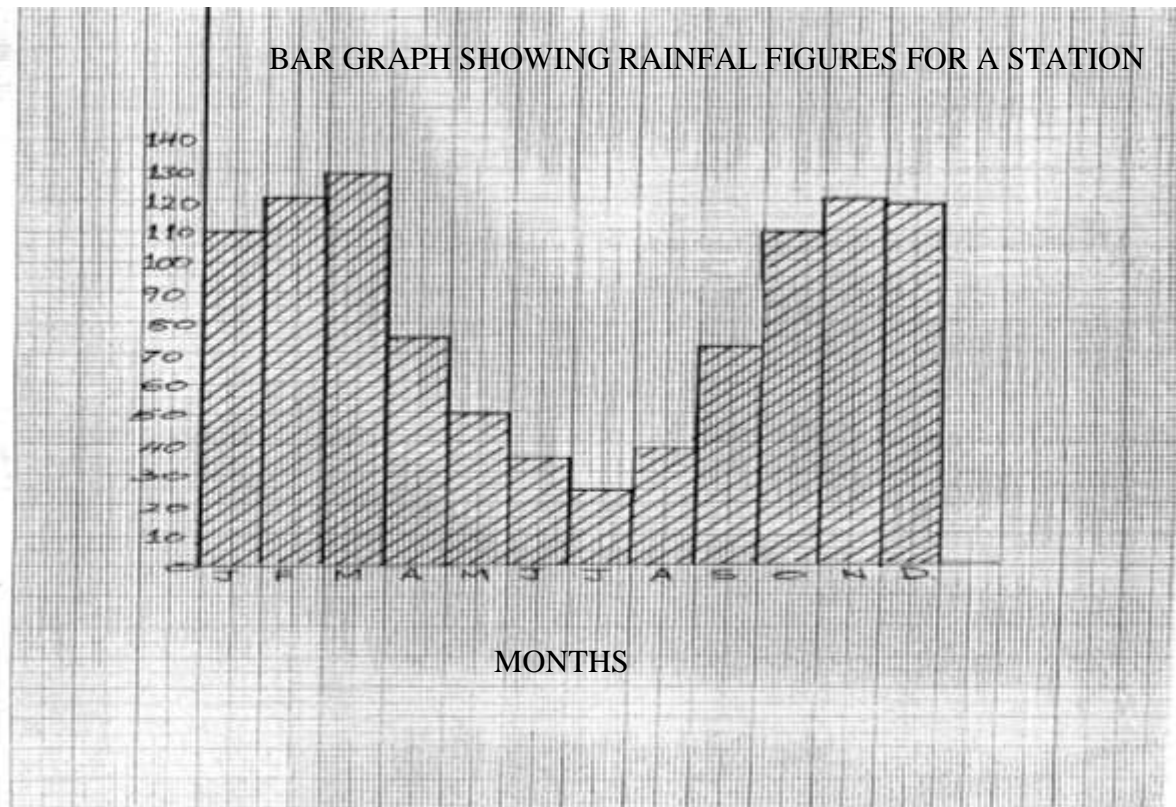
- Where winds are onshore, warm ocean currents have a warming effect on the adjacent coast/ lead to higher rainfall than inland areas
- Cold ocean currents have a cooling effect / drying effect on the adjacent lands (2mks)

(c) Effects of climate change on the physical environment

- Global warming /increased temperature may lead to increased evaporation of ocean water which may cause heavy rainfall in some areas
- Increased temperature may lead to melting of ice caps/ ice sheets and glaciers leading to rising sea level
- Increased temperature may lead to high evaporation causing drought
- Climate change may cause changes in rainfall patterns in different parts of the world

(d) Problems associated with convectional rainfall in lake region of Kenya

- The torrential / heavy rains cause floods which displace people
- The hailstone which sometimes accompany conventional rainfall destroy crops
- The strong winds associated with convectional rainfall blow off roofs of houses and uproot trees / crops
- Lightning strikes causes deaths of people and animals (2 x 2 =4mks)



