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UMSS NAMUGONGO 'A' LEVEL GEOGRAPHY SEMINAR GUIDE 2022

P250/1

1. **Study the 1:50,000 East Africa (UGANDA) KABALE map extract part of sheet 93/4, series Y732, Edition 4-U.S.D and answer the questions that follow.**

- **(i) Calculate the vertical rise of the map extract.**

  Highest point (H.P) - Lowest point (LP)
  7501 ft – 5900ft
  = **1601** ft

(ii) Determine the trend of the loose surface road in the south west.

The trend of the loose surface road in the south west.
South East (S.E) to North West (NW)

OR;
169° — 339°

- **With evidence from the map extract;**

(i) State the direction of flow of river Niachati – Karujabura.

It flows from the south to the North and North East.

Evidence:

- It flows from a hilly area of 7100ft to a low lying area of 5900ft in the North East.
- Tributaries join River Niachati-Karujabura at acute angles facing the North and North East.
- Presence of the permanent swamp in the North East.

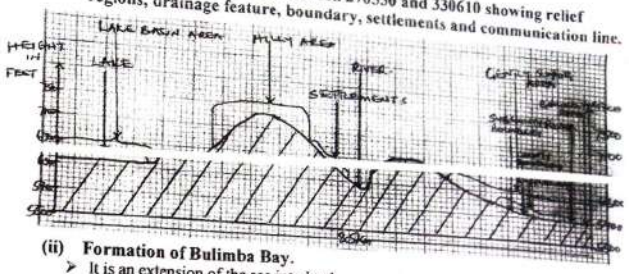
(ii) Identify the services provided in Kabale town.

- Education service evidenced by Rutooma technical school.
- Transport services evidenced by the loose surface and bound surface roads.
- Security services evidenced by the police station and barracks.
- Burial services evidenced by a cemetery.
- Industrial services evidenced by soap and floor factory.
- Residential services evidenced by the Hotel.

(iii) Show that Lake Bunyonyi is lava dammed.

- Numerous islands as lava deposits e.g. Bwama, Bushara, Bukomi.
- Irregular shore line with numerous bays and headlands e.g. Bulimba bay.
- It appears elongated especially in the south.
- High altitude of 6400ft above sea level.

(c) (i) A cross section of Kabale between 270550 and 330610 showing relief regions, drainage feature, boundary, settlements and communication line.



(ii) Formation of Bulimba Bay.

- It is an extension of the sea into land.
- It is formed by wave erosion due to Abrasion and hydraulic action.
- It is formed along a coastline with alternate soft and hard rocks.
- Due to Abrasion and Hydraulic action, the soft and less resistant rocks were easily worn away leading to an extension of the sea into the land to form a bay.

Illustration:

(d) (i) Description of Relief;

- The area has a basin e.g. Lake Bunyonyi.
- The area has numerous islands e.g. Bwama, Bukomi, Bushara.
- The area has headlands e.g. Kitooma in the south.
- The area has a bay e.g. Bulimba bay in the central and in the south.
- The area is hilly in the south, west, north etc.
- The area is gently sloping in the North East at Rushoorooza.
- The area is low lying in the North East around Kabale town.
- The area has ridges around Bukoora, Kitumba, Kyabahinga.
- The area has saddles or cols at Ndaragi in the North.
- The area has flat topped hills e.g. Mugabi and Ndaragi in the North and North East.
- The area has conical hills e.g. Bugona in the West.
- The area has several narrow valleys in the west, E.t.c.

(ii) Relationship between relief and vegetation.

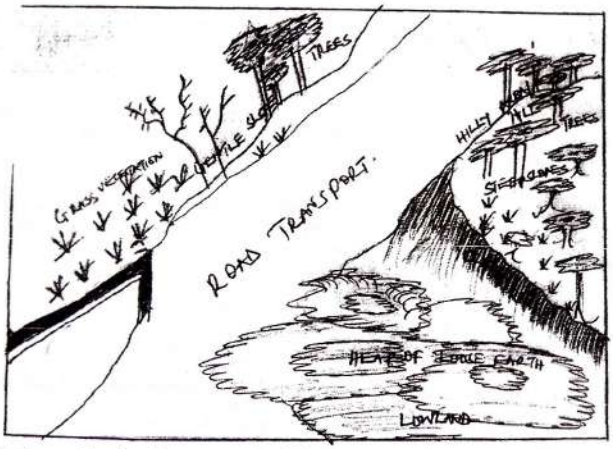
- The low lying area at Kagoma in the south west and Bugoroba in the North West have encouraged growth of papyrus vegetation.
- The steeply sloping area in the south has encouraged forest vegetation.
- The gently sloping area at Rusoorooza in the North East has encouraged growth of plantation vegetation.
- The hilly area in the south has encouraged growth of woodland vegetation.
- The hilly area in the south has encouraged growth of scrub vegetation.

2. (a) **With evidence from the photograph, identify any two;**

(i) Denudation processes.
- Landslides / mud flows / mud slides / mass wasting in the middle ground.
- Soil erosion in the foreground and middle ground.

(ii) Land use types.
- Road transport in the foreground and middle ground.
- Tree growing in the middle ground and background.

(b) A landscape sketch of the area shown on the photograph showing physiographic features, heap of loose earth, vegetation types and major communication line.



(c) (i) Accounting for the occurrence of the major denudation process in the middle ground.

The major denudation process is landslides / mud flows.
- Prolonged / heavy rainfall causes saturation and lubrication of rocks.
- The pounding effect of heavy rainfall also leads to saturation and lubrication of rocks.
- Steep slopes / over steepened slopes like cliffs and scarps speed up movement.
- Permeable, weathered, saturated rocks absorb water and are easily moved.
- Existence of semi-liquid materials (mud) that have been lubricated.
- Heavy, wet, young volcanic rocks absorb water and therefore increase the weight, they are more slippery.

- Volcanicity leads to volcanic ash and pumice that are so porous and therefore promote mudflows.
- Movement of heavy vehicles like buses, tractors along steep slopes cause vibrations and loosening of rocks.
- Construction of roads along steep slopes creates cliffs and steep slopes that encourage mudslides.

(ii) Measures that can be taken to solve.
- Afforestation and re-afforestation to hold the soil particles.
- Environmental awareness through sensitizing masses.
- Hill slope drainage to reduce on surface area and coverage of water.
- Population control measures to reduce pressure on marginal lands.
- Forced eviction of people from highland areas to reduce pressure.
- Forest conservation measures aimed at binding the soil particles together.
- Agro-forestry to bind soil particles together.

(d) Giving reasons for your answer; suggest an area in East Africa where this photograph could have been taken.

Areas include;
- Bududa
- Bulambuli
- Bulucheke
- Etc.
- Sironko
- Bundibugyo
- Kapchorwa

Reasons:-
- Presence of hilly areas.
- Cliffs along the road
- Winding roads
- Occurrence of mudflows.

3. **Examine the influence of earth movements in the formation of highlands and depressions in East Africa.**

Candidates are expected to;
- Define highlands and depressions.
- Give examples of highlands and depressions.
- Define earth movements and give their origins.
- Identify and describe the resultant highlands and depressions due to earth movement processes.

- **Highlands are uplands that rise above 1500m above sea level.**
  - Examples include; Mt. Rwenzori, Mt. Usambara, Mt. Uluguru, Muthews range, Ndoto and Nyiru ranges, Bunyaruguru hills, etc.
- **Depressions are hollows or basins on the earth's surface.**
  - Examples include; Victoria basin, Kyoga basin, the eastern and western rift valley basins, etc.

- ***Earth movements*** **are crustal disturbances associated with vertical and lateral** ***movements occurring*** **on a small and large scale.**
  - *They originate from the interior mainly in the mantle due to radioactivity, geophysical and geochemical reactions.*
  - This causes heating that results into melting or nearly melting of the mantle rocks resulting into convective currents.
  - Convective currents move vertically causing uplifts and sinking hence faulting, warping and tilting.
  - Convective currents move laterally leading to convergence and divergence hence faulting and folding.

- **Faulting has led to the formation of the following highlands;**
  - Block mountain / Horst.
  - It is upland bordered by fault scarps on one or more sides. It stands above the surrounding land as a result of the middle block of land being raised by an uplift.

- **Block mountain by Tension forces.**
  - Divergent convective currents produced the tension forces.
  - The rocks of the earth's crust were subjected to tension forces. Pressure from the tension forces pulled apart the land mass leading to normal fault lines on either side of the central block.
  - The continuous tension of the landmass pulled apart the side blocks causing them to sink.
  - The middle block was left to form a block mountain.

  Illustration:

- **Block mountain by compression forces;**
  - Convergent convective current produced the compressional forces. The compressional forces pushed the rocks of the earth's crust from either side leading to the development of reversed fault lines.
  - Continuous pressure from the compressional forces resulted into uplift / up thrust of the central block leaving the side blocks stable.
  - The uplifted central block formed a block mountain separated from the surrounding land by fault scarps.
  - E.g's include Mt. Rwenzori, Mathews range, Ndoto and Nyiru ranges, Usambara, Uluguru, Ufipa, Pare, Mahenge and Iringa mountains.

  Illustrations:

- **Tilt block landscape;**
  - Is a landscape composed of angular ridges and depressions formed by a series of tilted fault scarps and fault blocks.
  - Tension or compression forces caused the formation of fault lines that divided up the earth's crust into several blocks.
  - The blocks either sunk or rose and the middle block was uplifted higher than the sides.
  - The middle block therefore tilted / bent in one direction forming a tilt block landscape.
  - Examples include; Kichwamba in Uganda and Aberdare ranges in Kenya.

  Illustration:

- **Faulting has led to the formation of the following depressions:**
  - Rift valley;
  - It is an elongated trough / depression bordered by infancing fault scarps along more or less parallel faults.
  - The rift valley has two major sections i.e. the eastern arm and the western arm.

- **Rift valley formation by Tension forces.**
  - Radioactivity, geophysical and geochemical reactions led to divergent convective currents.
  - These produced the tension forces that acted / pulled apart in opposite direction from a central point within the earth's crust hence normal fault lines.
  - The side blocks were pulled apart as the central block was lowered or sink under its own weight to form a rift valley.
  - This is applicable to the eastern arm of the rift valley.

  Illustration:

- **Rift valley formation by compression forces.**
  - Radioactivity, geophysical and geochemical reactions produced the compression forces.
  - The forces moved or pushed in the same direction and acted on the earth's crust hence reversed fault lines.
  - The side blocks were forced to override / uplifted above the central block that remained stable to form a rift valley.
  - E.g's is the western arm of the East African rift valley.

  Illustration:

- **Graben hollows;**
  - Is a narrow trough between parallel fault lines formed at the floor of the rift valley due to secondary / multiple faulting.

- **Graben formation by tension forces;**
  - Radioactivity, geophysical and geochemical reactions resulted into divergent convective currents that spread within the earth's crust hence tension forces.
  - Tension forces pulled apart a block of land from a central point hence normal fault lines.
  - Continuous tension resulted into lowering of the central block leaving the side block stable.
  - The central block hence became a rift valley.
  - Secondary / multiple faulting took place at the floor of the rift valley to create a depression deeper than the rift valley called a graben.
  - E.g's include; L. Turkana, L. Naivasha and L. Nakuru.

  Note: One can use the compression forces theory.

  Illustration:

- **Fault guided valley.**
  - These are fault valleys / depressions located along a single fault line.
  - Displacement of rocks along fault lines caused the rocks to be crushed and later easily removed by erosion and weathering.
  - A depression is left behind called a fault guided river valley.
  - E.g's include; R. Aswa in Northern Uganda and Kerio valley in Kenya.

Illustration:

- **Warping.**
  - It is either up warping (uplift) and down warping (sinking) of the earth's crust.
  - Warping led to the formation of raised watershed / plateaus and down warped basins as the resultant highlands and basins respectively.
  - During the Pleistocene period, there was uplift of western Uganda and western Kenya to form the up warped plateaus or raised watersheds.
  - There was sinking or down warping of central Uganda and south eastern Uganda to form basins / depressions.
  - Examples of raised watersheds include the Bunyaruguru hills and basins include; L. victoria, L. Kyoga, L. Wamala, L. Opeta, L. Bisinia and L. Mburo.

Illustration:

- **Folding.**
  - It is the bending of the earth's crust due to the action of the compression forces.
  - Synclines were formed as depressions while anticlines were formed as the highlands.
  - Compression forces acted on the young sedimentary rocks hence bent to form up folds called anticlines and down folds called synclines.
  - E.g's are found in the Buganda – Tooro rock system, Nyanza – Kavirondo rock system and Ankole-Karagwe rock system.

Illustration:

4.(a) Account for the formation of the stratified rocks.

- **Explain the importance of rocks to the people of east Africa.**
  - Candidates are expected to;
  - Define sedimentary rocks
  - Give their characteristics
  - Provide process of formation
  - Explain the formation of the three categories

- **The stratified rocks are also referred to as sedimentary rocks.**
  - Stratified rocks are rocks composed of deposited minerals and rock fragments produced by mechanical and chemical weathering in the former rock masses
  - The weathered rock materials are transported by erosional agents like wind, ice, running water and are later deposited in strata on their dry land valleys lakes seas and oceans
  - The layers are separated by bedding planes of cemetery materials
  - The layers can be horizontal, gently dipping and steeply sloping.

- **Characteristics of sedimentary rocks.**
  - They contain fossils which include remains of dead plants and animals
  - They contain layers (strata)
  - They are non-crystalline in nature
  - The layers are separated by bedding planes of cementing materials
  - The layers are either gently dipping, steeply sloping or horizontal

- **Process of formation of sedimentary rocks.**
  - Weathering of the igneous rocks physically and chemically
  - Erosion and transportation of the weathered rock materials
  - Deposition of sediments by agents for example ice, wind, running water and ocean waves
  - Accumulation of the laid down or deposited materials
  - Stratification of the deposited materials where layers are created
  - Compression of stratified materials by the overlying weight
  - Compaction of the layers
  - Consolidation of the materials in a given layer
  - Cementation of the laid down materials by the silicurious, calcareous and ferruginous materials. These transform the sediments laid down to form the sedimentary rocks

Illustration

- **Sedimentary rocks are formed in three main ways which include;**
  - Mechanically formed sedimentary rocks
  - Chemically formed sedimentary rocks
  - Biologically formed sedimentary rocks.

- **Mechanically formed sedimentary rocks.**
  - These are sedimentary rocks which result from drying and consolidation of rock textures deposited by various agents.
  - The varied textures the form the varied rock types depending on the agents of erosion, transportation and deposition.

- **Rivers erode, transport and deposit materials which have resulted into alluvial and lacustrine deposit. These are laid down at the bed of the sea or in the lower valley of the river.**
  - The laid down materials include silt, alluvium, clay, gravel.
  - They are found in the lower valleys of rivers like Semliki, Nzoia. Nyando, Rwizi, Ngaila.

- Ice also erodes and deposits materials known as moraines. Tills, outwash plains, resorted clays. These are found in the valleys of Bujuku, Nyamwamba, and Mubuku.

- Wind erodes and deposits materials known as loess, sand dunes and sand sheets.
  - These are mainly deposited in the dry areas of Karamoja, northern kenya and Ankole Masaka dry corridor.

