

OCEAN CURRENTS.

Refers to general movements / drift of surface water of the ocean in a fairly defined direction. Most ocean currents are normally referred to as drifts.

Ocean currents may either be warm or cold.

1. WARM OCEAN CURRENTS.

These have warm waters eg Warm Mozambique current, South Equatorial current, Warm Guinea current, North Atlantic drift, North Pacific drift, East Australian drift, Brazilian current and the NE monsoon drift.

X-TICS.

1. They have higher temperatures i.e. tend to be warm.
2. They are generally found on the eastern sides of the continents.
3. They tend to move from lower to higher latitudes eg they move from the equator to the poles.
4. They generally tend to be of lower density.

5. They normally carry warm conditions to the adjacent areas they move to or flow to.
6. In the northern hemisphere, their circulation tends to be clockwise while in the southern hemisphere their circulation tends to be anti-clockwise though not all.

EFFECTS OF WARM OCEAN CURRENTS ON THE CLIMATE.

1. They lead to warm conditions i.e. they tend to rise the temps of the adjacent areas. This is because winds that blow over them are warmed up and as they blow overland, they bring in warm conditions.
2. They lead to heavy rainfall conditions on the adjacent coastal lands. This is because over warm ocean currents, there's a high rate of evaporation and the winds that blow over them pick up the moisture which winds later rise, cool ~~and~~ down and moisture condenses to form rainfall.
3. They result into high humidity. This is because warm ocean currents are associated with high humidity due to the relatively high temps which increase evaporation.
4. They influence the temps of winds and result into warm winds. Winds tend to originate from areas with warm ocean currents generally regarded as warm winds.

EFFECTS OF WARM OCEAN CURRENTS ON HUMAN ACTIVITIES ALONG THE COASTAL AREAS.

1. The resultant high rainfall experienced has encouraged crop production. This is common along the I-A coast where a number of crops are grown eg rice, sugarcane.
 2. The high rainfall encourages the growth of forests and people may be involved in forestry activities eg in rubber. On I-A coast lumbering is carried in the Mangrove forest.
 3. The high temps / warm conditions along the I-A coast are conducive for the growth of coral polyps leading to the formation of coral reefs. The coral rocks have been a potential in the Manufacturing of Cement at Bambui, tourist attraction.
- Negatives.
4. Heavy rainfall is associated with thunderstorms which tend to be destructive to crops and property hence disrupting economic activities.
 5. The fringing reefs have tended to be a hindrance to deep sea fishing along the I-A coast.

COLD OCEAN CURRENTS.

These are of water of low temperatures i.e. the waters are cold eg the cold Benguela current and the cold Canary in Africa. Elsewhere the examples are Californian currents, Cold Peruvian drift.

X-TICS

1. Low temperatures
2. Tend to flow from high latitude regions to low latitude regions i.e. they flow from the poles to the equator.
3. They generally flow on the western sides of the continents though not all.
4. High density because they're cold.
5. In the northern hemisphere, their circulation tends to be anti-clockwise while in the southern hemisphere their circulation tends to be clockwise.

EFFECTS ON CLIMATE.

1. They tend to cool the temps of the surrounding areas eg the cold Benguela lowers the temps of the adjacent area in Namibia eg Walvis bay has a temperature of 16°C as compared to Durban's 25°C yet they lie almost at the same latitude.
2. They tend to arid conditions: This is because winds that blow over them hardly have moisture meaning the level of condensation will be low leading to low rainfall.

Examples of marine deserts caused by cold ocean currents include Namib desert, western Sahara desert due to the cold Canary current. The Californian desert due to the Californian current and the Atacama desert due to the cold Peruvian.

3. They tend to result into low humidity because of the low rate of evaporation which consequently lead to low cloud cover.
4. They lead to formation of off-shore fog/mist and it may also be due to when slightly warm air blows over the cold ocean current resulting into steam fog.

EFFECTS ON HUMAN ACTIVITIES.

1. The arid conditions lead to growth of pastures of short grasses which have encouraged pastoralism eg in the Namib desert.
2. Promotion of tourism, such areas have been gazetted as wild life conservation sites eg Namib deserts.
3. Arid conditions have provided a conducive environment for the film industry. Film making has been carried in the desert areas such as Californian deserts.
4. Cold ocean currents lead to the formation of fog which tends to reduce the visibility over land and water, air thereby hindering navigation and aviation.

NATURAL VEGETATION IN EAST AFRICA.

Vegetation refers to the green cover of an area OR
It is the plant kingdom on the earth's surface.

- Vegetation is divided into two;
- i) Artificial / Planted Vegetation which is vegetation planted by man and it grows under natural conditions. It includes planted trees and crops.
 - ii) Natural Vegetation which is naturally existing plant cover of an area that is growing and adapted to the physical environment of an area.

TYPES OF VEGETATION.

- ✓ Tropical rainforests / Equatorial vegetation
- ✓ Savanna Vegetation
- ✓ Swampy Vegetation
- ✓ Montane / Alpine / Temperate / Mountain Vegetation
- ✓ Semi-Arid Vegetation
- ✓ Mediterranean Vegetation (Not in East Africa)

1. TROPICAL RAIN FORESTS.

This is the type of vegetation growing largely around the equator especially around Lake Victoria Crescent.

Areas covered by tropical rainforests include Mabira, Budongo, Narambagambo, Kibale in Uganda, Kisi and Kakamega in Kenya. Foothills of Mountain Rwenzori, Elgon and Kilimanjaro.

CHARACTERISTICS OF TROPICAL RAIN FORESTS.

- i) They have tall trees that grow to a height of 60m due to competition for sunlight.

- ii) The trees are hardwood in nature i.e. Mivule, Mustzi, Mahogany, Red heart and Rosewood due to availability of water and plant nutrients.
- iii) The trees have / form dense canopies usually of three layers i.e. bottom, middle and top layer. This is due to the growth of trees of different intervals and sprouts / spread to form canopies.
- iv) Trees have little or no undergrowth due to thick canopy preventing light from reaching the ground.
- v) Trees have broad leaves that allow evaporation and get rid of excess water.
- vi) Trees grown in mixed stands / have variety of plants growing profusely due to ample water supply.
- vii) The trees have a long gestation period to mature of about 30 years and more because they are hardwood in nature.
- viii) Most trees are smooth barked because of the ample supply of water.
- ix) Trees do not regenerate after cutting i.e. Secondary forests grow and consist of shorter trees with a dense undergrowth.
- x) Trees have numerous climbing plants i.e. Lianas and epiphytes that get support from the tall and huge trees.

FACTORS/CONDITIONS FOR THE GROWTH AND DISTRIBUTION OF TROPICAL RAINFORESTS.

1. Heavy rainfall received throughout the year with the annual totals of over 1500mm well distributed has encouraged the growth of luxuriant tall trees.
2. Hot temperatures of between 22°C - 28°C which increase humidity in the area hence rainfall is received that promotes the growth of trees with dense canopies.
3. The presence of sunlight for plants to manufacture their own food during photosynthesis also promotes the growth of the dense forests.
4. High humidity of about 80% promotes the luxuriant growth of dense forests.
5. Tropical rainforests require gently sloping areas and sometimes lowland for their growth - eg lowlands along the East African coast have encouraged the growth of Mangrove forests and along river valleys for riverine forests like Ketonga and R. Nile forests.
6. Favourable government policy of conserving/gazetting of forest reserves has led to the continued existence of the tropical rainforests - eg Kibale, Kariakoo, Ruwenzori forest reserves.
7. Deep fertile soils especially along mountains and other low altitudinal areas sometimes water logged areas favour riverine forests.
8. Limited man's activities in form of agriculture, lumbering and settlement which don't interfere with forest growth.

LAND USE ACTIVITIES ASSOCIATED WITH TROPICAL RAINFORESTS.

1. Lumbering activities because forests contain valuable trees which are hardwood and these provide timber for furniture construction among others.
2. Promotes research and study activities by biographers, botanists.
3. Tourism especially when forests are conserved as forest reserves.
4. They are used as wildlife conservation centres for example Bwindi forests.
5. Crop cultivation especially the planting of perennial crops such as tea, cocoa, sugarcane which require heavy rainfall throughout the year.
6. Agro-processing industries of tea, coffee, sugar have been established.
7. Settlement because of the fertile soils and heavy rainfall in the forested areas.
8. Hunting of animals and gathering of fruits is undertaken.