9. (a) (i) Give one type of desert surface

- Rocky desert/ Hamedra
- Stony desert / Reg
- Sandy desert / Erg

(1mk)

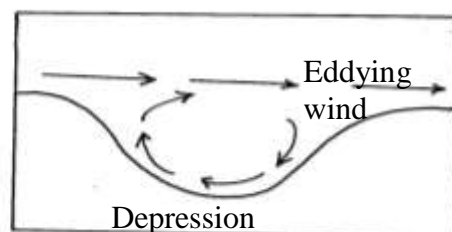
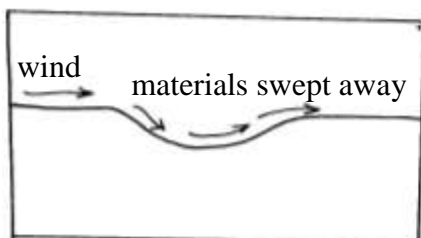
(ii) State **three** reasons why wind is more effective in hot desert.

- Loss and unconsolidated dry masses of sand dust and gravel
- Stony tropical wind storms are common
- Absence of repetition covers to protect the surface from wind(3mks)

(b) (i) Deflation hollows

- A pre- existing depression or localized fault is exposed to wind erosion
- Persistence wind may scoop unconsolidated material ie sand and dust
- Coarser materials are swept away by sand storms
- The heavier ones are moved along the surface in a series of hops or swirling lops
- Weathering aids in breaking down the exposed rock
- Continued adding of winds leads to creation of a basin or deflation hollow

Diagram of deflation hollow

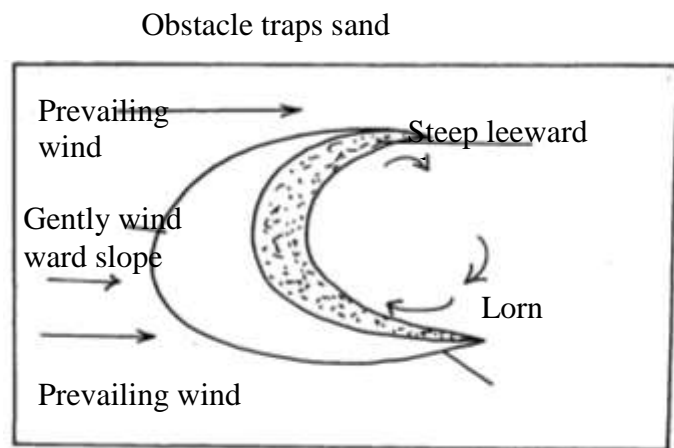
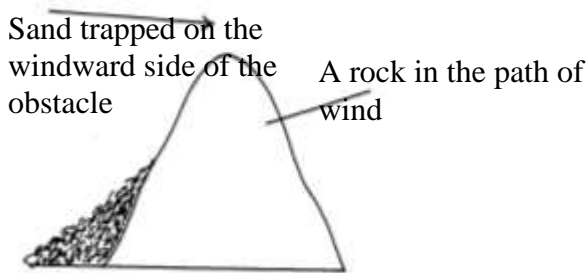


Text – 3mks
 Diagram – 2 mks
 Total 5mks

(ii) Barchans

- Formed in areas where wind blows constantly towards one direction for along time
- Sand deposition occurs around an obstacle a rock or any obstacle
- As the dune grows larger its two edges are slowly carried forward
- The horn receive less sand and are therefore move forward faster
- The wind ward face is gently sloping while leeward is steep and slightly concave
- The feature formed is called a barchan

Diagram of a berchan



Text 3mks
 Diagram 2mks
 Total 5mks

(c) (i) Aridity is a state of land being deficient in moisture leading to scanty vegetation (1mk)

(ii) causes of aridity

- Insufficient rainfall below 250mm per year that cant support growth of vegetation
- High temperature leading to high rate of evaporation causing drought like conditions
- Extreme low temperature reducing capacity of air to hold moisture
- Onshore winds dropping their moisture in the ocean due to cold ocean current
- Leeward side receive low rainfall
- Persistent dry wind blowing on lands cause dry effect (3 x 2 =6mks)

(d)

- Controlled grazing of animals
- Afforestation and deforestation programme
- Irrigation of dry land
- Introduction of suitable farming methods
- Controlling soil erosion
- Use of alternative source of energy other than wood fuel
- Public education on environmental management and conservation (4mks)

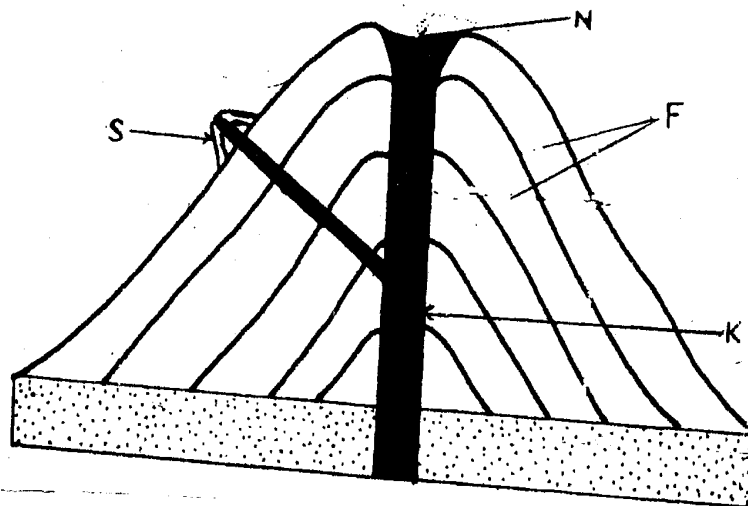
10. (a) (i) Define the term vulcanicity.

- Vulcanicity refers to the process by which solid, liquid or gaseous materials from the interior of the earth are ejected onto the earths surface or injected into the earth crust (1mk)

(ii) Name two feature resulting from intrusive volcanic activity.

- Dykes
- Sills
- Laccoliths
- Batholiths
- Lapoliths
- Phacoliths

(b) (i)



Name the parts labeled F,K,N and S

F= Pyroclast (layers of ash cinders)

K= Pipe / vent

N = Crates

S = Parasitic cone

(4mks)

(ii)

- A sudden and violent eruption occurs resulting to ejection of ash and pyroclast. This cools and solidifies to form an ash and pyroclast layers
- As pressure reduces and eruption ceases, lava flows out to cover the ash and pyroclast layer which cools and solidifies
- Subsequent eruption of ash ,pyroclast and lava build up a high and steep sided volcano
- Magma may solidify in the vent leading to its blockage
- Differerent pipes may develop leading to formation of secondary pipes.
- Lava flows in the secondary pipes, to the side of the volcano to form conelets
- The composite volcano also has a cratesat its summit e.g Kenya , Longornot , Meru

Any 4 x1 = 4mks

10 (c) Explain four economic importance of vulcanicity to human activities.

- Volcanic lava or rocks may be weathered to form fertile soils for agriculture
- Volcanic features eg mts, hot springs, geysers create beautiful sceneries that attract tourists who earn foreign exchange
- Hot springs , geysers , steam jets are tapped for geothermal energy
- Some lakes formed by volcanic activity are used for fishing, waters for domestics / industrial use
- Volcanic rocks like granites, / phonolites are used for building and construction (8mks)

10 (d) (i) State **three** objectives of the study

- To find out the effects of vulcanicity to the surrounding areas
- To find out the causes of vulcanicity
- To find out the features of vulcanicity

(3mks)

(ii) State **three** follow up activities that you undertook.

- Writing letters of appreciation to the authority
- Reported their findings
- Deployed their sample /photographs
- Duscussed findings of study
- Carried out experiments on the sample
- Date analysis

(3mks)