- Waves also erode and deposit materials which are later consolidated to form marine deposits like sand, clay, shell, shingles.
  - These are found on the shores of Lake Victoria and along the coast of east Africa.

The resultant rocks include sandstone, gravel, conglomerate, clay stone, shale, mudstone, grit, boulder clay.

- **Chemically formed sedimentary rocks.**
  These are sedimentary rocks formed from evaporation and or precipitation of rocks after evaporation.
- **Rock salt**, Soda ash and dolomites were formed due to continued deposition and accumulation of the salt crystals as a result of evaporation or precipitation caused by hot temperatures
- **Laterites or duricrusts** are formed by the process of leaching and oxidation.
  - Leaching involves the down ward movement of soluble mineral compounds leaving the insoluble ores of Iron and Aluminium either on to the earth's surface or just below the surface.
  - Due capillary attraction, soluble minerals dissolved in water or drawn from the underground moist rocks. As water reaches the earth's surface, evaporation takes place and the dissolved minerals are deposited either on the earth's surface or just below the surface.
  - These minerals fuse with iron and aluminium ores to form a duricrust or a lateritic duricrust . These are common on the flat topped hills of Buganda landscape.
- **The formation of stalactites and stalagmites** involves rainwater in the atmosphere reacting with carbon dioxide to form the weak carbonic acids.
  - The weak carbonic acids react with calcium carbonate to form Calcium Hydrogen Carbonate which is carried underground.
  - Calcium is deposited at the roof of the cave, dries up and forms a stalactite and drops of water containing Calcium are deposited at the floor of the cave and form a protrusion after drying up called a stalagmite.
  - They are common in Nyakasura, Tororo area and along the East African coast.
  - **Other examples** of chemically formed sedimentary rocks include: potash, Gypsum and Nitrates.
- **Biologically formed sedimentary rocks (organically)**
  - These are sedimentary rocks formed from the remains of once4 living plants and animals
- **Coral polyps are minute organisms** within the sea. When the polyps die, their skeletons sink and they are deposited at the sea bed, accumulate , compressed, compacted, consolidated and cemented to form limestone rocks containing Calcium Carbonate
  - These are generally associated with the coral reefs
  - **Examples can** be found at the East African coast at Mombasa, Tanga, Tiwi , Kilifi ,Mtwara.
- **Plant accumulation** during the carboniferous period resulted into the compression of sediments from the plant remains to form coal of different types for example lignite peat and brown coal .This is found in the Ruhuhu valley Tanzania.
  - Accumulation of ferruginous rocks led to the formation of iron ore and iron stone.
  - **Other examples** of organically formed sedimentary rocks include petroleum, in the Semliki basin, natural gas and chalk.

(b) Explain the importance of rocks to the people of East Africa.

Positives:

- Sedimentary rocks like sandstone and claystones provide raw materials for the building industry for example clay stones for brick making in kajjansi.
- Sedimentary rocks like coral reefs along the East African coast provide good sheltered harbours for shipping activities.
- Coral oil and natural gas are contained in sedimentary rocks hence a source of energy e.g. in the Albertine region or in Semliki- Wanseko region.
- Igneous rocks like pumice, basalt form fertile volcanic soils that support agriculture for example Arabica coffee and bananas on the slopes of Mountain Elgon and Mountain Kilimanjaro.
- Igneous rocks like basalt and obsidian form minerals that encourage mining for example diamonds at Mwadui are found in volcanic pipes composed of igneous rocks. tin in Kabale
- Igneous rocks like basalt from features like volcanic mountains like mountains Elgon, volcanic plugs for example at Tororo which are tourist attractions hence tourism and Foreign exchange earnings.
- Igneous rocks like obsidian and basalt form highlands which create the windward sides of the mountain are associated with heavy and reliable rainfall as well as hot temperatures like areas of Mbale.
- Metamorphic rocks like gneiss and quatzite form hard basement rocks that form a firm foundation for dam and road construction because of their hardness.
- Some metamorphic rocks like graphite, coal are used as sources of thermal energy basically for heating and lighting purposes.
- Metamorphic rocks like slates are used for study purposes and research mainly by Geographers and geologists.
- Because of their hardness and resistance, metamorphic rocks like quartzite outcrops form highlands that form good sites for defence institutions.
- Some metamorphic rocks like marble are used for decoration and ornamental purposes.

Negatives:

- Sedimentary rocks like peat and silt have formed young soils in valleys and lowlands.
- Sedimentary rocks like sandstones create wastelands due to the deposition of poor sedimentary rocks like sand dunes in Karamoja and Masai lands.
- Sedimentary rocks like sandstone, gravel are a barrier to fishing as they tear nets along the East African Coast.
- Sedimentary rocks like clay stone, silt encourage flooding in low lands because they are non-porous.
- Igneous rooks like granite are so hard to breakdown hence form thin shallow soils that do not support agriculture.
- Igneous rooks like basalt form highlands like Elgon, Muhavura that limit construction of transport and communication lines for example in areas of Kabale, Kisoro, Kapchorwa.
- Igneous rooks like basalt, pumice are sometimes ejected through violent means (explosion). Such explosions eject hot lava which destroys human lives and property.
- Igneous rooks likes basalt, obsidian form highlands that create the lee- ward side of the mountain associated with little or no rainfall and hot temperatures limiting possible human activities for example the Eastern slopes Mountain Elgon in Kenya.
- Igneous rooks like pumice also form highlands like Kenya, Kilimanjalo that are steep hindering construction of settlements.
- Metamorphic rocks like gneiss form out crop rocks that hinder human settlement.
- Metamorphic rooks like gneiss breakdown into poor soils that do not favour agriculture.
- Landslides and soil erosion often occur on metamorphic rocks features like highlands for example quartzite outcrops.

Note: Each importance must have an example of a rock.

5. Describe the weathering processes experienced in north Eastern Uganda.

Weathering refers to the physical break down and chemical decomposition of the rocks at or near the earth's surface "in Situ".

North eastern Uganda is made of districts like Kotido, Abim, Nakapiripit, Moroto, Kaabong.

The type of climate experienced in North Uganda is semi-arid climate characterized by;

- Very little, unreliable and poorly distributed throughout the year.
- Hot absolute temperatures of over 30°C.
- A high diurnal range of temperature of over10°C.
- Limited cloud cover
- Avery low humidity of less than 30%.
- Sunny conditions.

From the above conditions both chemical and physical weathering are experienced

Physical weathering process is dominant during the long dry season and some of the processes include exfoliation block disintegration granular disintegration, aridity shrinkage and salt crystallization.

The process includes;

- **Exfoliation;**
  - Is the peeling off the outer surface layer of the rock when heated or cooled
  - During day, rocks experience rapid heating of the outer surface layer which expands the heat does not reach the inner layers because rocks are poor conductors of heat
  - During the night; temperatures drop rapidly because of the absence of cloud cover making the rocks to contract. The alternative expansion and contraction causes stress in the rocks that makes the rocks break up especially the jointed rocks. The outer layer peels off in thin sheets a process known as exfoliation.
  - After peeling off, a smooth rounded block is left behind called an exfoliation dome.
- **Block disintegration;**
  - Is the breakdown of rocks into rectangular shaped blocks when heated and when cooled.
  - It occurs in jointed rocks that are heated and cooled leading to expansion and contraction of the joints.
  - The joints enlarge and the rock muscles break up into small blocks.
  - It is common in homogeneous rocks with uniform mineral composition.
  - This leads to formation of granitic / rock tors.
- **Granular disintegration;**
  - This is the breakdown of rocks into granules / grains due to differential heating and cooling.
  - It is common in heterogeneous rocks. Due to differences in minerals, the rock expands and contract at different rates.
  - The rocks therefore breakdown into grains.
- **Aridity shrinkage**
  - This occurs in non-porous rocks for example clay which absorbs water during the rainy season and expands.
  - During the dry season, the water evaporates and clay develops cracks and joints leading to disintegration.

- **Salt crystallization**
  - This is a process which occurs in semi-arid areas where saline solutions in the rocks cracks and joints begin to crystallize after the evaporation of water.
  - The salt crystals accumulate and cause stress in the rock joints thereby breaking them down
  - In semi-arid area of North Eastern Uganda, chemical weathering is also experienced during occasional showers, water sources and moist rocks.

This occurs through;

- **Oxidation**
  - When oxygen reacts with minerals, particularly iron and aluminium, oxidation occurs. The structures of the rocks are transformed to bauxites and laterites like basalt which is black or green is oxidized to red. The process is common ferric landscapes.
- **Carbonation**
  - This is the process by which rain water from the atmosphere reacts with carbon dioxide to form the weak carbonic acids.
  - The weak carbonic acids react with the rocks to produce new compounds. It is pronounced in limestone rocks where calcium carbonate reacts with carbonic acids to produce calcium hydrogen carbonate.
- **Solution**
  - This is the process that involves soluble rocks like limestone rock, salt that get dissolved in water and are carried away in solution leaving behind cracks and joints, hollows in the rocks.
  - The process is common in sedimentary rocks like limestone rocks and rock salt.
- **Biological weathering also is less dominant**

  Biological weathering is where plants use their roots to extract minerals. This is common with the xerophytic plants.
  - The roots of the plants and trees can force apart the rock joints as they grow and enlarge which encourages the breakdown of rocks physically.
  - Burrowing animals like moles, rodents also break the surface rocks as they create underground passages. They allow water and air to sink hence encouraging reactions with rocks.

6. (a) Distinguish between a cliff and ship off scope.

- **A cliff is the outer concave bank of the river.**
  - As the river water flows round the bend, the current exerts (impinges) a great force on the concave side or outside curve.
  - This leads to maximum erosion and under cutting causing a river cliff.
  - While;
  - Ship of slope is the inner convex bank of the river.
  - On the opposite side of the river cliff, there is a slack / weak current leading to very little erosion and more deposition.
  - This reduces the steepness of the spur ends leading to a gentle slope known as a slip off slope.

Illustration:

***Describe the features* that characterize the torrent (youthful) stage of the river in East Africa.**

Candidates are expected to;
- Describe the characteristics of the youthful stage.
- Describe the resultant landforms.

- The youthful stage of the river is the first stage.
- It is the stage where the river source is found.
- It is the stage where the river first makes its appearance of the earth's surface.
- It is the highest point of the river.

This is characterized by;
- The rivers flow through a steep gradient.
- Velocity is high and turbulent.
- The river increases its length through head ward erosion.
- The volume of water is small.
- Erosion is directed to the bed and so the river is deep.
- The river has a V-shaped cross profile.

The major features in this stage include;

- **V-shaped valley.**
  - Is a deep and narrow valley where vertical erosion through hydraulic action undercuts the bed faster than the sides.
  - This results into a V-shaped valley e.g. R. Nyamwamba, R. Mubuku, R. Nyamugasani on Mt. Rwenzori.

Illustration:

- **Potholes.**
  - These are circular depressions cut at the bed of the river.
  - They are formed by fast flowing water loaded with materials such as sand, gravel pebbles and swirls.
  - Pot holes are formed on river beds that are uneven or have fairly soft rocks.
  - Materials carried by the river cut on circular depressions on the river bed which gradually deepen to form potholes.
- **Conditions include;**
  - Relatively soft rocks on the channel bed.
  - Rocks with joints and cracks on the channel bed.
  - High river velocity.
  - High river energy.
  - Presence of abrasion materials such as sand pebbles and gravel.
  - E.g's include; R. Manafwa and R. Mubuku.

Illustration:

- **Interlocking spurs;**
  - These are resistant obstacles / rocks around which the river winds in the youthful stage.
  - They form in areas of alternate soft and hard rocks.

  - As hard rocks resist erosion, the river concentrates on erosion of soft rocks.
  - Bends are gradually emphasized to form the spurs. Spurs do alternate on the opposite sides of the river banks and seem over lock / overlap into each other forming the interlocking spurs.
  - Examples are found on R. Nyamwamba, .R. Mubuku on Mt. Rwenzori.

Illustration:

- **Waterfalls.**
  - Is a sharp break in the rivers' course where the river in water flows from a region of higher elevation a lower level.
- **Waterfalls are formed due to differences in rock hardness / resistance.**
  - When a resistant rock layer lies across the river bed.
  - After which is a soft rock which can easily be eroded by abrasion and hydraulic action.
  - There is undercutting / down cutting of the soft rock which will cause a steep gradient / sharp break in the channel bed of the river hence a waterfall.
  - E.g's include; Owen falls dam, Kindaruma falls, Pangan falls, Sezibwa falls, etc.

Illustration:

NOTE: Other conditions can as well be used to explain a waterfall.

- **Plunge pool;**
  - Is a broad, circular, shallow depression at the base of the waterfall forming a pool of seemingly settled waters due to progressive drilling and grinding of the valley floor.
- **Conditions include;**
  - Large volume of water.
  - Steep gradient.
  - Great erosive energy due to velocity.
  - Hard rocks lying over soft rocks.
  - Presence of abrassional materials such as gravel, pebbles and sand.
- **Process of formation.**
  - Waterfall is formed due to alternate soft and hard rocks.
  - A pothole is created at the base of the waterfall due to the hydraulic force of the falling water.
  - Erosion, drilling, cavitation, scouring and swirling action collectively enlarge and widen the pot hole to produce a plunge pool.

Illustration:

- **Rapids.**
  - It is a turbulent flow of water in a river channel.
  - Develops when the gradient in a river bed increases without sudden break of the slope or vertical slope.
  - Soft rocks are easily eroded / removed and the slope dips downstream.
  - Hard sections of rocks remain protruding hence irregular bed of river.
  - The river therefore flows at a moderate rate or gently over it forming rapids.

OR:
- Presence of boulder deposits may make the channel irregular forming rapids.
- E.g's include along river Nile in Northern Uganda.

Illustration:

- **Gorge.**
  - It is elongated steep sided narrow river valley with the depth of the valley greater than the width or a V-shaped river valley with the depth greater than the width.
  - A gorge is formed where vertical erosion cuts more rapidly than the forces of weathering can wear back and open up the sides.
  - This is common where rivers follow lines of weakness.

OR:
- When a waterfall is receding.
- When the hard rocks exist across the river bed.
- The river flows over them and concentrates its attack on the lower side made up of soft rocks.
- The water pouring undercuts the hard rocks causing the waterfall to retreat up stream hence gorge formation.
- Examples include the great Ruaha gorge, Kyambura gorge and the Mitano gorge.

Illustration.

7. **To what extent has long shore drifting influenced the development of depositional coastal features in East Africa?**

- Candidates are expected to define the term long shore drift,
- talk about constructive waves,
- Give the land forms that result from long shore drift.
- Then bring out other factors.

- Long shore drift is a method of wave transport where there is a general movement of materials along a shore line due to the effect of waves breaking obliquently, such that the materials transported by swash is obliquently pushed up the shore line but backwash flows back and drags material down the beach at right angles to the shore.
- In this way material moved by long shore drift follows a zigzag path along the shore.

Illustration.

Candidates should bring out the role of long shore drift in the formation of depositional features.

- **Beach**
  - Beach accumulation of the material along the coast on gently sloping coastline.
  - **Barrier beach**; long ridges of sands deposits approximately parallel to the coast separated from the coast by a lagoon formed on gently sloping coastlines by long shore drift and constructive waves breaking off shore. Materials are deposited under water as off shore sand bars appear above high tides.
  - **Beach cusps**; series of small corn-shaped projections separated by a shallow indentation that Point Sea wards. Formed by eddies of powerful swash that scours course materials in the depression. Examples are found at Mombasa.
  - **Bay head beaches**; being a crescent of sand and shingle lying between headlands formed where there are bays and headlands by long shore and constructive waves.
    Examples Bugongo beach, Nyali beach, Lutembe beach, Lido beach, etc.
  - **Storm beach**; Formed when strong waves deposit materials several metres above the water level in periods of storms.
  - Contain large boulders and rocks.
- **Beach rocks;** a hard crust-like deposits projecting above the sea. They are formed shells, pebbles cemented together by calcium carbonate.
  - **Berms**; ridge like features formed by larger materials that accumulates at furthest limit of swash action. Develop where swash is stronger than back swash e.g. Lutembe beach, Lido etc.
- **Bars**; ridges of sand, mad, gravel, shingle are deposited off shore parallel to the coast formed on gently sloping coast or irregular shore lines.
  - Formation is attributed to either wave which drifts materials along the shore, backwash depositing materials directly down the beach.
  - Similarly, the long shore drift and breaking waves cause sand grains to move sea wards resulting into accumulation of material and the submerged line known as break point bar. Repeated processes form a bar behind which develops a lagoon, mudflats and marshes.

Types of bars include;
- **Offshore bars;** these are long ridges of sand and shingle deposited along a coast separated from the coast by the lagoon.
- Formed by waves breaking some distance offshore where the continental shelf is shallow leading to the formation of a submarine bar that is slowly built upwards through continued deposition of materials.
- **Foreshore sand bar**; a bar formed by constant accumulation of sand causing offshore bars to rise above the water surface.
- **Bay-bar**; a bar which extends across a bay. Forms when a spit continues to grow length wise from one headland towards another linking the two headlands enclosing a lagoon e.g. at Nabugabo bay.
- **Barriers island**; a bar which gradually moves inland by wave attack and encloses the area of shallow water (sounds) and have no connection to the mainland.
- **Spit**; a long narrow ridge of sand, shingle or pebbles in a linear form joined to the land at one end with the other end projecting into the sea or across.
  - It grows out from the coastline due to the effect of long shore drift often at a location where the line coast changes direction, usually at the mouth of the estuary and delta e.g. Kabo spit and Tonya spit on Lake Albert.

Types of spits include;
- **Hooked spit**; this is when the open end of a spit being hooked or curved across the bay or estuary formed by waves moving obliquely to the shore tending to swing around the end of the spit or waves approaching the shore from several directions forced the open part of the spit to bend or curve the deep water off the spit allows wave action to curve hence forming a curved spit e.g. at Kibanga.

- ***Cuspate* spit**; applies to two spits converging offshore. It is also a curving of a simple spit *until* it comes attached to the shore at the ends.
- **Winged headlands**; these are spits attached at both sides of the headland.
- **Cuspate forehead**; it is a triangular shaped deposit of sand, shingle projecting seawards formed by convergence to an apex of two separate curved spits broadly at right angles or by two sets of constructive waves. When two spits converge in water, the enclosed water is filled with deposits then colonized by vegetation leading to a cuspate foreland e.g. at Tonya point.

- **Tombolo**; a ridge / bar of sand or shingle joining an island to the mainland or joining an island to an island. When the long shore drift operates between an island and the mainland, sediments may gradually be laid in that zone. Deposition may start on one end of the mainland linking the two up e.g. Bukakata-Lambu Island.

- **Mudflats**; platforms of mud, silt and other forms of alluvium along gentle coasts especially in bays and estuaries.

- They develop when rivers and waves deposit material along gentle coasts especially in bays and estuaries between high and low tides e.g. near R. Rufigi, Murchison bay.

Candidates are expected to bring other factors like;

- Wind direction; which should be on-shore such that material is carried and deposited by on-shore wind along the coast.
- Availability of weathered and eroded materials are transported by constructive waves and deposited at the coast to form various landforms e.g. beaches.
- Presence of relatively shallow continental shelf to form the base upon which materials are deposited.
- Organic deposits or corals due to deposition and accumulation of dead polyps.
- Nature of the coastline i.e. gently sloping areas allow deposition and accumulation of materials leading to formation of deposition coastal features.
- Human activities i.e. dumping of industrial wastes at the coast or shoreline, soil and rock, boulder to construct piers etc.
- River deposition at the mouth forming deltas.
- Diagrams should be drawn.

Conclude the judgement.

8: Account for the differences in the climate of Lake Victoria basin and North Western Kenya.

Candidates should define climate as; Average weather conditions of a place over a long period of time usually like 35years. This is in terms of weather elements like rainfall, temperature, humidity pressure, sunshine, cloud cover etc.

Candidates should come up with characteristics of climate of Lake Victoria basin and north western Kenya.

- **Lake Victoria Basin**
  - Heavy to very heavy rainfall of 1000mm-2250mm
  - High humidity of around 80%
  - Dense cloud cover for most of the year.
  - Hot temperatures of around 27^0c throughout the year.

  - Small annual temperature range of 1^0-4^0c
  - Rainfall is in form of double maxima/two rainfall peaks i.e March – May and September – November.

- **North western Kenya**
  - Low rainfall of less than 650mm
  - Rainfall is unreliable and in one short wet season
  - There is low humidity of less than 30%
  - Little or no cloud covers particularly during the dry season.
  - Hot temperature throughout the year of over 27^0c
  - High diurnal temperature range.
  - High annual temperature range
  - Strong winds particularly during the dry season.

- **Factors for the climate of Lake Victoria basin (equatorial climate)**
  - **Lake Victoria:** From the lake, there is high evaporation leading to high humidity. When the South West trade winds reach the lake they are recharged leading to heavy rainfall on Northern and North eastern shores. The land and sea breezes due to presence of the lake increase rainfall and also moderate the temperatures in Lake Victoria basin.
  - **Vegetation**: Lake Victoria has dense vegetation which includes forests like Mabira, Kalangala forests etc. which contribute water vapour to the atmosphere through evapotranspiration leading to high humidity and heavy rainfall. The dense vegetation cover also lowers temperatures.
  - **Swamps**. Lake Victoria basin is endowed with swamps from which there is high evaporation and evapo-transpiration leading to high humidity, dense cloud cover and heavy rainfall.
  - **Latitude**: Lake Victoria basin lies astride the equator and consequently experiences hot temperatures throughout the year with small range in temperature. Its location also enables it to have rainfall throughout the year with double maxima March-May and September-November when the sun has been overhead.

While;

- **Factors for the climate experienced in north western Kenya.**
  - **North east winds:** Is affected by North East trade winds which originate from Arabian Desert pass through the horn of Africa which is dry, go over Ethiopian highlands where they deposit moisture and reach Northern Kenya when dry. As they descend Ethiopian highlands they warm up leading to hot temperatures in North western Kenya.
  - **Latitude:** North Western Kenya is slightly away from the equator. This latitudinal location make the area experience one rainy season and one dry season as compared to Lake Victoria basin that experiences double maxima.
  - **Coriolis force effect**: when the South East Trade winds cross the equator they are deflected to Indian Ocean leaving North Western Kenya dry.
  - **Perturbation** where there is persistent low pressure attracting winds from the interior of Kenya denying North western Kenya water vapor.
  - **Absence of large water bodies** apart from Lake Turkana (which is also narrow), thus the winds are not recharged.
  - **Absence of high mountains** to act as cooling agents leading to low rainfall and low humidity and hot temperatures.

- ***Continentality***: North western Kenya is located in continental interior winds reach there when they are dry and the area does not experience rainfall and temperature conditions associated with land and sea breezes.
- **Human activities** like nomadic pastoralism and associated overstocking and overgrazing, drilling holes of boreholes, burning etc have led to deterioration of vegetation cover resulting into reduced evapotranspiration, low humidity, low rainfall and hot temperatures etc.

9 (a). Distinguish between orographic rainfall and conventional rainfall.

- **Orographic rainfall** is a type of rainfall formed when moving air or wind meets a mountain or highland.
- Air is forced to rise up the mountain
- The rising warm moist air is forced to cool at dry adiabatic lapse rate until dew point is reached. The air continues to rise and cool at saturated adiabatic lapse rate.
- The cooling releases latent heat which makes the atmosphere more unstable and this forces the air to continue rising leading to formation of cumulo-nimbus clouds.
- There is rainfall on windward side of the mountain while the lee ward side of the mountain lies in rain shadow and is dry due to dessicating effect of dry descending winds.
- Examples are found around mountain Elgon, Kenya, Kilimanjaro.
- Diagram.

While;

- **Conventional rainfall** is a type of rainfall which occurs when the ground surface is heated leading to upward movement of warm moist air.
- The heated air rises and cools at dry adiabatic lapse rate.
- When air continues to rise, it cools at saturated adiabatic lapse rate leading to formation of strato cumulus clouds.
- As condensation continues latent heat is released and there is more instability. The rising air cools to form cumulo-Nimbus clouds.
- There is rainfall accompanied by thunder and lightning. This type of rainfall occurs throughout the year at the equator and in summer in Mid-latitudes.
- Common along the East African coast, shores of L. Victoria.

Illustration:

(b) Account for the differences in rainfall patterns in East Africa.

There are two different types of rainfall patterns in East Africa.

- **There equatorial type of rainfall pattern** where rainfall is received throughout the year with two rainfall peaks/maxima March – May and September – November.
- **The tropical type of rainfall pattern (monomodal / unimodal)** where there is one rainy season and one dry season. The wet season comes when the sun is overhead.

- **In the Northern hemisphere** there is one wet season and one dry season. The rainfall season coincides with the overhead sun in the months of May-September in places like Gulu.
- **In the Southern hemisphere**, there is one wet season and one dry season. The rainy season coincides with the overhead sun in the months of November-March in places like Central Tanzania.

- **The rainfall patterns are influenced by the following factors.**
  - **Latitudinal location:** places in Southern parts of East Africa receive rainfall in November to march when the sun is in Southern hemisphere and those in Northern East Africa receive rainfall May to September when the sun is Northern hemisphere while the rest of the year is dry. Those around the equator receive two rainfall maximas around March and September when the sun is overhead.
  - **Wind system:** Northern East Africa is affected by dry winds the North East trade winds leading to low rainfall in Northern and North western Kenya and North Eastern Uganda while the South East trade winds lead to heavy rainfall on East African coast and Lake Victoria basin, the latter after being recharged by the lake.
  - **Presence of water bodies** like Lake Victoria and Indian Ocean which lead to heavy rainfall and rainfall occurring throughout the year in surrounding areas as a result of evaporation from these water bodies.
  - **Vegetation cover.** Lake Victoria basin has dense vegetation cover leading to high evapotranspiration leading to heavy rainfall while Northern and North western Kenya and North eastern Uganda have limited vegetation cover leading to limited evapotranspiration and low rainfall.
  - **Altitude and relief:** There is modifying influence of altitude and relief where there are mountains like Rwenzori, Kilimanjaro, Kenya and Elgon there is heavy rainfall on windward side e.g. South East slopes of Kilimanjaro and Mt. Kenya and North West slopes of Mt Elgon. The lee ward of these mountains receive low rainfall. Areas with no mountains/highlands to act as cooling agents like Northern Kenya and central Tanzania receive low rainfall.
  - **Human activities** like overstocking and overgrazing, burning of vegetation particularly in areas occupied by nomadic pastoralists like Karamajong, Turkana, Bahima have contributed to low humidity and low annual rainfall.
  - **Coriolic force effect** where the South East trade winds are deflected back to Indian Ocean has contributed to low rainfall in most parts of Northern East Africa.
  - **Pertubation** where there is condition where there is persistent low pressure over the Indian ocean which attracts winds that become off shore leading to low rainfall in Northern parts of east Africa.
  - **Coastal configuration** where the East African coast is aligned in North East-South West direction and winds blow parallel to the coast denying Northern parts of East Africa like Northern Kenya moisture leading to low humidity and low rainfall. etc

10: Account for the differences in natural vegetation zonation in any one mountainous area in East Africa.

- Candidates are expected to define natural vegetation
- Identify one mountainous area in East Africa.
- Identify the zonation of vegetation on selected mountainous area and then illustrate the vegetation zonation on the mountain.

- *Candidates should identify the vegetation types describe their characteristics and explain the conditions for their existence at a given altitude.*

- ***Natural vegetation*** is continuous plant cover that grows on earth surface as a result of physical factors like climate, soils and drainage.

- **MT. KILMANJARO**

➢ On Mt Kilimanjaro the zonation of natural vegetation is as follows: 1000 – 1800m savanna vegetation, 1800 – 2500m tropical rain forest, 2500-3000m temperate forest, 3000-3500m bamboo forest, 3500-4500m heath and moorland.

Diagram:

- At an altitude of 1000m-1800m above sea level, there is growth of Savanna vegetation in form of Savanna grassland and Savanna woodland.

- **Savanna grassland is characterized by;**

➢ Tall grass of 1metre in some cases 2-3metres
➢ Elephant grass and spear grass are common
➢ Grass dries become brown during the dry season while green during the wet season.
➢ There are scattered relatively short trees.
➢ Trees like acacia and baobab are common.
➢ Trees have thick barks and wax on their leaves to reduce on evapotranspiration.
➢ Trees shed leaves during the dry season.
➢ Trees have long tap roots, Etc.

This is because at altitude there is;

➢ Low rainfall of between 500-750mm
➢ Humidity of around 40%
➢ Hot temperatures of 24-29^{0}c
➢ Fairly fertile soils
➢ A lot of human activities like grazing, cultivation and settlement, mining and quarrying.

- **This is followed by savanna woodland with the following characteristics;**

➢ Continuous cover of umbrella shaped trees.
➢ Trees are of moderate height of 8-20metres
➢ Trees have thick barks and have wax on their leaves
➢ Trees like acacia and Baobab are common
➢ Trees have small leaves to reduce on evapotranspiration
➢ There is dense growth of grass, bushes and shrubs
➢ Trees and grass are drought and fire resistant
Etc.

This is because at this altitude, there are following conditions;

➢ Moderate rainfall of 750-1000m
➢ Moderate humidity of around 50%
➢ Hot temperatures of 24^0-29^{0}c
➢ Fairly fertile and well drained soils
➢ Conservation as National Parks/Game reserves.

- **At an altitude of 1800m-2500m above sea level there is tropical rainforest with the following characteristics;**

➢ Tall trees of up to 50metres
➢ Dense canopy which is in three layers of 30-50m, 15-30m and 8-15m because of growth at intervals.
➢ Trees are evergreen and have broad leaves
➢ Trees have buttress roots to support the tall and huge trees.
➢ Trees have climbing plants like lianas that climb in search of sunlight.
➢ There is little or no undergrowth because of thick canopy.
➢ Trees are in mixed stands because of hot and wet climate.
➢ There is growth of hard wood trees like mahogany, ebony, iron wood etc. which take long to mature.

This is due to the following conditions;

➢ Heavy rainfall of 1500-2250mm particularly on South East slopes of Mt. Kilmanjaro.
➢ High humidity of around 80%
➢ Hot temperatures of 24-27^{0}c
➢ Deep, fertile, volcanic and well drained soils
➢ Less human interference due to conservation.

- **At an altitude of 2500-3000m above sea level, there is growth of temperate forests with the following characteristics;**

➢ Growth of soft wood tree species like Cedar, Camphor podocarp.
➢ Trees are evergreen
➢ Trees have small leaves
➢ Trees are of moderate height of 8-20m
➢ Trees are cone shaped
➢ Trees are in pure stands

This is due to the following conditions;

➢ Moderate rainfall of 800-1200mm
➢ Relatively cool temperatures of 14^0-21^{0}c
➢ Shallow/thin but well drained soils
➢ Less human interference due to conservation

- **At an altitude of 3000-3500m above sea level, there is growth of Bamboo forest with the following characteristics;**

➢ Single layer of bamboo trees
➢ Trees are evergreen
➢ Have small tough pointed leaves
➢ Trees have hollow and segmented stems
➢ Trees have hard stems
➢ Bamboo trees have prop roots

This is due to the following conditions;

➢ Moderate rainfall of 600-800mm
➢ Cool temperatures of 8^0 – 14^{0}c
➢ Thin but well drained soils
➢ Less human interference due to conservation

- **Between 3500m-4500m above sea level there is growth of heath and moorland with the following characteristics;**
  - Short grass
  - Alpine shrubs and bushes
  - Everlasting flowering plants
  - Plants like giant groundsel, lobelia, mosses, lichens.

This is due to the following conditions at this altitude;
- Low rainfall of less than 600mm
- Cold/cool temperatures of 1^0-7^0c
- Very thin soils
- Poorly drained soils due to melting of snow and ice.

11. To what extent have physical factors influenced the growth of semi desert vegetation in East Africa?

Candidate is expected to identify areas in East Africa that experience semi-desert vegetation which include Northern Kenya, North eastern Uganda, North Western Kenya, Albert Flats, Ankole Masaka Corridor etc.

- **Candidates are expected to describe the characteristics of semi desert vegetation.**
  - Bush thorny trees with scrub growing in between
  - Many plants have deep/tap roots that enable them to draw water from underground sources as there is limited surface moisture.
  - Many plants have tiny, thorny leaves which help them to reduce the rate of water loss e.g cacti, acacia and deter animals which may wish to eat them.
  - Some trees are waxy to prevent moisture loss
  - Some trees are swollen trunks in which they store water for use during the long dry season e.g Baobab.
  - Many plants produce seeds which lie dormant for years until little rainfall is received then they germinate.
  - Many plants complete their cycle within a few weeks before the soils completely dry up.
  - They consist of bush thorny trees having a height of 5-10 metres tall.
  - Some plants are halophytic growing in areas of saline soils.
  - The most dominant plants are xerophytes that are highly tolerant to draught and can survive in dry areas e.g acacia, euphobia, cacti etc.
  - They have thick fleshy appearance on the leaves and stems.
  - Plants such as cactus are widely spaced to avoid competition for water.
  - Some plants have thick barks to control water loss through transpiration.
  - Seeds of semi desert plants have thick case that protects them from fires and drought allowing them to germinate when rains come.
  - Trees have hard barks
  - There are thickets separated by bare patches or short grass.

- **Candidate should bring out role of physical factor in growth of semi-desert vegetation. i.e. to large extent;**
- **Climate**
  - Low rainfall ranging from 250-625mm which is unreliable and falling over short period.
  - Very low humidity of less than 30%
  - Hot temperatures above 30^0c with dry winds and high rates of evaporation favouring the growth of short grass and scattered trees.
  - Long periods of drought.
- **Soils**
  - Existence of infertile sandy skeletal soils with limited humus content
  - Highly porous soils with a low moisture retention capacity hence scattered tree and grass clusters.
- **Relief and altitude**
  - Semi-desert vegetation grows in areas of low lying relief less than 1200metres above sea level with hot temperatures and low rainfall.
  - Location on lee ward side of mountains has led to growth of drought resistant trees in areas like Karamoja and Turkana land.
- **Drainage**
  - Due to limited surface drainage dwarf, small brittle heath like plants grow in scattered patterns.
  - In areas of salt depressions halophytic plants such as salt bushes grow.
- **Biotic factors**
  - Wild animals feed and destroy savanna woodlands and grasslands turning them into dry bushes.
  - Termites and locusts also destroy grass leading to emergence of dry scrub.

Candidates should bring out human factors.
- Overstocking and overgrazing in areas like Karamoja and Turkana land
- Bush burning practiced by nomadic pastoralists like Karamoja and Turkana.
- Sinking boreholes leading to drying of trees and reduced evapotranspiration
- Deforestation
- Charcoal burning
- Swamp reclamation
- Poor agricultural methods
- All which have led to reduction in vegetation growth leading to scattered stunted grasses.
- Conservation policies by the government which has encouraged the growth of semi desert vegetation e.g. Kidepo Valley national park.

Impression marking.

12. *To what extent has the nature of the rock influenced formation of soil types in East Africa?*

Candidates should define soil as;

- Soil is thin loose surface layer on top of the earth crust composed of mineral rock particles, air and water, decomposing organic matter or humus and living organisms like bacteria, fungi and worms.

Candidates should bring out the soil types in East Africa.

- **Zonal soils**
  - These are mature soils with well-developed soil profile
  - They are mainly governed by climatic factors that work hand in hand with vegetation types
  - They are well drained soils formed in lowlands and gentle sloping areas.
  - They are of two types namely pedalfers rich in iron and Aluminium and pedocals rich in calcium carbonate.

The types depend on climate of different areas;

- In hot and wet areas, there is formation of latosols.
- In savanna climate areas where there is seasonal rainfall, there is black earth soils rich in humus.
- In semi-desert areas, there is formation of chestnut soils or brown soils.
- In very dry areas like chalbi desert in Northern Kenya, there are red desert soils or sierozens.

- **Azonal soils.**
  - These are young soils with immature soil profile.
  - They are derived from unconsolidated materials like alluvium deposits, sand and volcanic ash.
  - As they are young soils, they tend to have characteristics of the parent rock material.
  - They are of two types namely; Lithosols and Regosols.

Examples include;

- Scree soils on mountain slopes
- Mud flat soils or marine clay soils
- Fluvio-glacial soils like till, outwash sand soils and gravel and clays
- Windblown soils like loess and sand dunes.
- Volcanic soils such as ash, lava, cinder and pumice.

- **Intrazonal soils**
  - These are soils that occur under special conditions of parent rock material and drainage/relief.

The types include;

- Saline soils formed in hot and dry areas e.g solonchaks and solonetz.
- Hydromorphic soils in areas of poor drainage like peat soils.
- Meadow soils in areas affected by flooding.
- Calcerous or calcimorphic soils like Rendzina and Terra rossa in limestone areas.

Candidates should bring out the role of parent rock;

- **Hardness of rock;**
  - Hard rocks like granite resist weathering giving rise to shallow immature azonal soils
  - Soft rocks are easily weathered by physical weathering processes leading to deep, mature zonal soils.

- **Jointing of rock**
  - Jointed rocks are easily subjected to physical weathering processes leading to breaking into soil particles resulting into deep mature zonal soils.
  - Unjointed rocks tend to resist physical weathering lead to shallow immature azonal soils.

- **Permeability**
  - Permeable rocks allow water to percolate leading to leaching, eluviation and illuviation resulting into deep mature zonal soils.
  - Impervious rocks limit percolation of water leading to limited leaching, eluviation and illuviation thus shallow immature azonal soils.

- **Colour of the rock**
  - Dark coloured rocks like basalt and pumice absorb a lot of heat leading to physical weathering that break rocks into soil particles leading to deep, mature zonal soil.
  - Light coloured rocks like sandstone tend to reflect heat leading to limited physical weathering and limited breaking into soil particles that lead to shallow, immature azonal soils like sandy soils.

- **Mineral composition**
  - Quartzite rocks and granites with high silica content resist weathering leading to formation of shallow, immature azonal soils.
  - Limestone rocks when weathered give rise to soils rich in lime like rendzina and terra rossa.
  - Rocks rich in iron and aluminium give rise to laterites that form under hot and wet conditions.
  - Basic igneous and previously weathered sedimentary rocks are difficult to weather giving rise to shallow, immature azonal soils.

Candidate should bring out other factors.

- **Climate**
  - In hot and wet areas, the heavy rainfall encourages leaching, eluviation and illuviation leading to deep mature zonal soils, like latosols in Lake Victoria Basin.
  - Chemical weathering processes that occur in humid areas of East Africa have led to development of deep fertile soils e.g clay loam soils such as nitosols in humid highland areas.
  - In areas of seasonal rainfall (savanna climate areas) there is leaching, eluviation and illuviation during the wet seasonal and physical weathering during the dry season leading to fairly deep and mature zonal soils.
  - In semi-arid and arid areas there is physical weathering that break the rock into soil particles, while leaching, eluviation and illuviation are limited leading to shallow, immature azonal soils.

- **Relief**
  - Steep slopes are more susceptible to erosion resulting into thin skeletal azonal soils. However erosion exposes the rock to further weathering but all the same the resultant soils are eroded leading to skeletal soils.
  - On gentle slopes there is deposition of eroded soils from steep slopes, there is leaching, eluviation and illuviation due to percolation of water resulting into deep mature zonal soils like clay loam soils.
  - In valleys and lowlands with good drainage the extensive deposition leads to deep mature soils like those in Lake Victoria basin.
  - In valleys and lowlands where there is poor drainage there is partial decomposition of organic matter leading to peat soils and grey soils.

- **Biotic factors.**
  - In areas with dense vegetation like forests of Mabira the roots of plants contribute to physical weathering while when plants die and rot they add humus to the soil and when it rains the humic acids formed assist in breaking the rock leading to deep, mature zonal soils.
  - Burrowing animals like rabbits, moles and termites dig tunnels breaking the rock into soil particles and also allowing water to percolate leading to leaching, eluviation and illuviation resulting into deep mature soils.
  - Human activities influence soil formation through physical and chemical means. Activities like digging ad ploughing, mining and quarrying break the rock into soil particles leading to soil formation. Through addition of manure and fertilizers man introduces chemical to the soil that increases chemical weathering and soil formation. In some areas which are relatively dry man does irrigation farming that encourage chemical weathering, leaching, eluviation leading to deep mature zonal soils.

- **Time**
  - Ample time is required for the formation of deep mature zonal soils as long time allow deep weathering of the rocks breaking it into soils particles.
  - If the time is short there is limited weathering of the rock, limited breaking into soil particles and limited decomposition resulting into shallow thin skeletal azonal soils.

Note:
In course of discussion of this question the students should give a stand point.

13. (a) Distinguish between Sheet erosion and gully erosion.

- **Sheet erosion**
  - Involves uniform removal of thin surface layer of top soil
  - It involves slow movement down slope
  - It occurs on gentle slopes
  - It occurs over a wide area.

- **Gully erosion**
  - This is a type of erosion in form of deep wide valleys created by running water through which soil is eroded.
  - It occurs in an area that receives heavy rainfall.
  - It is common in areas with steep slopes.
  - When there is gully erosion there is formation of large channels incised so deeply into the underlying soil and rock materials leading to creation of an irregular landscape difficult to work on during cultivation.

(b) With reference to specific examples where soil erosion is rampant explain the soil conservation measures being undertaken.

- **Terracing**
  - Involves building embankments across the slope usually at fixed intervals. Involves cutting flat or nearly flat surfaces along steep slopes and grass strips may be planted along the terrace to check run off and speed of water.
  - Reduces sheet erosion
  - Common in Kigezi and Kenya highlands.

- **Contour ploughing**
  - Cultivation is done where crops are planted in farrows that follow contours.
  - The farrows that run across the slope check flow of water by run off and soil loss through sheet erosion
  - Common in Kigezi highlands and slopes of Mt. Elgon.

- **Strip farming**
  - Involves cultivation in alternation along the slope so that if one strip is made bare as a result of ploughing the other strip is under grass or growing the crop.
  - The grass traps the soil and encourage infiltration of water thus reducing soil splash and sheet erosion.
  - Practiced in Kigezi highlands.

- **Ridging**
  - Cultivation where the top soil is in form of elongated mounds raised from other areas.
  - The soil on ridges is deep allowing growth of health crops whose roots bind soil particles together and eroded soil is trapped between ridges thus reducing sheet erosion.
  - Practiced in Kigezi highlands.

- **Mulching**
  - Covering the soil with materials like banana leaves, banana fibres, maize and millet stalks, coffee husks and saw dust.
  - The mulch material prevent direct impact of rain drops on the soil thus reducing soil splash erosion and also encourage infiltration thus reducing sheet and rill erosion
  - Mulching is done in hills of Ntungamo, Bushenyi, Mitoma in western Uganda and on slopes of Mt. Elgon in Eastern Uganda.

- **Planting cover crops**
  - There are crops like pumpkins, sweet potatoes, water melons and beans whose leaves spread and cover the soil.
  - Their leaves intercept rain drops preventing direct impact on the soil thus reducing soil splash erosion.
  - Cover crops like beans, sweet potatoes are grown in Kigezi highlands.

- *Crop rotation*
  - Cultivation of different crops in alteration on the same plot of land season by season.
  - Maintains soil fertility, crops grown have strong roots that bind soil particles together and their branches effective cover the soil thus reducing soil splash erosion and sheet erosion.
  - Crop rotation system is practiced in Kigezi highlands.

- **Application of fertilizers or manure**
  - In some areas, there is application of fertilizers like superphosphate fertilizers or ammonium sulphate and manure like cow dung and banana peelings.
  - When manure or fertilizers are applied, crops which grow are strong, their roots bind soil particles together and leaves effectively cover the soil thus reducing sheet erosion and soil splash erosion.
  - Application of fertilizers and manure is done in Bushenyi, Mitoma, Mbale etc.

- **Controlled grazing**
  - This is grazing animals using paddocks
  - When animals are moved from one paddock to another, it gives chance for grass to regenerate thus reducing soil splash erosion and wind erosion.
  - Is being practiced among the Bahima pastoralists in Ankole-Masaka dry corridor

- **Filling rills and gullies**
  - Where rills and gullies are being filled with stones, grass and soil.
  - Prevent rill and gully erosion
  - Being done in Kapchorwa, Bundibugyo, Kigezi highlands and Kenya highlands.

- **Afforestation and reafforestation**
  - Afforestation is planting trees where they formerly never existed and reafforestation is planting trees where they existed and were cut.
  - Roots of trees bind soil particles together reducing sheet erosion and the branches reduce direct impact of rain drops on the soil thus reducing soil splash erosion.
  - Growing of trees has been done at Muko and Mafuga in Kigezi and Bugamba in Ankole.

- **Planting shelter belts**
  - This is where trees are planted in belts in lowland areas or flat lands
  - Trees check the speed of wind thus reducing wind erosion.
  - Practiced by individuals on Kisoro lava plateau.

- **Use of gabions**
  - These are structures constructed using wire mesh and then filled with stones.
  - There are constructed across gullies to check gully erosion.
  - Practiced in hilly/highland areas of Kigezi.

- **Mass education**
  - Through radio, Television programmes, Newspapers, Magazines and seminars about dangers of soil erosion and how to conserve the soil.
  - This is being done on Citizen TV, Daily Nation Newspaper in Kenya, Uganda Broadcasting Corporation (UBC), NBS, NTV, Daily Monitor in Uganda.
  - This is about how to check soil splash, sheet rill, gully and wind erosion.

P250/2

1. **Study the table provided showing selected African countries and answer the questions that follow.**

Country	Population size ('000's)
Algeria	30,800
Central Africa Republic	3,800
Chad	7,900
Djibouti	600
Egypt	65,200
Ethiopia	65,800
Libya	5,400
Morocco	29,200
Niger	11,200
Somalia	9,100
Sudan	31,700
Tunisia	9,700

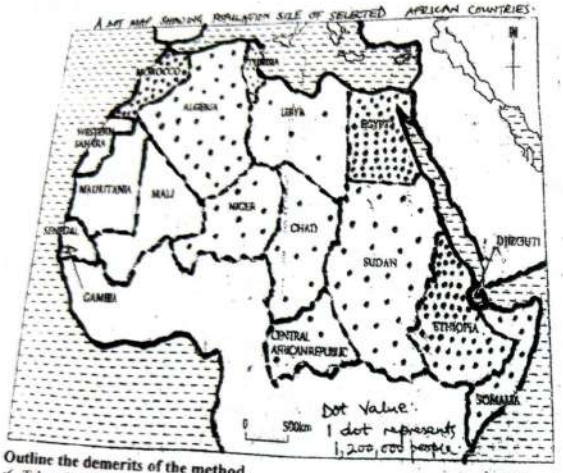
(a) Using the dot map statistical method represents the information given in the table on the base map provided.

1 dot represents 1,200,000 persons – Therefore

Algeria $\frac{30,800,000}{1,200,000}$ ⇨ 26 dots.

Djibouti $\frac{600,000}{1,22,000}$ = 0.5 ⇨ 1 dot.

C.A.R	=	03	dots
Chad	=	07	"
Egypt	=	54	"
Ethiopia	=	54	"
Libya	=	05	"
Morocco	=	24	"
Niger	=	09	"
Somalia	=	08	"
Sudan	=	26	"
Tunisia	=	08	"



(b) **Outline the demerits of the method.**
- ✓ Takes time to draw
- ✓ involves calculations
- ✓ Can appear congested
- ✓ Takes space
- ✓ Lack of exactness due to rounding off
- ✓ Maintaining dots of same size is difficult.
- ✓ Difficult to draw circular dots.
- ✓ It assumes that population is evenly distributed.

(c) **For either Egypt or Ethiopia, explain the implications of having a large population size.**

The positive implications include;
- ✓ Contributes to Urban development
- ✓ Source of revenue
- ✓ An index for economic development
- ✓ Provides labour
- ✓ Encourages utilization of resources
- ✓ Provides defense for the country
- ✓ Encourages creativity/inovations
- ✓ Encourages provision of social services.

The negative implications are;
- ✓ Overcrowding/congestion
- ✓ Inadequate accommodation/slums
- ✓ Unemployment
- ✓ Shortage of land
- ✓ High dependency ratio
- ✓ Brain drain
- ✓ Over exploitation of resources
- ✓ Food shortages
- ✓ Strain on social services.

2. **(a) Distinguish between Death rate and population growth rate.**

Death rate refers to the percentage of the number of deaths in a population sample of 1000.

Death rate is calculated as;

Death rate $= \frac{\text{Number of deaths}}{\text{Total population of 1,000}} \times 100$

- ✓ Deaths are caused by natural factors or by human related factors.
- ✓ Population growth rate is the difference expressed in percentage between the number of live births (in percentage i.e. $\frac{\text{Number of birth}}{\text{population of 1,000}} \times 100$) and the number of deaths (in percentage) in the population sample of 1,000.

Population growth rate is calculated as Birth rate – Death rate e.g. If the birth rate is 8% and the death rate is 3% then population growth rate is 8 – 3 = 5%.

(b) **Explain the causes of rapid population growth rate in either India or Nigeria.**

The causes of rapid population growth rate in Nigeria include;
- ✓ High fertility rate of women
- ✓ Polygamy
- ✓ Low level of education/dropouts
- ✓ Religious beliefs
- ✓ Immigration from other countries
- ✓ Political stability
- ✓ Lack of family planning
- ✓ Traditional beliefs towards large families
- ✓ Government policy.

3. **Explain the problems facing cattle ranching in either Nigeria or Botswana.**

❖ **Cattle ranching** refers to rearing of cattle for Beef (Meat) and Beef products.

In Botswana Ranching is in the South Eastern part of the country in Kanye, Phitsane, Molepolole etc.

The problems facing cattle ranching in Botswana include the following;
- ✓ Severe drought conditions that results into death of cattle /causes water shortage/total rainfall is low and irregular.
- ✓ Poor breeds of cattle due to non-selective breeding
- ✓ Poor pastures e.g. dry scrub.

- ✓ Shortage of grass due to overgrazing and overstocking especially in the dry season.
- ✓ Diseases can be transferred from one ranch to another due to limited fencing.
- ✓ Wild animals which attack and kill animals.
- ✓ Poor land tenure system of communal ownership encourages spreading of diseases and overgrazing.
- ✓ Wild fires in the dry season burn grazing areas.
- ✓ Limited research on modern livestock farming.
- ✓ Poor storage facilities/poor methods of preservation of beef.
- ✓ Limited funding.
- ✓ Limited means of transport and communication.
- ✓ Inadequate market
- ✓ Limited skilled labour due to low level of education.
- ✓ Unfavourable government policies that limit provision of extension services, etc.

4. Account for the development of the St. Lawrence Seaway as a transport route in North America.

❖ **The St. Lawrence Seaway** is a water way jointly controlled by U.S.A and Canada. It covers a distance of 3,760 km from the Western shores of Lake Superior to the Atlantic Coast.
It covers the Great lakes i.e. Superior, Muchigan, Hurron, Erie, Ontario and river St. Lawrence.

The following factors have led to the development of the St. Lawrence Seaway.

- ✓ The presence of navigable lakes and river St. Lawrence.
- ✓ Role of technology e.g. removal of bottlenecks between Montreal and lake Ontario.
- ✓ The presence of settlements along the Waterway.
- ✓ The co-operation by the governments of Canada and U.S.A.
- ✓ Availability of minerals like iron oil and coal (bulky) making use of cheap water transport.
- ✓ The presence of complementary means of transport e.g. roads and railways.
- ✓ Additional water ways like the New York State Barge Canal has increased traffic along the Sea way.
- ✓ The existence of the prairies of Canada that use the Sea way as Eastern export route for wheat.
- ✓ The gentle relief has enhanced construction of over land transport routes connecting with the Seaway.
- ✓ The development of heavy manufacturing industries in the region that import raw materials and export products along the Sea Way.
- ✓ Political stability
- ✓ The desire to promote both internal and international trade.
- ✓ The presence of tourist site e.g. water falls, sluice gates e.t.c.
- ✓ The role of research.
- ✓ The desire to make the interior accessible from the coast.
- ✓ Desire to ease mobility of labour.
- ✓ The desire by the government to distribute/provide social services to their nationals.
- ✓ The presence of land to develop ports along the Seaway.
- ✓ Favourable climatic conditions i.e. the Seaway are navigable throughout the year. etc.

5. To what extent has the low level of technology contributed to the problems facing commercial exploitation of tropical forests in Democratic Republic of Congo?

❖ Democratic Republic of Congo has over 50% of its total land area covered by equatorial rain forest. A larger part of these forests is in the river Zaire basin.
❖ Some of the characteristics of the forests include evergreen trees, trees grow in mixed stands, and they have huge stems, very tall and take a long gestation period. Some of the tree species found area, Teak, Mahogany, Iron wood and logwood.

The low level of technology has contributed to the problems facing commercial exploitation of forests in D.R.C in the following ways.

- ✓ Limits harvesting of trees as simple tools are used.
- ✓ Dragging of logs and eventual loading of bulky timber on trucks is a problem.
- ✓ Developing of transport routes in the region is limited.
- ✓ Processing of timber into various products is still limited.

Other factors include;

- ✓ The impure stands
- ✓ Harsh climatic conditions
- ✓ The nature of wood (hard) different to cut.
- ✓ The bulky timber from the forests
- ✓ The buttress roots
- ✓ The long gestation period
- ✓ Pests diseases and wild animals.
- ✓ The rapids and falls along the rivers.
- ✓ The lianas make tree felling and movements within the forest difficult.
- ✓ The steep slopes in the Eastern parts are not favourable for development of transport roots.
- ✓ Political instability
- ✓ Labour shortage
- ✓ Accidents
- ✓ Hostile Communities that live within the forest.
- ✓ Destruction of forests due to increasing population
- ✓ Profit repatriation
- ✓ Limited market
- ✓ Competition with soft wood timber producing countries
- ✓ Limited market
- ✓ Limited research
- ✓ Transport problems
- ✓ Limited power supply.

6. Explain the factors that have led to the development of Mombasa as a port.

❖ As a port Mombasa is a place where ships can shelter, or dock to load and unload cargo or passengers. It is the major port in East Africa and it is found at the Coast of Kenya on the Indian Ocean.

The factors that have led to the development of Mombasa as a port include the following.

- ✓ Strategic location on a busy Trans Indian Ocean route.

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- ✓ The presence of natural harbours i.e. Mombasa and Kilindini.
- ✓ Presence of deep water
- ✓ Low tidal range
- ✓ Hard basement rocks to construct docks e.t.c..
- ✓ Favourable climate making the port functional throughout the year.
- ✓ Low lying flat land making constructions easy.
- ✓ The productivity of the hinterland in the region i.e. Rwanda, Uganda, Sudan, D.R.C e.t.c.
- ✓ Historical factors based on Arab and Portuguese coastal trade with the interior region.
- ✓ Inter-connection with other transport routes e.g. railways and roads.
- ✓ Favourable government policies.
- ✓ Use of improved technology in handling cargo.
- ✓ Presence of storage facilities
- ✓ Presence of skilled labour
- ✓ Availability of Capital
- ✓ Relative political stability.
- ✓ Establishment of social services
- ✓ Power supply
- ✓ Research
- ✓ Presence of industries e.g. oil refining and manufacture of cement.

7. **Explain the importance of Tourism in the Republic of South Africa.**

❖ Tourism refers to movement of people to places of interest e.g. for leisure or research.
The Republic of South Africa has the following tourist assets.
Wild game e.g. Elephants, Buffalos in Kruger National park, Relief features like the Drakensberg and Karroo Mountains, Drainage feature like river orange the Atlantic and Indian Ocean, Rock paintings Castles, Forts, Cultural diversity etc…

❖ The Republic has tourist centres like Cape Town, Pretoria, Port Elizabeth, Durban, Soweto, Johannesburg etc…

Tourism has both positive and negative effects in the republic of South Africa.

Positives:

- ✓ Conservation of tourist assets.
- ✓ Acquisition of skills.
- ✓ Makes use of dry lands and mountains.
- ✓ Provision of social services
- ✓ Has attracted foreign investors.
- ✓ Promotion of international relations
- ✓ Creates employment opportunities
- ✓ Development of urban centres
- ✓ Provide market for agricultural products and Souvenires.
- ✓ Local revenue is obtained.
- ✓ The economy is diversified
- ✓ Hotel industry is developed.
- ✓ Foreign exchange is earned.
- ✓ There is development of transport routes.

Negatives:

- ✓ Profit repatriation
- ✓ Encourages terrorism on foreign tourists
- ✓ Poaching/smuggling of items
- ✓ Pollution of tourist sites
- ✓ Urban related problems
- ✓ Spreading of diseases
- ✓ Reducing land for other activities
- ✓ Promotes undesirable habits e.g; Drug abuse, prostitution etc…

8. **To what extent has the presence of Ocean currents contributed to the development of the fishing industry in China?**

❖ Fishing is the business or industry of catching fish and other seafoods for sale.
The fishing grounds of China include, yellow sea, South China Sea and, Pacific Ocean, Rivers like Si-Kiang and Hwangho. Ponds also provide fish through fish farming.
The types of fish caught include; Bonito, Tuna, Cod, Herrings, Seals, Salmons e.t.c
The methods used to catch fish include; Purse seining, Drifting, long lining and Trawling.
The example of ports used by the industry include; Luda, Hongkong, Shantou, Ningbo and Wenzhou. Ocean current refers to the continuous directed movement of water that flows in an Ocean. The Ocean currents are either warm or cool / cold. The Chinese Marine grounds are influenced by the Warm Kuroshio and the Cold Oyasiwo / Cold Okhotistik Currents.

Influence of Ocean Currents

- ✓ Provide idea temperature conditions for the breeding of fish.
- ✓ They are responsible for movement of plankton.
- ✓ They are responsible for circulation of nutrients for the growth of plankton.
- ✓ Create ice free conditions in the water to enable fishing throughout the year.
- ✓ Cause upwelling (movements within water) mixing the deep waters with surface water which increases Oxygen circulation.
- ✓ They modify temperatures for growth of plankton.

Other factors:

- ✓ The indented coastline
- ✓ Presence of offshore islands
- ✓ The shallow continental shelf
- ✓ Variety of fish species
- ✓ Presence of plankton.
- ✓ The smooth Sea bed.
- ✓ Extensive Coastline/large water bodies.
- ✓ The contribution of forests.
- ✓ Limited productivity of land in the West.
- ✓ The influence of cool climate,
- ✓ Efficient methods of fishing
- ✓ Preservation and storage
- ✓ Market
- ✓ Labour
- ✓ Capital
- ✓ Transport

- ✓ Co-operatives
- ✓ Long Sea faring tradition
- ✓ Government policy
- ✓ Research
- ✓ Political stability

9. Assess the role of power and energy in the development of large scale industrialization in either Germany or New England.

Industrialization is the process by which industries become increasingly involved in production of manufactured goods. *(There are other varied definitions of industrializations)*

Germany is located in Western Europe and she among the leading industrialised nations not only in Europe but also the entire world. The Ruhr is the largest industrial complex in Germany and Europe at large. The region covers over 3370 sq. km with industrial centres such as Duisburg, Essen, Bochum, Dortmund, Bottrop, Gladbeck, Hagen, Hamm and Mulheim. Other industrial towns in German include; Stuttgart, Frankfurt, Hamburg, Bremen, Leipzig and Munich. The major industries in Germany include; Chemicals, Automobiles (Volkswagen), Ship Building, watch making, textiles, Aircrafts manufacturing, locomotives, Ammunitions, food processing and electronics (Siemens). *(a candidate can also give the major industrial towns with their corresponding industrial centres concurrently)*

New England is one of the major industrialized **regions of United States. It is located in the North East of the Country with six states: Maine, Massachusetts, New Hampshire, Connecticut, Rhode Island, and Vermont.** The region was the earliest industrialized in United States due to its earlier contact with wealthy merchants who built water-powered textile mills. The major industrial centres include; Boston for light Engineering, Ship building, leather tanning and footwear industries; Springfield, New Haven, Manchester and Bridgeport for Chemicals and pharmaceuticals; Providence, Lawrence and Bethlehem for Textiles and Beverages.

Role of power and energy I development of large scale industrialization

- ✓ Hydro-Electric Power (HEP) and Nuclear power are used to run Ammunitions industries.
- ✓ Imported Oil and or petroleum are used in running heavy industrial machinery in the ship industries.
- ✓ Oil has led to development of Oil refineries
- ✓ Anthracite coal is used for heating boilers in factories due to its high carbon content.
- ✓ Coking coal is used for smelting iron and steel in the iron and steel industries.
- ✓ Coking coal is used to manufacture coke or tar used in the construction of tarmac roads.
- ✓ Coal is used in the manufacture of dyes and other chemical ingredients.
- ✓ Biomass (wood fuel) is used in the pulp and paper industries, and in heating of industrial boilers for manufacturing of dyes.
- ✓ HEP, Biogas, Solar energy and Biomass provide lighting in the various large industrial establishments.
- ✓ Coal, Oil and HEP are used in the ship building industries.

Role of the Physical factors include the following;

- ✓ Presence of a wide range of mineral resources used as raw materials in various industries.

- ✓ Presence of other raw material like fish for fish processing industries and Timber from the dense forests for the timber processing and ship building industries.
- ✓ Presence of an ideal relief suitable of the establishment of industries
- ✓ The strategic location which eases accessibility.
- ✓ Availability of abundant water supply from numerous water bodies
- ✓ Presence of large tracts of land for the establishment of large scale industries.

Role of human factors;

- ✓ Availability of a ready market
- ✓ Availability of a ready market provided by the Americans, European and the rest of the world due to the high quality products produced.
- ✓ Availability of a rich population that highly invests in large scale industrialization.
- ✓ Availability of a skilled labour force necessary for the industrial development.
- ✓ Availability of a well-developed modern and efficient transport network or system of roads, electrified railways, tunnels, airports and waterways. This has eased the distribution of raw materials and finished products within and outside.
- ✓ The political stability has attracted more investment in large scale establishment of industries.
- ✓ The supportive government policy towards industrial development through provision of subsidies and grants to the industries has attracted more investors into the industrial sector. (Policy of export promotion and protection of internal industries against foreign competition.)
- ✓ Intensive research in the industrial sector has led to the production or manufacture of high quality reliable and cost effective goods like electronics.
- ✓ The technical based education system *(especially for China)* has led to the production of an efficient labour force necessarily for large scale industrial development e.g. engineers, researchers and technicians in the railway engineering and automobile industries.
- ✓ The stiff competition within the domestic industries has led to efficiency and effectiveness in production basing on international standards thereby leading to large scale establishment of industries in the country.
- ✓ Industrial inertia causing localisation of large industries.
- ✓ The production of reliable and relatively cheap products which are universally accepted has boosted the industrial sector.
- ✓ Early migrations or historical factors e.g the Europeans in New England.
- ✓ Merging with other large co-operations has also been carried out so as to widen the market base, lower the cost of production and improve on the quality of goods produced.

10. (a) Examine the effects of environmental pollution either Egypt or India.

Environmental pollution refers to various ways in which the environment is contaminated and made impure and unsafe for use by man and other creatures. Pollution can take the form of any substance (solid, liquid, or gas) or energy (such as radioactivity, heat, sound, or light). Pollution can be for air, water, noise and land (soil).

Egypt is located in North Africa and she is one of the most polluted nations on the continent. The major polluted areas are mainly urban and industrial centres such as Cairo-the capital city, Giza, Qalyubiyah, Alexandria and Port Said. The major forms of pollution in Egypt are air, water, noise and land pollution. It involves emission dangerous/harmful gases into the atmosphere, and discharge of dangerous wastes into the soils and water bodies like the Nile River, Red Sea and the Mediterranean Sea.

India is one of the leading polluted nations not only on the Asian continent but also the entire world. The major polluted areas are mainly urban and industrial centres such as Ghaziabad, Delhi, Noida, Gurugram, Greater Noidak, Bandhwari, Lucknow, Bulandshahr, Muzaffarnagar, Bagpat, Jind, Faridabad, Coraut, Bhiwadi and Patna. The major forms of pollution in India are air, water, noise and land pollution. It involves emission dangerous/harmful gases into the atmosphere, and discharge of dangerous wastes into the soils and water bodies such as the Damodar River, Yamuna River, Ganges River, Baghmati River, Betwa River and some parts of the Indian Ocean along the Coastline of the country.

The effects of environmental pollution include;

- ✓ Air pollution leads to formation of Acidic rains due to combination of numerous dangerous gases like Sulphur dioxide, carbon monoxide with rain.
- ✓ Smog has resulted thereby affecting visibility
- ✓ Global warming has resulted due to accumulation of greenhouse gases in the atmosphere such as Carbon dioxide, Methane and Nitrogen Dioxide.
- ✓ Increase in airborne diseases like Asthma, Pneumonia and Bronchitis.
- ✓ Air and water pollution have led to high air purification costs.
- ✓ Water pollution has negatively affected fishing activities since it leads to death of aquatic life.
- ✓ Land pollution has led to decreased land productivity which has led to food shortages hence famine and high food importation costs.
- ✓ Land and water pollution have led to spread of diseases like Cholera, dysentery and Typhoid.
- ✓ Oxides of nitrogen released from the exhausts of buses, trucks and two wheelers cause irritation of eyes and lungs. Inhalation of these oxides in large amounts may lead to gum inflammation, internal bleeding, pneumonia and even cancer.
- ✓ Carbon monoxide being an extremely toxic gas inhibits the combining capacity of Oxygen with haemoglobin leading to diseases. (*In fact, the affinity of carbon monoxide for blood is 240 times more than that of oxygen)*
- ✓ Air pollution reduces Sunlight reaching the surface thereby affecting photosynthesis.
- ✓ Air pollution has affected the Ozone Layer thereby increasing the Ultraviolent radiation reaching the Earth hence causing diseases like skin cancer, restricts development of plants, slows development of fish and amphibians, and reduces the number of phytoplankton in marine ecosystems.

(b) Outline the steps taken to solve the problems in the country chosen.

- ✓ Adopting population control measures such as family planning
- ✓ Using forest resource management programmes such as afforestation and reforestation programmes.
- ✓ Waste management should be based on the principle of 3Rs, that is, Reduce, Recycle and Reuse whenever possible.
- ✓ Only detergents with a low phosphate content should be used to check on water pollution. (*Remember, a big percentage of phosphates in water pollution come from detergents*)
- ✓ Emphasizing alternative energy sources to reduce the careless cutting down of trees. (*Although this may cause air pollution, its adverse effects are not as pronounced as those on soil and land pollution*)
- ✓ Improving the farming systems for example encouraging agro forestry, crop rotation, mixed farming, intensive farming, ranching

- ✓ Enforcing strict laws on environmental resource management.
- ✓ Reforming resource ownership/tenure rights to return responsibility for management of natural resources such as the local forest reserves, bush lands.
- ✓ Improving solid waste management such as by burning, burying, land filling, recycling, and re-use of solid wastes to reduce land pollution. *(Combustible solid wastes should be burnt in incinerators to check on land pollution)*
- ✓ Strengthening education and awareness campaigns about environmental pollution management.
- ✓ Encouraging community participation in environmental management and this empowers the local people to mobilize their own capacities to be social actors rather than passive subjects.
- ✓ Effective coordination of natural resources management agencies such as game departments, wildlife authorities, ministry of natural resources to avoid conflicting interests.
- ✓ Avoiding wastage at the industrial level, that is, ensure total use of resources.
- ✓ Environmental impact assessment (EIA)
- ✓ Gas emission pollution is being mitigated in a variety of ways with car emission control, electric and hybrid vehicles and public transportation systems.
- ✓ The cost of radioactive power plants is becoming apparent and the days of coal power plants are nearly dead.
- ✓ Alternative environmental friendly power sources are being emphasised such as use of Solar and Wind energy.
- ✓ There is reduction in Electromagnetic radiation (ER) in form of computers and other electronic devices which often affect the eyes and brains of users.
- ✓ Solid wastes like faecal matter should be converted into compost manure to check on soil pollution.
- ✓ Reduced use of fertilizers, pesticide, herbicides and other agrochemicals to check on soil pollution.

population explosion

P250/3

a)i)Candidates are expected to state the topic which is researchable, bearing a geographical relationship and clearly bringing out

- what was studied
- where the study took place

ii) Candidates are expected to come up with the objectives which are closely related to the topic. These should be specific, measurable, achievable and time bound. Candidates should use phrases like;

- To find out.
- To identify.
- To investigate.

Avoid phrases like

- To know.
- To appreciate.

b) Candidates should come up with activities carried out before field work or pre-field work activities.

They should include the following;

- Pilot study
- Topic of study
- Objectives of the study
- Methods
- Seeking for permission
- Literature review
- Formation of groups
- Organization of tools
- Final briefing
- Departure

NB: • The 1st four Must be in that order

- The steps/ activities should be explained using relevant examples and in past tense.

(c) Candidates are expected to describe how they used any three methods during the field work study i.e. they should

- Identify/state the method
- Define the method
- Describe how it was used and the tool should come out
- Mention the information obtained in using the method.

For example;

- **I used observation**; this involves the use of eyes and other senses to get/obtain geographical information from the field. What was observed/ seen may include, goods, land use activities, crops, relief features. Etc.
- **I used interviewing**; this is a face to face interaction between the researcher and the respondent, where the researcher ask oral questions and the respondent answers orally.

Candidates should explain how they interviewed and the information they get/found out.

d) Candidates should outline the merits and demerits of the above methods of data collection in the field i.e.

- **Merits should be in PAST TENSE with some form of explanation.**
  Each merit should be attached to the method.

Observation;

- I got quick information since the eye directly saw geographical features of the area of study.
- It helped me to interpret and analyse information on the spot thus time saving
- It enabled me to make comparisons in the field.
- It was cheap since no costs were involved etc.

Interviewing

- It helped me to get hidden information like historical back ground
- It was participatory since it involved face to face dialogue
- It was cheap since it involved no costs
- It was flexible because questions were modified in the field

- **Candidates are expected to come up with problems faced when using the technique selected and the information missed.**
  Problems and demerits must be attached to the method selected e.g.

Observation;

- Weather changes
- Not everything was directly observable

e) Candidates should identify and explain the impact of human activities on the physical environment in the area of study. The impact can be positive or negative e.g.

Positive impacts;

- Afforestation/ planting of trees promotes soil conservation at……
- Controlled fishing activities lead to preservation of fisheries resources on lake……
- Construction of drainage channels along roads mitigates the impact of gulley erosion along……

Negative impacts;

- Establishment of industries leads to destruction of natural forests e.g……
- Mining and quarrying leads to swamp reclamation e.g.
- Use of poor fishing methods like undersized nets leads to depletion of fisheries resources on lake……

f) Candidates are expected to come up with findings which constitute the significance of the study.

These should be varied geographical relationships i.e. physical to physical, physical to human, human to human.

- Relationships should be stated with proper connecting words such as favoured, promoted, encouraged, hindered, discouraged etc.

g) **Candidates are expected to come up with the skill from the method and explain how the skill was got i.e. through the definition of the method e.g.**
- I gained observing skills through using my naked eyes to see and interpret information.
- I gained recording skills through writing down information using a pen, paper etc.
- I gained interviewing skills through asking oral questions and getting oral answers.

h) **Candidates are expected to describe the activities they carried out as a follow up such as,**
- We assembled in class and discussed data collected
- We presented data and compared it with each other
- There was data analysis
- There was polishing of the sketches and diagrams
- There was drawing of conclusions
- There was writing of recommendations
- There was writing of a final report
- There was dissemination of the report to the various stake holders

NB: The activities must be described and explained in past tense.

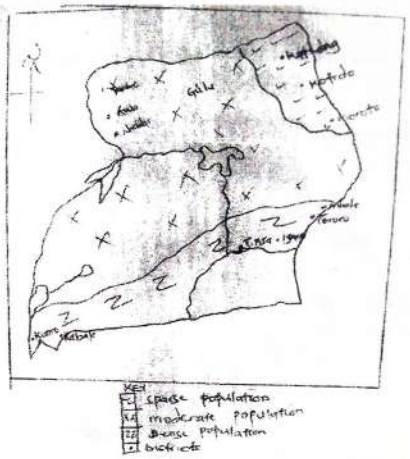
i) **Candidates are expected to mention the problems faced during the field work study such as,**
- I faced the problem of language barrier
- I faced the problem of uncooperative respondents
- I faced the problem of obsolete equipment like maps, weighing scale
- I faced the problem of inaccessibility
- I faced the problem of inadequate tools
- I faced a problem of hostile respondents
- I faced a problem of hiding information

NB:
- The problem should be geographical in nature
- Avoid personal problems
- Information missed should be brought out clearly.

2. **To what extent has climate influenced population distribution in Uganda?**
- Candidates are expected to define the term population distribution as the spread of people in a given area at a given time.
- Candidates are expected to describe the spread out of people as follows;

- **Areas of high population density** e.g. Mukono, Kampala, Jinja, Masaka, Kabale, Kisoro, Bushenyi, Mbale etc.
- **Areas of moderate/medium population density** e.g. Soroti, Lira, Moyo, Kasese, Mubende etc.
- **Areas of low population density/sparsely populated areas** e.g. Kaabong, Kotido, Moroto ,Lyantonde, Albert flats etc.

A sketch map of Uganda showing population distribution.



- **Candidates are expected to explain the influence of climate on population distribution in Uganda e.g.**
  - **Areas that experience equatorial climate** characterized by heavy reliable rainfall have a dense population such as Kampala, Mbale etc.
  - **Areas that experience tropical climate** characterized by moderate rainfall totals have moderate population such as Soroti, Luwero, and Kumi etc.
  - **Areas that experience arid and semi-arid climate** characterized by low rainfall amounts have a sparse population such as Moroto, Kiruhura, and Kotido etc.
  - **Areas with montane climate** which is characterized by heavy relief rainfall and cool temperature such as Kabale, Mbale etc have a dense poplation.

- **Candidates are expected to come up with other factors influencing population distribution in Uganda e.g.**
  - **Soil fertility**. Fertile volcanic and alluvial soils attract a dense population such as Wakiso, Kabale, Mbale etc. while areas with bare rock have sparse population e.g. parts of Nakasongola and Kiboga
  - **The nature of relief** also determines population distribution in that areas with steep slopes/relief such as parts of Kasese have a sparse population whereas with gently sloping relief such as Kampala attract a dense population.
  - **Drainage**. Areas which are well drained like Wakiso, Mbale etc. attract a dense population while the areas which are water logged like Mpologoma swamp have a sparse population.

vegetation. Thick vegetation cover discourage a dense population e.g. Semliki forest in Bundibugyo while areas with moderate vegetation attract a dense population e.g. Wakiso.

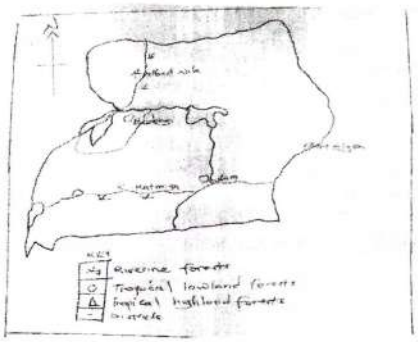
- ***Biotic factors.*** Areas which are infested with pests or disease vectors attract a sparse population which are free from pests or disease vectors attract a dense population such as Wakiso.
- **Attitude.** Areas at very high attitude attract very sparse population e.g. the top of Mt. Rwenzori. This is because the living conditions here are difficult with very low temperatures and reduced oxygen whereas areas at moderate altitude attract a dense population e.g. in Masaka.
- **Migrations.** There are times when people move from one place to permanently settle in another place. This has been common in places like Kisoro, Kasese where refugees from DRC settle.
- **Urbanization**. The growth of towns attracts a dense population as people flock them to get jobs, markets, social services etc. for example in Tororo, Kampala etc.
- **Accessibility.** Areas which are easily accessible attract a dense population e.g. Kampala while remote areas have a sparse population.
- **Security.** Areas which are secure attract a dense population like Wakiso whereas those which are insecure experience sparse population e.g. Kotido.
- **Government policy.** There are areas where the government has barred settlement and therefore they experience sparse population e.g. parts of Kasese.
- **Historical factors**. Areas which were initially settled in by Europeans and those which were kingdom headquarters attract a dense population like Kampala, Mengo, Bugembe etc. while those areas that were no man's land between different tribes continued to be sparsely populated e.g. parts of Katakwi.
- **Culture/land tenure**. Areas occupied by nomadic pastoral groups like Sembabule and Kotido have a sparse population whereas areas which are occupied by sedentary tribes have a dense population like Jinja.
- **Economic activities**. In some areas especially where there are economic activities like commercial farming (like Kakira, Lugazi) mining and industries, attract a dense population as people move in to look for jobs.

NB: Candidates are expected to use correct population distribution terms.

3. (a) Explain the factors influencing the distribution of tropical rainforests in Uganda.

- **Candidates are expected to define the term tropical rain forest as forests found in tropical lands receiving heavy or high rainfall amounts of 1500mm and above per annum.**
- **Candidates are expected to identify the categories of tropical rainforests in Uganda as;**
  - Tropical lowland forests such as; Mabira, Bugoma, Budongo, Malabigambo etc
  - Tropical highlands forests/montane forests such as Mt. Rwenzori forests, Mt. Elgon forests etc
  - Tropical riverine forests such as Katonga forest, Kafu forest etc

A sketch map of Uganda showing the distribution of tropical rain forests.



- **Factors/ conditions favoring the growth and distribution of tropical rain forests include;**
  - Climate: Tropical rain forests grow well in areas receiving over 1500mm of rainfall, well distributed all year round. Hot/warm temperatures all year round (27°c) and high humidity helps to reduce evaporation rates/ transpiration.
  - Altitude. Tropical rain forests thrive in areas of low altitude of less than 2000m above sea level.
  - Soils. Tropical rain forests are found in areas with deep, fertile soils.
  - Drainage. Tropical rain forests grow well in well- drained areas. Water logged soils tend to promote the growth of tropical riverine forests/trees.
  - Influence of relief. Tropical rain forest tends to grow on gentle slopes and lowlands.
  - Human activities. Man through his activities e.g. gazetting of forest reserves, national parks have enabled the growth and maintenance of tropical rain forests.

(b) Candidates are expected to explain the land use activities associated with tropical rain forest e.g.

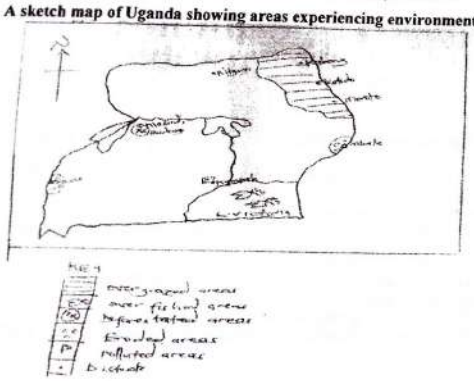
- Wild life conservation e.g. Bwindi National park in Kanungu in Bwindi forest.
- Plantation farming due to heavy rainfall associated with tropical rain forests.
- Establishment of agro processing industries.
- Education and research activities i.e. Botany and Zoology studies eg Nyabyeya forest.
- Settlement in areas near tropical rain forest due to heavy rain fall.
- Herbal centers/collection of herbs from tropical rain forests.
- Hunting of animals and gathering of fruits
- Lumbering/sawmills activities because tropical rain forests contain valuable tree which are hard wood e.g. Budongo forest etc.

4.(a) Explain the effects of environmental degradation in Uganda.

Candidates are expected to define the term environmental degradation as the decline in the productive value of the available renewable and non-renewable resources.

- ***Areas experiencing environmental degradation/degraded areas in Uganda. These include;***
  - Eroded areas e.g. Bududa, Mbale, Sironko, Kabale, Kisoro, Bundibugyo etc.
  - Deforested areas e.g. Kyenjojo, Buikwe, Hoima etc.
  - Over grazed areas e.g. Kotido, Moroto, Kiruhura, Nakasongola etc.
  - Polluted areas e.g. Kampala, Jinja, Wakiso, Mbale, Gulu etc.
  - Soil exhausted areas e.g. Kasaku, Kyamuhunga, Kyenjojo etc.
  - Over fished areas e.g. L. Victoria, Lake Kyoga etc.
  - Mined/quarried areas e.g. Kajjansi, Kamonkoli, Kilembe, Lwera etc.

A sketch map of Uganda showing areas experiencing environmental degradation.



- **Candidates are expected to bring out the effects of Environmental degradation which include;**
  - It results into reduction in agricultural production leading to food shortage, and in extreme case, famine and loss of income e.g. in Masaka, Isingiro etc.
  - Destruction of forests has resulted into shortage of wood fuel for domestic use e.g. in Tororo, Nakasongola etc.
  - Environmental degradation leads to soil erosion/landslides which lead to formation of gullies, rills e.g. on the slopes of Mt. Elgon, Kabale highlands
  - It has resulted into laterisation due to leaching e.g. in Wakiso, Mukono and Mpigi
  - There is lowering of the water table and water quality thus drying of shallow wells e.g. in Kabale, Bushenyi, Palisa etc.

  - Environmental degradation leads to loss of agricultural land thus leading to severe famine e.g. in Kabale.
  - There is loss of water catchment areas leading to the disappearance of streams and shallow wells e.g. in Mbale, Kabale etc.
  - Environmental degradation leads to loss of bio- diversity i.e. the original flora and Fauna are transformed into secondary form or become extinct e.g. on the slope of Mt. Elgon in Mbale.
  - There is disease outbreak due to drinking polluted water, living in a polluted environment, and failure to meet basic nutritional requirements e.g. in Nakasongola, Kampala, Masaka, Soroti etc.
  - There is flooding especially in valleys due to increased water run-offs e.g. Kalerwe, Bwaise, and Nakivubo etc.
  - Vibrations from mines/quarries destroy settlements, property and lives e.g. Tororo Girls' secondary school from limestone mining.
  - Environmental degradation leads to siltation of water bodies leading to shallowness, pollution, flooding, death of aquatic life etc. e.g. along R. Manafwa along L. Victoria etc.
  - It leads to micro climatic changes which result into late and low rainfall e.g. Kabale, Mbale, Soroti and Palisa.

(b) **Candidates are expected to bring out measures being taken to control the problem of environmental degradation in Uganda. These may include;**

- Afforestation and re-afforestation which is the planting of trees is being done to control soil erosion e.g. Mubende, Ntungamo, Kabale etc.
- Paddocking and rotational grazing is being done to control overgrazing e.g. Kiruhura, Sembabule etc.
- Use of organic manure is being carried out to increase soil fertility e.g. Wakiso, Mukono etc.
- Using cut and fill method in mining/quarrying to cover the ditches/pits left by mining e.g. Kilembe mines.
- Treating of industrial toxic wastes before disposal is being done e.g. Uganda Breweries at Luzira.
- Terracing is being used on steep slopes to control the speed of water in order to control soil erosion e.g. Kabale, Kisoro, Rubanda etc.
- Eviction of encroachers on wetlands is being done by NEMA to restore wetlands e.g. Bushenyi, Kabale, Gaba, Lubigi etc.
- Laws/by –laws are being instituted to control bush burning, deforestation and wetland draining e.g. Rubanda, Wakiso, and Kotido etc.
- Sensitization of masses is being done to create awareness for forest, swamp and land conservation e.g. Moroto, Kabale, Kiruhura etc.
- Recycling of wastes is being done to control pollution e.g. recycling of plastics in Kampala, Mbarara, and Jinja etc.
- Strip cropping is being done to control soil erosion. This involves cultivation a strip around the hill, leaving another strip with grass e.g. grass separating cultivated strips e.g. Kisoro.
- Contour ploughing is being done to control soil erosion. This involves cultivation along a contour in a hill separated by trenches to reduce the speed of water e.g. Kabale, Rubanda.

- *Mulching is being* done to conserve soil moisture. This involves covering soil with plant material e.g. Wakiso, Mpigi etc.
- *Crop rotation* is being done to prevent soil exhaustion. It involves sub-dividing the plot and changing the crops grown in different crop seasonally e.g. Wakiso, Mukono etc.
- *Intercropping* is being done to maintain soil fertility where by different crops are grown in the same piece of land e.g. Mukono, Wakiso etc.
- Use of gabions is being done to control soil erosion. This involves use of wire mesh and stones or sacks and soil as barriers along water passages on slopes e.g. Kabale, Kisoro, Bundibugyo, Kapchorwa etc.
- Sorting garbage before disposal is being done to prevent pollution and contamination of soil e.g. Kiteezi, Kampala, Mukono.
- Planting of cover crops is being done to control soil erosion. These include pumpkins which protect soils from direct exposure to rain drops e.g. Kabale, Kayunga etc.
- Diversification of energy resources to control deforestation is being done e.g. Wakiso, Mbarara, and Hoima.
- There has been establishment of environment protection organizations like NEMA, UWA, UFA which aim at environment conservation.
- Population control measures are being practiced to control population growth.
- Gazetting forests and swamps is being done.

NB: Points should be well explained and illustrated with place names

5. Account for the expansion of the mining sector in Uganda.

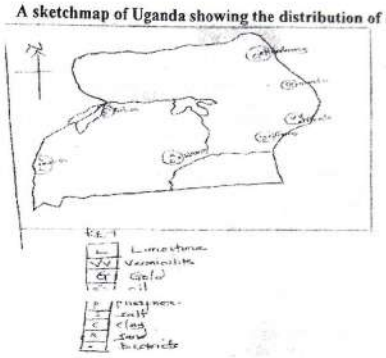
Candidates are expected to come up with the current status.

- There is wide spread exploitation of sand and clay
- Large scale commercial mining is limited
- Mining in Uganda is lowly developed
- Vermiculite and gold are the leading mineral exports by value
- Most of the minerals are exported in raw form
- Most of the commercial mining is done by foreign companies
- A variety of minerals with commercial value have been discovered in recent years and processes to exploit them are in advanced stages

Candidates are expected to identify mining areas and the mineral mined e.g.

- Kasese with; limestone, copper, salt, cobalt etc.
- Kaabong with; limestone, gold, copper
- Mbale with; vermiculite,sand
- Kabale with; wolfram, iron ore, gold
- Hoima with; oil, salt, sand
- Bushenyi (Kyamugunga) with; gold
- Bundibugyo with; gypsum

A sketchmap of Uganda showing the distribution of minerals and mining areas.



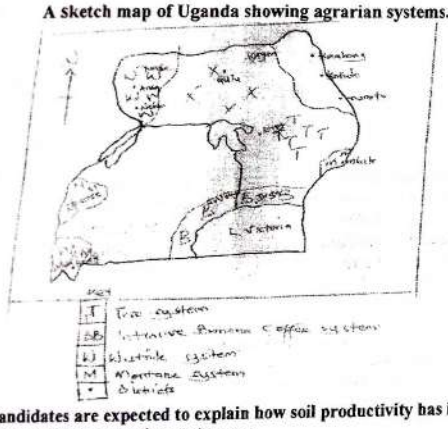
Reasons / factors for the expansion / increased development of the mining
Reasons / factors for the expansion / increased development of the mining sector / mining activities / mining industry.

- Discovery of new minerals e.g. oil in Buliisa.
- Introduction of modern technology e.g. copper mining in Kilembe at Kasese.
- Liberalization of the mining activities e.g. sand mining in Wakiso.
- increased training of mining labour force e.g. oil mining in Buliisa.
- Introduction of mining courses at universities e.g. about oil mining at Buliisa.
- Increased mineral surveying / research/exploration e.g. gold in Mubende.
- Construction of mineral processing industries encouraged limestone in Tororo.
- Construction of new roads promoted vermiculite mining in Mbale.
- Improved political stability has promoted limestone mining in Kasese.
- Increased government support has promoted gold mining in Kaabong.
- Rehabilitation of mineral processing industries- clay and sand mining in Wakiso.
- Opening up of formerly closed mines e.g. copper mining at kilembe in kasese.
- Widening of mineral markets / increased market research e.g. limestone in Tororo.
- Increased capital investment promoted gold mining in Kaabong.
- Reduction in the smuggling of minerals e.g. Gold in Busia
- Increased power generation has promoted limestone mining in Kasese
- Attraction of foreigners/ companies into the mining sector e.g. vermiculite in Mbale
- Privatization of formerly inefficient state owned mines, promoted sand and clay mining at Kajjansi in Wakiso.
- Hiring of foreign expatriates to boast skills e.g. mining in Buliisa.

6. **To what extent has soil productivity influenced agrarian systems in Uganda?**

- **Candidates are expected to define the term agrarian system as the type or form of agricultural practice in terms of crops grown and animals reared in an area.**
  Identify the various agrarian systems e.g.
  - Intensive banana-coffee system in Mukono, Wakiso, Masaka etc.
  - Pastoral system in Kaabong, Kotido etc.
  - Afro- montane system in Mbale, Kabale etc.
  - West Nile system in Nebbi, Arua etc.
  - Northern system in Gulu, kitgum etc.
  - Teso / Eastern in Kumi, Soroti etc.

A sketch map of Uganda showing agrarian systems.



- **Candidates are expected to explain how soil productivity has influenced the development of the different agrarian system e.g.**
  - **Areas with/of high soil productivity** e.g. Mbale, Kapchwora, Sironko, Kabale, Kisoro, Jinja, Mukono, Wakiso, Kabarole etc. have favoured the growing of perennial crops like coffee, banana hence the development of the intensive coffee banana system in Mukono and Afro-montane system in Mbale.
  - **Areas with/of moderate soil productivity** e.g. Gulu, Lira, Soroti, Tororo, Kamuli, Palisa, Kasese etc. have favoured the growing of annual crops like millets, sorghum hence the development of the Northern system in Gulu, Teso system in Soroti etc.
  - **Areas with/of low soil productivity** e.g. Moroto, Kotido, Napak, Abim, Kiruhura, Sembabule, Nakasongola etc. have favoured animal rearing hence the development of the pastoral system in Kotido, Sembabule etc.

Candidates should explain and illustrate other factors influencing the development of agrarian systems e.g;
- Nature of relief
- Type of soil
- Nature of vegetation cover
- Nature of drainage
- Pests and diseases
- Culture/land tenure system
- Capital
- Level of technology
- Government policy
- Altitude
- Transport

NB: Points must be well explained and illustrated with an agrarian system/ name of crop grown or animals reared and place names.

7. **(a) Describe the state of agricultural sector in Uganda.**

- **Candidates are expected to identify the various agrarian systems in Uganda e.g.**
  - Intensive banana- coffee system in Mukono, Wakiso, Masaka etc.
  - Pastoral system in Kaabong, Kotido etc.
  - Afro- montane system in Mbale, Kabale, Bundibugyo etc.
  - West Nile system in Nebbi, Arua etc.
  - Northern system in Gulu, Kitgum
  - Teso/ eastern system in Soroti, Kumi etc.

  Candidates should come up with a map showing Agrarian system.

  Refer to the sketch above.

  Candidates should bring out the current status of the agricultural sector in Uganda e.g.
  - Agriculture remains the backbone of Uganda's economy
  - The agricultural sector is characterized by the use of simple tools like hand hoe, ox plough
  - Agriculture is being modernized and not producing purely for subsistence
  - There is a shift from over reliance on the export of traditional cash crops like coffee, cotton tea etc. to the export of even food crops like bananas, beans etc.
  - Agricultural production is mainly dominated by small holder farmers.
  - It employs about 70 percent of the total labour force

(b) Discuss the problems facing agricultural sector in Uganda.

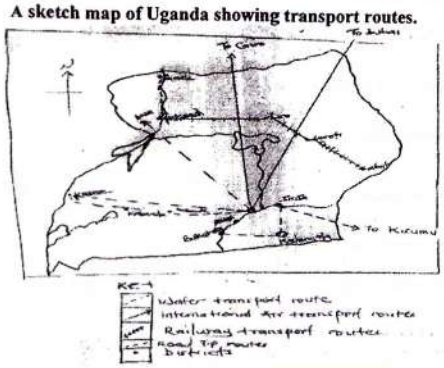
- **Candidates should explain the problems facing the agriculural sector in Uganda e.g.**
  - Unfavourable climatic conditions e.g. the long drought season e.g. in Kotido
  - Decline in soil productivity/soil exhaustion
  - High incidence of pests and diseases e.g. coffee wilt in Mpigi, Wakiso foot and mouth disease e.g. in Kabale, Mbarara
  - The use of poor farming methods leading to low agricultural productivity in areas like Kotido, Moroto etc.
  - Inadequate capital to purchase agricultural inputs and for modernizing the agricultural sector.

- Low levels of technology has limited agricultural modernization and productivity in many parts of Uganda.
- The high cost and limited availability of improved farm inputs has limited agricultural productivity in Uganda.
- There is limited supply of skilled man power to guide farm operation, maintain and operate farm machinery.
- The nature of land tenure system
- Inadequate storage facilities results in a lot of wastage during bumper harvests.
- The limited market fluctuating prices as well as delay in payments to farmers e.g. vanilla farmers in Mukono.
- Traditional and cultural attitudes
- Insecurity in places like Kotido, Moroto
- Low levels of research.
- Poorly developed transport system and network
- Corruption/ embezzlement/mismanagement of agricultural funds by some public officials.

8. Assess the contribution of the transport sector to the development of Uganda.

- **Candidates are expected to give the current status of the transport sector in Uganda e.g.**
  - Road transport is the dominant mode of transport in Uganda
  - There is rehabilitation of major transport routes and facilities e.g. roads, airport, railway lines etc.
  - The transport sector has been liberalized
- **Candidates are expected to identify the modes of transport in Uganda with examples of transport routes e.g.**
  - Road transport e.g. Kampala – Masaka, Mbarara road
  - Water transport e.g. port Bell to Kalangala Island on L, Victoria.
  - Air transport e.g. from Entebbe international airport to Jinja airstrip
  - Railway transport e.g. the Eastern route i.e. Malaba- Tororo – Kampala

A sketch map of Uganda showing transport routes.



- **Candidates should explain and illustrate with names of transport routes the positive and negative contribution of the transport sector to the development of Uganda e.g.**

Positive:

- Promotes internal and external trade e.g. railway line from Malaba- Jinja
- Promotes international relationship with other countries e.g. Rwanda i.e. Mbarara-Kabale-Katuna road which connects to Rwanda.
- Helps in labour mobility from one area to another e.g. from Nakiwogo –Ssese on Lake Victoria, Kampala – Jinja road.
- Promotes the development of the industrial sector through Easy transportation of raw materials and finished products e.g. Tororo -Jinja- Kampala railway line.
- The transport sector encourages the easy spread of ideas (innovations e.g. Kampala, Masaka road
- Leads to the development of urban centers e.g. Lugazi town because of Kampala- Jinja road.
- Promotes the development of agriculture through the feeder roads and railway lines.
- Transport helps in the exploitation of natural resources such as minerals, forests and fisheries resources.
- Leads to the promotion of education/tourism/research e.g. students visit Entebbe international airport.
- The transport sector generates internal revenue from the transport users.
- Promotes economic diversification.

Negatives:

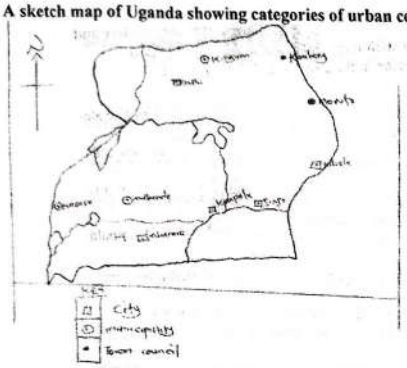
- Leads to destruction of vegetation cover e.g. swamps and forest
- It is associated with accidents leading to loss of lives.
- Promotes the easy spread of diseases especially along major highways.
- The transport sector has promoted pollution
- The construction and rehabilitation of transport routes leads to displacement of people.
- Encourages smuggling
- Associated with highway robbers
- Promotes rural-urban migration
- Diversion of labour from other sectors.

9. Explain the causes and effects of rapid urbanization in Uganda.

- **Candidates are expected to define the term urbanization as "the process whereby an increasing proportion of the country's population lives in towns/cities**
  Or
- **This is a process whereby rural areas develop into towns or cities.**

- **Identify the categories of urban centers in Uganda e.g.**
  - Cities e.g. Kampala (capital city), Gulu, Jinja, Mbarara etc.
  - Municipal councils (municipalities e.g. Bushenyi, Entebbe, Mukono etc.
  - Town councils e.g. Bundibugyo, Mpondwe Kagadi, Kyenjojo, Kyengera, Mpigi etc.
  - Town boards/trading centers e.g. Buwama, Namwendwa etc

A sketch map of Uganda showing categories of urban centres.



- **Candidates should account for the increased urbanization in Uganda live;**
  - Increased rural- urban migration
  - Government policy of gazetting new districts, municipalities, town councils etc.
  - Increased industrialization
  - Increased trade opportunities/commercial market
  - Increased mining activities/new mineral discoveries.
  - Increased fishing activities
  - Improved infrastructure like roads, dams, housing, banks, electricity etc.
  - Increased religious centers
  - Improved technology
  - Improved security
  - Increased research/education centers
  - Increased capital
  - Increased increase in population in particular areas like Mbale and Kabale municipalities.

NB: Points should be described, explained and illustrated with names of urban centers.

Descriptive terms may include increased, improved, well developed, high levels etc.

- **Candidates are expected to explain the positive and negative effects of urbanization in Uganda e.g.**

Positives;

- It has acted as a reserve of labour force for different sectors such as industries in Kampala city.
- Has provided market for goods especially agricultural produce as well as industrial goods e.g. in Kampala city
- Has provided employment opportunities to people.
- Has led to creativity and innovativeness in urban areas such as Jinja city
- Source of government revenue through taxation such as ground rent etc.

- Has led to provision of social services to the people such as education, health etc.
- Has led to promotion of regional and international cooperation.
- Has promoted tourism/research/education due to tourist attractions like historical sites.
- Has promoted full utilization of resources like sand, clay for construction purposes.
- Has led to conservation of the environment e.g. green belts.
- Has provided administrative and commercial services such as payment of civil servants.
- Has improved standard of living due to provision of better accommodation, sanitation etc. in towns like Kampala.

Negatives;

- Has led to competition for land with other activities/ land uses e.g. agriculture.
- Has led to pollution of land, water and air due to various function such as industrialization and dumping of domestic wastes.
- Has led to depopulation of rural areas as people migrate to urban areas e.g. Kampala city.
- Has led to easy/ increased spread of diseases such as cholera in towns like Kampala etc.
- Has led to increased flooding in towns like Kampala due to urban infrastructure, poorly planned drainage system etc.
- Has led to high crimes rates such as thefts, prostitution e.g. in Kampala city
- Has resulted into increased unemployment and under employment in towns like Kasese, Kampala etc.
- Has led to increased pressure on social services such as water, electricity etc.
- Has led to destruction of vegetation such as forests and swamps due to expansion of towns like Kampala.
- Has led to Traffic congestion leading to delays affecting trade and other activities.
- Has led to change of the land scape destroying the natural beauty.
- Has led to displacement of people due to infrastructural development like roads, markets etc.
- Has resulted into cultural erosion due to mixing up of people of different culture in towns.
- Has led to over exploitation of resources like sand, clay etc. in the bid to satisfy urban requirements like accommodation, food etc.
- It has increased government expenditure on social services/infrastructures like roads.

10.(a) Account for wetland degradation in Uganda.

Define wetland as an area which is seasonally or permanently flooded by water and contains plants and animal communities adapted to such conditions.

Current status;

- There is increased reduction in total wetland cover.
- Most wetlands destroyed are urban based.
- All wetlands are managed under National Environmental Management (NEMA).
- Most wetlands are destroyed for agricultural practices.

Identify the categories of wetland e.g.

- Lacustrine / lakeshore wetlands e.g. Lutembe wetland, Masese wetland.
- Riverine wetlands along river valleys e.g. R. Katonga wetland, Mpologoma wetland.
- Open valley wetland e.g. Kiruruma wetland in Kabale.

A sketchmap showing wetlands affected by degradation/destruction

Give reasons for wetland degradation / destruction in Uganda.

- Need for land for establishing industries.
- Need for land for settlement /establishment of urban centres.
- Need for land for establishing farm lands.
- Need for establishment of transport routes such as road.
- Uncontrolled harvesting of papyrus reeds for art and crafts making.
- Deliberately destroyed to control pests and diseases.
- Excavation of sand and clay.
- Fires both wildfire and man-made fires.
- Need for timber and poles has led to destruction of tree swamps.
- Poor garbage disposal which limits growth due to materials that do not decompose.
- Climatic changes which causes lowering of water table.
- Insecurities such as flashing out rebels e.t.c.
- Need for fuel wood.

N.B: All should be illustrated with names of wetlands.

(b) Explain the effects of uncontrolled wetland utilization in Uganda.

- Exhaustion of underground water leading to lowering of the water table.
- Resulted into reduction of purifying effect leading to decline in water quality.
- Destruction of habitants for animals as well as loss of plant communities leading to loss of bio diversity.
- Flooding of previously wetland areas leading to destruction of man-made features and his property.
- Desertification due to reduced water vapour in the atmosphere due to lowering of the water table.
- Loss of raw materials for art and crafts making.
- Increased incidences of waterborne diseases due to flooding and open pits.
- Creation of badlands which become excessively hard and brittle.

N.B: Must illustrate using names of wetlands.

11. (a) Outline the challenges of developing the energy sector in Uganda.

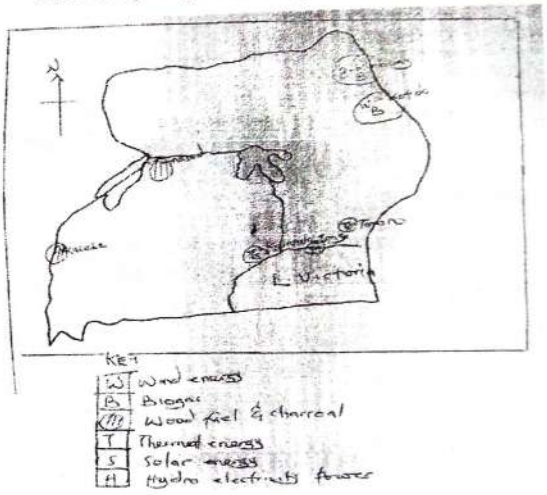
Current status:

- The sector is developing.
- There is increased use of solar energy especially in rural areas.
- There is rural electrification going on.
- There has been discovery of oil.
- Biomass is a very popular source.

Candidates should identify the sources of energy e.g.

- H.E.P on rivers like Nile.
- Thermal /oil at Namanve.
- Biogas in Mbarara, Wakiso.
- Solar in Wakiso, Kampala e.t.c.
- Gas – imported.
- Wind energy e.g. in Moroto, Kotido, Kaabong.
- H.E.P is the major source for industries and urban population e.t.c.

A sketchmap of Uganda showing the distribution of energy sources



KEY

W	Wind energy
B	Biogas
W/C	Wood fuel & charcoal
T	Thermal energy
S	Solar energy
H	Hydro electricity power

Candidates should explain the negative effects of the energy sector e.g:

- It has led to accidents.
- Displacement of people.
- Destruction of vegetation cover.
- Pollution of the environment.
- Urban related problems.
- Profit repatriation.
- It has led to competition with other sectors of the economy.
- Regional imbalance.
- High costs of production.

(b) Explain the measures being taken to access power and energy.

Candidates should come with the steps being taken to improve the energy sector in Uganda.

- Promoting rural electrification programme e.g. in Bundibugyo, Ssembabule.
- There is construction of new hydro-electric power stations e.g. Isimba hydro-electric power plant in Kayunga.
- Research is being carried out to develop other sources of energy.
- The energy sector is being liberalized/privatized e.g. Tronder power firm from Norway.
- There is diversification of the energy sources to supplement hydro-electric power e.g. use of solar energy in Kampala.
- Government is ensuring security in order to promote investment in the energy sector.
- There is sensitization on the sustainable use of energy resources.
- Modern technology is being imported to facilitate the generation and distribution of energy.
- Capital is being acquired from financial institutions.
- There is training of man power to facilitate the effective exploitation of energy resources in Uganda.
- There is fighting illegal connection.
- There is improvement of transport routes to facilitate the transportation of energy resources.
- Promotion of the use of prepaid meters by UMEME.

12. Study the table below showing total fish catch from selected water bodies in Uganda.

Fishing grounds	Fish catch (tones)	
	2005	2009
L. Victoria	43,500	34,600
L. Kyoga and L. Kwania	28,000	26,000
L. Albert	19,950	15,800
L. Edward	10000	8,540
L. George	5,000	4,200
L. Bisinia	1,954	1,000

(a) Draw a comparative bar graph to portray the information in the table above.

(b) Calculate the percentage change for;

(i) L. Victoria (ii) L. Albert (iii) L. George

(c) Account for the variations in the volume of total fish catch from the fishing grounds shown on the table above.

- Differences in the size of the lake whereby LakeVictoria and Lake Kyoga are large therefore there is a high total fish catch as compared to Lake George, Lake Bisinia which are small hence leading to a small volume in total fish catch.
- Differences in the number of fish species.
- Differences in the amount of planktons.
- Differences in the nature of the coastlines.
- Differences in accessibility.
- Differences in the amount of capital invested.
- Differences in the size of the fish market.
- Differences in terms of labour force.
- Differences in the methods of fishing/level of technology.
- Differences in the level of security.
- Differences in the processing methods.
- Differences in the level of research.
- Differences in climatic conditions.

N.B: All points must be well explained bringing out comparison clearly.

END