PROBLEMS ASSOCIATED WITH TROPICAL RAINFORESTS.

1. They harbour pests which spread diseases like Malaria for Malaria and
2. The dense and thick forests limit construction of transport routes hence forested areas remain remote.
3. There's difficulty in harvesting of tree products because they don't appear in pure stands.

4. Tropical rainforests have hardwood tree species which are heavy and difficult to transport by both road and floating on rivers.
5. They have long gestation of maturity of over 30 years which limits their commercial value.
6. They are associated with insecurity as they promote bases for hiding by rebels and criminals.
7. They harbour wildlife that is a threat to both life of man and property.

2. SAVANNAH VEGETATION.

This is a form of vegetation that exists in three types namely, Savannah grassland, dry Savannah, dry bush and Thicket, Savannah woodlands.

i) SAVANNAH WOODLANDS.

This is the type of Savannah that grows next to the tropical rainforests zone like in the western Tanzania (Miombo woodland), Northern Uganda i.e. Kei, Morongole, Tumu and limited grass.

CHARACTERISTICS

1. The trees are hardwood in nature and are of mixed stands because of the hot temperatures.
2. Trees are of medium heights between 8-16m due to lack of competition for sunlight.
3. Trees are umbrella shaped with bushy spreading tops due to lack of competition for sunlight.

4. Trees are fire and drought resistant
5. Trees have long roots that obtain water from underground moist rocks.
6. Trees have rough barks and swollen stems due to lack of adequate water supply.
7. Trees are deciduous in nature i.e. shed off leaves during the dry season to reduce moisture loss.
8. Some trees have small leaves to reduce on evaporation.
9. The main species include acacia, baobab and cactus.
10. The grass grows tall in height and is composed of mainly spear and elephant grass.

FACTORS FOR THE GROWTH OF SAVANNAH WOODLANDS.

1. The moderate mean annual rainfall total of between 750-1000mm which is reasonably distributed has favoured the growth of medium tall trees in the woodland.
2. Hot temperatures of about 24°C that lead to the rapid evapo-transpiration hence discouraging the growth of tall trees but favouring the existence of the medium sized trees.
3. Moderate humidity of about 50% encourages moderate rainfall that favours the growth of woodlands.
4. Fairly fertile soils that encourage the growth of fairly tall trees in the savannah woodland.

5. The gentle / Relatively flat landscape that favours the growth of relatively tall trees.
6. Limited man's activities inform of lumbering, agriculture, settlement etc but deforestation by man leads to presence of scattered trees / woodland.
7. Favourable government policy that conserves areas of woodlands into reserves eg Miombo woodlands of Central Tanzania.

ii) SAVANNAH GRASSLANDS (NYIKA TYPE OF VEGETATION)

It is a type of vegetation of savannah dominated by wide growth of grass and a few scattered trees.

It is common in Nyika plains, Pott Valley areas of western Uganda, Parts of Northern Uganda and Bukoba North of Tanzania.

CHARACTERISTICS

1. It is dominated by tall elephant grass and spear grass species of about 1-4 metres.
2. The grass turns brown / yellow during the dry season.
3. The grass grows in tufts with sharp edges (blades).
4. Scattered short trees and bushes grow within the grass. The tree species include acacia, Baobab.
5. The trees have posing small deciduous leaves.
6. These scattered trees are tropical hardwood which are of umbrella shaped canopies.

FACTORS / CONDITIONS FOR THE GROWTH OF GRASSLANDS.

1. Moderate annual rainfall of 500-750mm which is reasonably distributed.
2. Hot temperatures of about 30°C causing rapid evapo-transpiration and limited surface of water limiting the growth of huge trees.
3. Well drained areas especially in flat or gentle slopes.
4. Relatively flat areas with well drained soils of the Nyika Plains.
5. Fairly fertile soils and of lateritic type which favours the growth of grasslands.
6. Moderate humidity due to the presence of small leaves that cause limited evapo-transpiration to take place.
7. Low ~~humidity~~^{altitude} of below 1000m above sea level responsible for the hot temperatures.
8. Man's activities of deforestation of woodlands and limited activities of overgrazing, agriculture, settlement.
9. Favourable government policy of conserving areas of grasslands into wildlife conservation areas like game parks and reserves.

III SAVANNAH DRY BUSH AND THicket.

It is common in N.E Kenya, Central Tanzania and Northern Uganda. They occur in areas which range between tropical and desert vegetation.

They are characterized by the following;

1. They have mainly short / stunted scattered trees.

2. The trees are deciduous with long tap roots.
3. The trees are thorny with shrubs and thickets.
4. The trees have small waxy needle shaped-like leaves.
5. The grass between the trees grows short and grows in branches or tufts.
6. Species of trees include Cacti, Acacia and Euphorbia.

CONDITIONS / FACTORS FOR THE GROWTH OF DRY SAVANNAH.

1. Little rainfall of between 250-500mm per annum which enables the growth of stunted trees since the rainfall is poorly distributed.
2. Very hot temperatures of ~~about~~ over 30°C leading to small waxy leaves to reduce the moisture loss.
3. Low humidity that cannot favour ample amounts of rainfall to support the growth of luxuriant vegetation.
4. Thin / shallow infertile soils favouring the growth of short stunted trees.
5. Fairly drained soils which favour the growth of shrubs and thickets.
6. A low altitude of between 500-1000m above sea level which favours hot temperatures.
7. Man's activities of overgrazing by wild animals and domestic animals, burning of the bushy grounds, action of pests like termites, locusts etc which change the characteristics of the grasslands.

8. Gently sloping and relatively flat areas which are fairly drained that encourage the existence of dry savannah.

LANDUSE ACTIVITIES ASSOCIATED WITH SAVANNAH VEGETATION.

1. Crop cultivation mainly of annual crops like maize, cotton, These require moderate and seasonal rainfall.
2. Livestock keeping because of presence of abundant pasture grass.
3. Settlement because of the grasslands and scattered trees that are very easy to clear.
4. Thatching of houses / Grass thatching using the abundant elephant and spear grass eg in Northern Uganda.
5. Road and railway constructions because the grasslands and woodlands are very easy to clear.
6. Woodlands are a source of fuel hence favouring charcoal burning.
7. Lumbering activities due to the presence of scattered hardwood trees.
8. Wildlife conservation and tourism because habitats ~~are~~ of the wild animals are the grasslands. They have resulted into the creation of national parks and game reserves like L. Mburu, Queen Elizabeth and Tsavo National Parks.
9. Bee keeping activities due to the presence of flowering plants like in the Miombo woodlands of central Tanzania.
10. Study and research activities mainly by geographers and Botanists.

11. Hunting of wild animals especially herbivores that can be eaten by man for example antelopes, waterbucks etc.

PROBLEMS ASSOCIATED WITH SAVANNAH VEGETATION.

1. Unreliable and poorly distributed rainfall leading to water shortage.
2. Pests and diseases from woodlands and scattered trees like the tree flies in Mkombo woodlands of Central Tanzania.
3. Poor development of soils due to scattered trees which result into limited humus which hinders crop cultivation.
4. Uncontrolled cutting of trees leads to the reduction of rainfall mainly because of need for wood fuel.
5. Soil erosion due to overgrazing by domestic and wild animals.
6. Poaching of wild game by illegal hunters.
7. Grasslands and thickets are affected by fire outbreaks naturally and by illegal hunters.
8. Effects of wild animals to man from national parks and game reserves which threaten man's existence.

FACTORS FOR THE DETORINATION OF SAVANNAH VEGETATION.

The factors are both physical and human;

1. HUMAN FACTORS

1. Overstocking which has led to overgrazing changing the grasslands to dry bush and thickets.

2. Uncontrolled bush burning for fresh pasture to grow has changed grasslands into dry bush savannah.
3. Tree cutting for building materials has destroyed woodlands turning into grasslands.
4. Clearing of the woodland savannah vegetation for cultivation has changed the would be woodland into grassland very common in Kayunga.
5. Mining and Quarrying activities have led to the destruction of woodland changing it into savannah grassland common in Bulisa, Mukende etc.
6. Increased demand for wood fuel like charcoal and firewood has led to woodlands changing to grassland common in Nakasongola.
7. Construction of transport routes like roads, railway lines has led to clearing of the woodland savannah into grassland.
8. Industrialisation in East Africa has led to the destruction of savannah woodland due to a wide demand for land and wood fuel eg Hima and Tororo cement factories have changed the woodland into grassland.
9. Borehole drilling that lowers the water table has transformed the grassland into dry savannah.

11. PHYSICAL FACTORS,

10. Pests and diseases eg termites at the capital, harvesters ants have destroyed the savannah grassland hence changing to dry bush and thicket common in Nakasongola and Katakwi districts.

11. Prolonged dry seasons that have led to desert conditions eg North eastern Uganda, Eastern Kenya changing the grasslands into dry bush and thicket.
12. Natural fires during prolonged drought / dry seasons have destroyed savannah grassland changing it into thickets for example in Northern Uganda.
13. Fencing of savannah grassland into game parks has led to overgrazing of grass and browsing of trees by wild animals eg elephants turning it into dry bush and thicket eg Murchison Falls national park.
14. Influence of prevailing winds which further intensify the changing effect of degradation of grasslands to dry bush and thickets in North eastern Kenya.

B. Qns.

1. Describe the characteristics of the woodland savannah?
 - Identify areas where woodland savannah is found
 - Describe the X-facts with a reason
2. Account for the growth of savannah woodland?
 - Identify with an example
 - Factors for the growth of savannah woodlands
3. Describe the characteristics of savannah vegetation?
 - Describe the 3 types of savannah vegetation
 - X-facts and location with a reason.

4. Account for the deterioration of Savannah vegetation in East Africa?

5. Explain the conditions that have influenced the growth of Savannah vegetation in East Africa?

- Identify the 3-types of Savannah
- Location
- Factors / conditions

6. Account for the growth of Miombo woodland type of vegetation in East Africa?

- Identify where Miombo woodland is found
- Locate other areas of Savannah woodlands
- X-fire
- Factors

TEMPERATE / MONTANE / ALPINE VEGETATION.

This is the type of vegetation that grows in cool areas of East Africa. These cool areas exist in mountainous areas at altitudes of over 3000m above sea level. These areas include areas around Bwindi, Mt. Elgon, Rwenzori, Mount Kenya.

There are three different types of Montane vegetation in East Africa and these include; Temperate forests, Bamboo forests and Heath and Moorland.

i. TEMPERATE FORESTS.

These are forests that grow between 3000-3500m above sea level especially on the slopes of mountains like Rwenzori, Elgon, Kilimanjaro, Kenya.

CHARACTERISTICS OF TEMPERATE FORESTS.

1. They have tall trees with straight and small branches.
2. Trees are evergreen i.e. they don't shed their leaves because of the cool temperatures.
3. Trees are cone shaped to allow snow-fall.
4. The trees are of softwood species like Pines, Deodar, Camphor. This is due to the cool temperatures.
5. Trees grow in pure stands i.e. they are not intermixed.
6. Trees have a short gestation period because they are of softwood of 1-3 years.

CONDITIONS FAVOURING THE GROWTH OF TEMPERATE FORESTS.

1. Cool temperatures of about 10°C due to the high altitude. This explains the existence of the softwood tree species like Pines.
2. Moderate rainfall of about 1000mm per year which is evenly distributed favours the growth of the evergreen trees like Camphor.
3. Low humidity of about 30% due to the cool temperatures hence the growth of trees with small branches.
4. Moderately fertile thin soils that support the growth of light temperate trees of softwood species.
5. Steep slopes with soils that are thin along the mountain that support the growth of light trees.
6. High altitude of between 3000-3500m above sea level that results into the cool temperatures that has led to the growth of the softwood tree species.

7. Favourable government policy that encourages conservation of temperate trees (forests) and sometimes gazetted as forest reserves.
8. Limited human activities in form of settlement and cultivation; Logging which are due to cool temperatures.

II BAMBOO FORESTS.

These grow at an altitude of between 3500-4000m above sea level. They grow next to the temperate forests disappearing into the heath and moorland.

They are found on Mt. Elgon, Mt. Kenia, Mt. Ruwenzori, Mt. Ashimanjaro.

CHARACTERISTICS OF BAMBOO FORESTS.

1. The bamboo forests have hollow segmented tree stems.
2. They have trees with sharp pointed leaves.
3. The trees have small soft branches.
4. The stems are yellowish in colour.
5. The trees grow in pure stands.
6. The bamboo trees have prop roots.

CONDITIONS FOR THE GROWTH OF BAMBOO FORESTS.

1. Cool temperatures of less than 10°C at a high altitude which explains the small soft branches of the bamboo trees.
2. Little rainfall throughout with increased other forms of precipitation in form of fog, snow and mist which encourage the growth of bamboo.

3. Low humidity levels due to the cool temperatures and the small sharp pointed leaves.
4. The skeletal thin soils highly affected by erosion on the steep slope to support the growth of the soft bamboo trees.
5. High altitude of between 3500-4000m above sea level associated with cool temperatures hence the growth of soft bamboo trees.
6. Limited man's activities in form of fruit gathering has favoured the existence of the bamboo.
7. The favourable government policy that encourages the conservation of the bamboo.

III HEATH AND MOORLAND.

This is a type of Montane vegetation that grows at altitude of about 4000m and above sea level. This is found on the Mountains of Rwenzori, Kenya and Kithimaniro.

CHARACTERISTICS OF HEATH AND MOORLAND.

1. They appear short and tufted
2. They are composed of ferns, Mosses and flowers.
3. They have bare patches the land inbetween the tufts and clusters.
4. The main species include giant, heathers, lobelia and groundcel.

CONDITIONS.

FACTORS OF HEATH AND MOORLAND.

1. Cold temperatures of between 5°C - 10°C because of the high altitude which explains the growth of ferns, flowers, Mosses.
2. Very little rainfall but with increased other forms of precipitation like snow which has encouraged the growth of flowers, ferns and Mosses.
3. Very low humidity due to the cool temperatures explains the existence of the bare grounds, short and tufted plants.
4. The very thin and skeletal soils support the growth of short vegetation and flowers.
5. The high altitude of about 4000m above sea level resulting into cool temperatures hence bare grounds and short plants have grown.
6. Very little man's interference due to the cold temperatures at a high altitude. This explains the survival of heath and moorland.
7. Favourable government policy that conserves and gazettes the alpine vegetation.

LAND USE ACTIVITIES ASSOCIATED WITH MONTANE VEGETATION.

1. Tourism and wildlife conservation on mountains like Pico Ancon and Kilimanjaro, in form of game parks and reserves.
2. Too much coldness causes some diseases like pneumonia, asthma.
3. Soil erosion due to the steep slopes of the highlands.
4. Premoteness especially in the highland forests due to inaccessibility by transport and communication network.

5. Insecurity especially temperate forests are holding places for rebels for example The Ruwenzori mountain forests were used by ADF rebels.

R.Qns.

1. Explain the factors responsible for the growth of Montane vegetation in E.Africa?

- Defn of Montane vegetation
- Areas where its found
- Identify types with their characteristics
- Factors for the growth of each montane vegetation type

2. Explain the influence of altitude on the distribution of the natural vegetation on any one mountain in E.Africa?

MANGROOVE SWAMP VEGETATION.

Swamps are a special type of natural vegetation that grows in water logged areas.

They are sometimes called wetlands. There are three types of swamps that exist in East Africa.

- Mangrove Swamps
- Papyrus Swamps
- Grassland Swamp

B MANGROOVE SWAMPS / FORESTS.

Mangrove forests are found along the East African coast between 5°N and 5°S of the equator around Mombasa, Tanga, Lamu, Dar-el-Salaam.

The lower valleys of Rufiji and Rovuma etc.

CHARACTERISTICS OF MANGROOVE SWAMPS.

1. The trees are evergreen because of the heavy rainfall received throughout the year.
2. The trees have aerial roots to support the trunks and keep them above the water levels for respiration.
3. Trees have broad leaves to get rid of excess water.
4. They are hard wood trees because they grow in the tropics under hot and wet conditions.
5. They take long to mature because they are hardwood in nature.
6. