

# GATE AND E

Mapwork

(a) in Dam

Geo

or

(i) Amplitude = highest elevation — lowest elevation.

$$= 1460 - 1000 \checkmark m_1$$

$$= 460m \checkmark A_1$$

(b) on graph paper.

(c) in vertical exaggeration =  $\frac{V.S}{H.S} m_1$

V.S 1 cm rep soft

1: 1500

H.S 1: 50,000

Therefore  $\frac{1}{1500} \div \frac{1}{50,000}$

$$= \frac{1}{1500} \times \frac{50,000}{1}$$

$$= 33.3 \checkmark A_1$$

(ii) From the scale 1: 50,000,  $\checkmark q$

$\frac{1}{2} \text{ km} \checkmark$

1 cm =  $\frac{1}{2}$  Km

$$18.4 \text{ cm} = \frac{1}{2} \times 18.4 \checkmark \frac{9.2}{1}$$

$$= 9.2 \text{ Km. } \checkmark q$$

OR. using the linear scale, horizontal equivalent is 9.2 km  $\checkmark$  Queso.

Q) is Relief of Naam okora

- Highest elevation is 1460m in gridsquare 2871
- Lowest elevation is 1000m along a seasonal swamp in the southwest.
- Amplitude of relief is 460m
- Average height is 1230m
- Flat topped hill in gridsquare 3070
- Conical hill northwest of Onyala
- Saddle in gridsquare 2872
- Flat area in the north, south, East etc
- steep slopes on onyala highland in the west.
- Broad valley occupied by river pager.

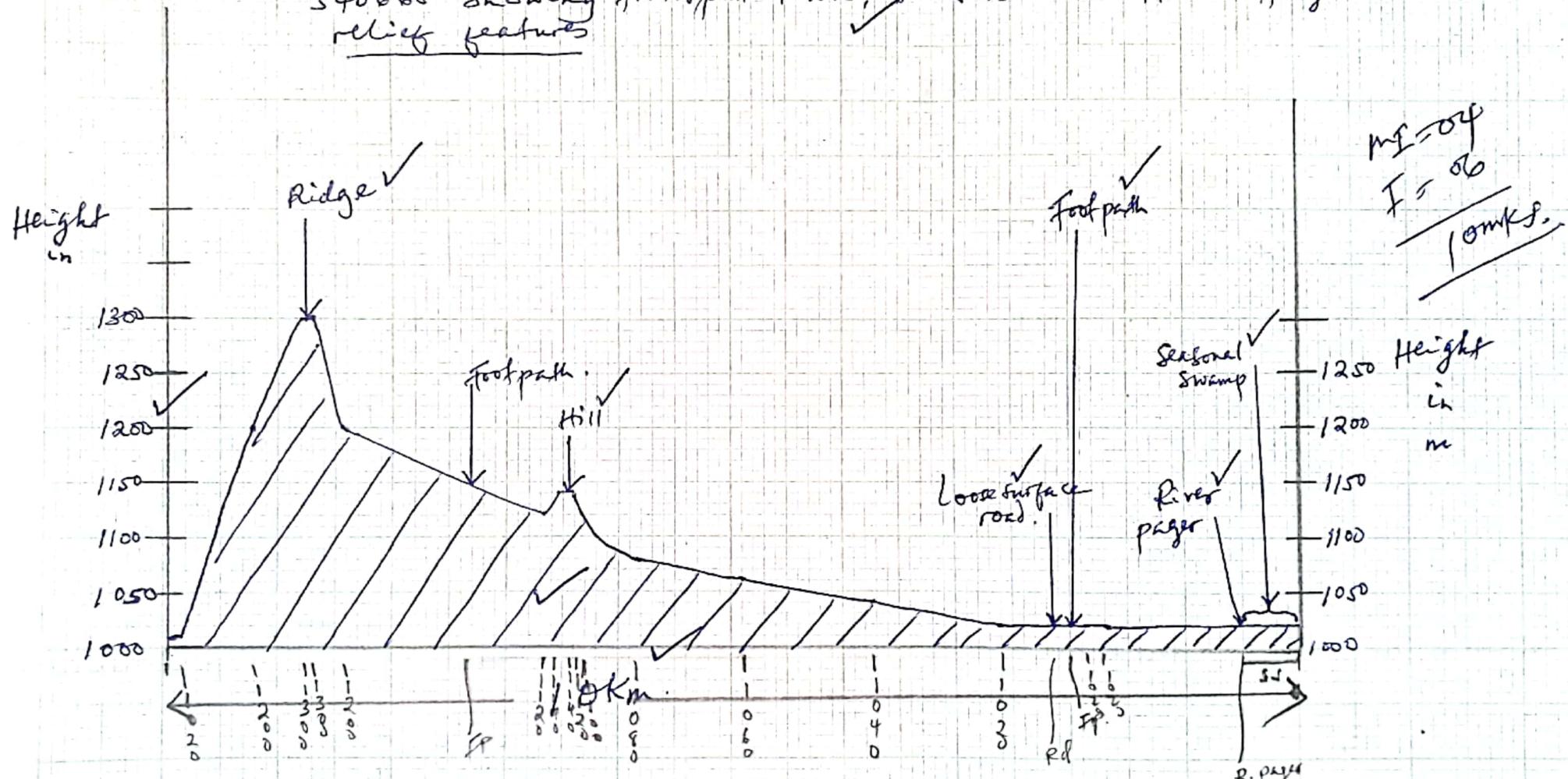
$$\text{Any } 4 \times 1 = 4 \text{ mks.}$$

(ii) Relationship between relief and drainage.

- River pager flows through a broad valley
- Seasonal swamp in gridsquare 3871 is occupying a lowlying area

$$2 \times 2 = 4 \text{ mks.}$$

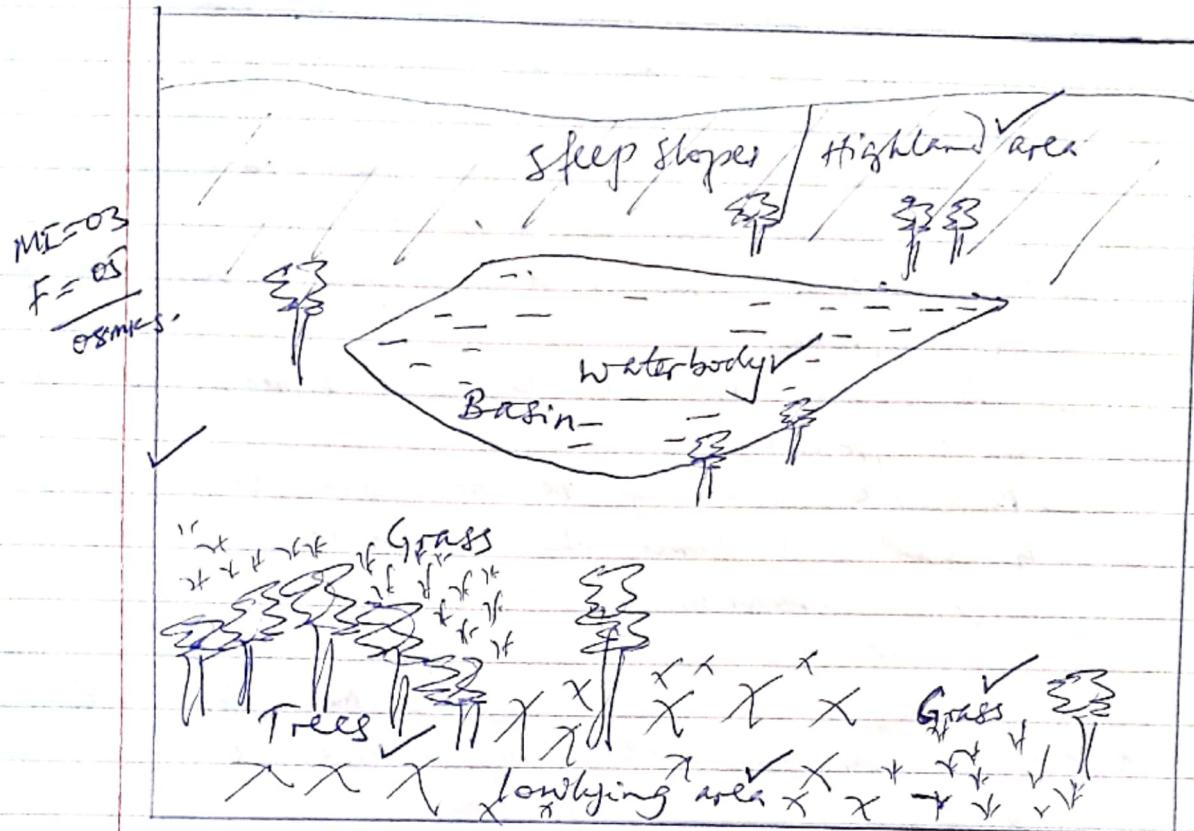
Qn. 1(b). A <sup>relief</sup> cross section of Naam Okra between grid reference 280730 and 340660 showing transport routes, seasonal swamp, river pager and relief features



Vertical Scale: 1 cm rep 50ft

2871

2. (a) A landscape sketch of the photograph showing physiographic regions, vegetation types and a waterbody. ✓



(b) The drainage feature in the middle ground is an explosion crater lake. This is a lake which occupies a shallow flat floored depression. It was formed by the process of volcanicity. This was due to the radioactivity and geochemical reactions which created a lot of heat within the earth's interior. This caused a lot of the rocks of the earth's interior to melt. Because of too much pressure from below, the magma was forced out in a violent eruption, thereby blowing away the rocks of the earth's crust. This left behind a hollow / depression surrounded by a rim of pyroclasts. This was later filled up with water from rainfall and underground streams to form an explosion crater lake.

(Impression marking 5marks)

- C (i) - Accidents in form of drowning into the lake
- water borne diseases due to the existence of a lake in the middle ground.
  - Dangerous aquatic animals due to the existence of a lake in the middle ground.
  - Difficulties in constructing roads due to the existence of a lake in the middle ground / steep slopes in the background.
  - Soil erosion due to the steep slopes in the background.
  - Land slides due to the steep slopes in the background.
  - Diseases causing vectors like tsetse flies because of some thick forests in the left foreground.

Any 6x1 (6marks).

Note: each problem must have evidence attached to it

(ii). Relief of the photograph.

- middle ground has got a basin
- Back ground has got steep slopes
- Back ground is a highland/hilly area
- Fore ground is a lowlying area
- middle ground has got gentle slopes.

Any 4x1 = 4marks.

(d). Kabale:

Kasese, fort portal, Rubirizi Bunyamwera

Reason: Due to the existence of crater lakes.

DR. Lake Kigere, Watikere in fort portal, Lake Nyamwonka, Muryangojo in Kasese or Lake Rutozi in Rubirizi/Bunyamwera

Reason: because of the existence of an explosion crater lake in the photograph.

Area - crater  
Reason - crater.

3 - Examine the influence of vulcanicity on drainage.

- Candidates are to define vulcanicity as the process by which molten rocks (magma) are intruded into the earth's crust or extruded on top of the earth's surface.
- Bring out its origin i.e. radioactive and geochemical reactions within the earth's interior.
- Must bring out the influence of vulcanicity on drainage i.e.
  - Crater lakes from explosive volcanic eruptions that blow off the top part of a volcano creating a depression that is filled with water e.g. Lake Kavir.
  - Caldera lakes from explosive eruptions or caldera subsidence creating depressions which are filled with water e.g. Ngorongoro, Mkenya, Suswa etc.
  - Lava dammed lakes from lava blocking a river forming a lake e.g. L. Bunyonyi, L. Mutanda.
  - Crater lakes formed from explosive eruptions creating a depression that is filled with water e.g. Lake Mukavura.
  - Radial drainage pattern from volcanic mountains like Elgon with rivers like Manafwa, Sipi radiating downwards.
  - Formation of hot springs e.g. Kitagata, Sempage
  - Loss of surface drainage in areas with porous volcanic rocks e.g. in Kisumu.
  - Formation of waterfalls

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  - Caldera lakes from explosive eruptions or caldera subsidence creating depressions which are filled with water e.g Ngorongoro, Arusha, Lake Naivasha etc.
  - Lava dammed lakes from lava blocking a river forming a lake e.g L. Bunyonyi, L. mutanda.
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  - Loss of surface drainage in areas with porous volcanic rocks e.g in Kisoro.
  - Formation of waterfalls

460 mgs  
1

in areas where intrusive vulcanicity creates  
fills across river valleys. eg the Tapi  
falls in Kachchh.

### Impression markings (25mgs)

Impression markings are formed by the  
action of water on the surface of the  
soil. They are formed by the  
action of rain water on the soil.  
The soil is washed away by  
rain water and it forms  
small depressions in the soil.  
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4(a) Why do glaciers form in East Africa?

- Candidates to define glaciers as a mass of ice moving down the valley in a specific direction.
- Glaciers form due to the accumulation of ice crystals / Snow particles in an environment where temperatures fall below the freezing point. As the snow particles keep on accumulating, the overlying layers of snow because of their weight compress the underlying layers leading to their compaction. This eliminates the air spaces between the snow particles. In addition, because of the weight of the overlying layers, water vapour is squeezed out of the snow particles making them to be compacted together to form a solid impermeable mass of ice known as a glacier.
- Glaciers in East Africa occur on only three mountains i.e. Kilimanjaro, Ruwenzori and Kenya.
- Candidates are to bring out reasons for their existence i.e.
  - Heavy amounts of rainfall
  - Existence of high altitude areas.
  - Existence of hollows / depressions on the high mountains.
  - Snow line was much lower during the pleistocene period

Impression markings (8mks).

Q) Explain the processes that lead to the formation of the upland glacial features.

- Candidates have to note that upland glacial features are the same as glacial erosional features
- Explain process of glacier erosion is plucking, ablation and basal sapping.
- must identify areas where glaciation occurs in Mt. Kilimanjaro, Ruwenzori and Kenya
- must bring out the landform features i.e. cirques / corries - semi-circular or bowl-like depression surrounded by a steep backwall. Formed when melt water occupies a pre-existing depression during day time/ summer. However at night/ winter, the melt water freezes and this exerts extra pressure on the rocks thereby breaking them. The broken rocks are then removed by melt water which widens the hollow. The process of plucking operates on the backwall thereby steepening it while ablation deepens the Valley. The depression may be filled with water to form a lake e.g. Lac du Spele, Lac Catherine in Mt. Ruwenzori.



steep back wall.

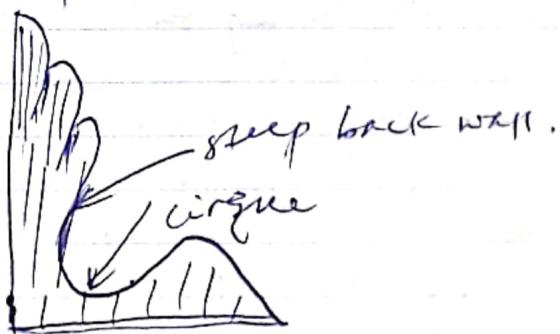
Cirque

- precip - <sup>narrow</sup> steep sided rocky ridge separating two cirques formed from backwall retreat of cirques.

- pyramidal peak - pointed pyramidal-like rock with ridges radiating from the sides. e.g. Margherita peak in Mt. Ruwenzori

(b) Explain the processes that lead to the formation of the upland glacial features.

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- arêtes - steep sided rocky ridge separating the cirques formed from backwall retreat of 2 cirques.
- pyramidal peaks - pointed pyramidal-like rock with arêtes radiating from the sides. eg Margherita peak on mt. Kilimanjaro

- ~~Handwritten notes~~
- ~~Section~~
- Glacial troughs - Broad flat-bottomed valleys with steep walls eg. Tukkis, subaqueous Valleys on mt. Ruwenzori
  - Hanging Valleys - tributary valley to the glacial trough but with less glaces
  - Roche moutonnée
  - Crag and tail
  - Fretions
  - Rockbasins etc.

N.B : Candidates must illustrate

Impression marking (27ms)

Ans. What is meant by marine transgression?

- Candidates are to define marine transgression as the submergence coastal features. If it is brought about by a rise in sea level also known as positive eustatism.
- The caves are to be brought out ie sedimentation which displaces the water upwards leading to a rise in sea level.
- Increase in the temperature of the ocean water.
- Deglaciation ie melting of ice
- Heavy amounts of rainfall
- Tectonic movements involving plate convergence due to compressional forces.
- Volcanic eruptions which create volcanic cones in water that displace the water upwards leading a rise in sea level.
- downwarping of the land near the sea.
- Isostatic readjustments etc.

Impression marking banks.

(b). Describe the features that result from marine transgression

- Candidates need to define marine transgression.
- Need to bring out the Landforms/features, describe them, explain formation and illustrate or give examples.
- Estuaries from Submergence of lowland coasts
- Dalmatian/longitudinal coasts for example at the East coast of

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Impression marking 5marks.

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To what  
respect

### pumba island

- Sound - water that separates the longitudinal islands from the mainland e.g. the Smith Sound at Mwanza
- Rias - Submerged river valleys in highland areas e.g. at Mombasa.
- Creeks - small sea inlets which have been submerged to form larger inlets. Examples include Makupa and Mtwapa at Mombasa.
- Fiorded Coasts - Deep, submerged glaciated river valley with steep walls. Examples are at the western coast of Sweden, Chile, Norway etc
- Islands
- mudflats and lagoons etc.

Impression marking 25 MARKS.

N.B. - the above landforms must be explained and illustrated.

- Q. To what extent is distance from the sea responsible for temperature variations?
- Candidates have to define temperature as the amount of sensible heat or cold within the atmosphere.
  - Identify areas with varying temperatures in East Africa. e.g. Hot temperatures are experienced in semi-desert and desert areas like Chalbi desert in Kenya, Turkana region in Northern Kenya, north eastern Uganda in Karamoja, Central TZ and coastal areas like Mombasa, Dar es Salaam etc.
  - On the other hand low temperatures are experienced in highland areas such as top of Mt. Kilimanjaro, Gombe TZ, Mt. Elgon, Ruwenzori and Mt. Kenya.
  - Areas of moderately low temperatures are in mountainous like Kigezi highlands, Mbale etc.

~~Ques~~ Distance from the Sea / Continentability influences continentability temperature variations between places near the coast and those in the interior.

- During day time, land heats up faster than sea hence high temperatures are recorded on land and low or moderate temperatures on areas near the sea.
- At night, land lose its heat very slowly rapidly leading to low temperatures on land while since water lose heat very slowly, relatively warm temperatures are recorded on the sea/water bodies like Lake Victoria.

7. Factors  
natural forests & wet lands

### Other factors

- Latitudinal location
- Altitude
- Aspect
- Albedo
- Prevailing winds
- Ocean currents
- Cloud cover
- Apparent move of the sun north and south of the equator
- Elevation etc.

8. Various Evaluation Zts.

Cloud Cover (contd.) 23nts.

Impression monkey (25nts).

## 7. Account for the distribution of natural forests in East Africa.

- Candidates should identify the different natural forests in East Africa i.e Tropical woodland forests or equatorial forests, mangrove forests, <sup>Woodland</sup> ~~Savannah vegetation~~, mountain forests, Riverine forests etc.
- Equatorial forests are found along the equator and/or shores of Lake Victoria. Examples are mabira, Budago, malabigambo in Uganda, Kakamega, Maragoli, Malava swampy. They are characterised by tall and ever green trees; limited under growth, plenty of climbing plants, hard wood trees like mahogany, Ebony etc, big buttress root system etc.
- Mangrove forests are located on the East African coast and along river valleys like Ruvuji and Ruvuma. They are characterised by evergreen trees, trees have broad leaves, trees are mainly of hard wood, trees have medium height of 10-20m, trees have aerial roots etc.
- montane forests comprise of the temperate forest and the Bamboo forests.
- Temperate forests are found at an altitude of 3000m A.S.L or high mountains like Kilimanjaro, Kenya, Elgon, Muhavura etc. They are characterised by evergreen trees, trees have small leaves, trees are in pure stands, trees are of medium height  $\frac{8}{10}-20m$ .
- The Bamboo forests are found on the high mountains of Kilimanjaro, Kenya, Elgon, Muhavura. They are characterised by hollow and segmented trees, trees are ever green, trees have tough and pointed leaves, trees have prop roots, trees

Taj  
Ch.

- Savannah woodland is a form of savanna vegetation with more or less continuous cover of trees and shrubs. It forms near the tropics forest zones where rainfall is heavy. It is found in Central Tanzania where it is referred to as miombo woodland, northern Uganda, parts of Kasese, North eastern Uganda and the Nyika Plateau of Kenya. It is characterised by trees with small leaves, trees are deciduous in nature, trees are of medium height of 8-16 meters, trees are generally umbrella shaped at the top, trees are fire resistant etc.

- Candidates then need to bring out the factors that influence the distribution of natural forests in East Africa which include

1- Climate (1500-2250mm)

Heavy rainfall of 1500mm  
Hot temperatures of  $23^{\circ}\text{C}$  -  $29^{\circ}\text{C}$   
Abundant Sunlight  
High humidity of around 80%

Heavy rainfall of 1000 - 2000mm  
Hot temperatures of  $23^{\circ}\text{C}$  -  $29^{\circ}\text{C}$   
High humidity of around 80%

Moderate rainfall of 700-1600mm  
Hot temperatures

Moderate rainfall of 600 - 800mm  
cool/mild temperatures  $8^{\circ}\text{C}$  -  $14^{\circ}\text{C}$

2- Soils

Fertile soils like those of Lake Victoria basin and fertile volcanic soils on mountains have led to the growth of tropical rain forests

- Fairly fertile soils. - Savannah woodland.
- Clay, alluvial, peat soils of lowlands and river valleys have led to the growth of mangrove forests.
- Relatively shallow soils of steep slopes of mountains have led to the growth of Bamboo forests.

### 3 - Drainage

- well drained areas support the growth of tropical rainforests, Bamboo and Savannah woodland.
- poorly drained areas (water logged areas) are responsible for the growth of mangrove forests.

### 4 - Relief / topography.

- Coastal lowlands and river valleys of Rufiji, and Ruvuma have led to the growth of mangrove forest.
- Gentle slopes which are well drained encourage the growth of tropical rainforests.
- Relatively steep upper slopes of mountains encourage the growth of Bamboo forests.

### 5 - Altitude

- At low altitude of 0-200m, there is growth of mangrove forests due to hot temperatures.
- At an altitude of 1000-2500m, there is growth of tropical rainforests due to hot temperatures and heavy rainfall.
- At an altitude of 1000m, there is Savannah woodland due to the hot temperatures.
- At an altitude of 3200-4000m, there is growth of Bamboo forest due to relatively cool temperatures of 8-14°C.

and moderate rainfall.

6. Biotic factors

7. Govt policy through conservation of forest reserves, National parks / Game reserves etc.

### Impression marking (25mks)

1. What is meant by impression marking?
2. Explain the process of impression marking.
3. State the importance of impression marking.
4. Define the following:
  - a) Impression
  - b) Marking
5. Explain the following:
  - a) Impression
  - b) Marking
6. Define the following:
  - a) Impression
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50. Define the following:
  - a) Impression
  - b) Marking

and moderate rainfall.

6. Biotic factors

7. Govt policy through conservation of forest reserves, National parks / Game reserves etc

Impression marking (25mks)

What is  
Zone 5  
me

(a) What is meant by zonal soils?

Zonal soils refer to the well developed and mature soils resulting from the maximum effects of climate and organic matter upon the parent rock over a long period of time.

- Zonal soils commonly occur on gently sloping and well drained areas of East Africa such as the Lake Victoria basin, the lower slopes of the highland areas of East Africa etc. Examples of such soils include; the pedocals eg those rich in calcium carbonate.
- Pedalfers eg the latritic soils, the tropical red earth and tropical black earth etc.
- Loamy soils like sand and clay loams etc.

### Impression marking (Sinks)

(b). To what extent is climate responsible for the distribution of zonal soils in East Africa?

- Candidates have to show the extent to which climate influences the distribution of zonal soils.

Climate influences the formation of zonal soils through the elements of rainfall and temperature.

- In humid areas of East Africa, chemical weathering processes are accelerated which lead to the development of deep fertile soils such as clay loamy like nitosols found in the highland areas of East Africa.

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- On the other hand, high rainfall & leaching occurs in some parts of East Africa to encourage leaching, hence formation of laterite soils of around Lake Victoria shores.

### Other factors:

- Nature of the parent rock: This provides the basis upon which soil forming process operate, the parent rock differs in terms of hardness, permeability, jointing, colour, structure etc.
- If parent rocks are easily weathered, to produce deep and mature zone soils.
- permeable rocks accelerate chemical weathering process leading to the formation of deep mature zone soils.
- Relief / Topography: Gentle slopes experience a balance between erosion and deposition. This accelerates chemical weathering process hence leading to the formation of deep mature zone soils.
- Valleys/ flat areas have extensive deposition leading to the development of deep zone soils.
- Biotic factors - This refers to the influence of living organisms in soil formation.
  - When plants/ vegetation die and rot, they add humus to the soil and produce compounds which may break down complex rocks to form soil.



- on the other hand, high rainfall totals received in some parts of East Africa encourage leaching, hence formation of lateritic soils e.g. around Lake Victoria shores.

### Other factors:

- nature of the parent rock. This provides the basis upon which soil forming processes operate. The parent rock differs in terms of hardness, permeability, jointing, colour, structure etc.
  - The soft parent rocks are easily weathered to produce deep and mature zonal soils.
  - permeable rocks accelerate chemical weathering processes leading to the formation of deep mature zonal soils.
- Relief / Topography. Gentle slopes experience a balance between erosion and deposition. This accelerates chemical weathering processes, hence leading to the formation of deep mature zonal soils.
- Valleys / flat areas have extensive deposition leading to the development of deep zonal soils.
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  - When plants/vegetation die and rot, they add humus to the soil and produce compounds which may break down complex rocks to form soil.

Burrowing animals like rabbits and moles, worms etc, through their passages underground also contribute to soil formation.

- Human activities through the addition of manure, fertilizers etc leads to the introduction of chemicals to the soil which accelerate chemical weathering process, thus the formation of deep mature soils.

- Time

- vegetation.

Impression marking (20marks).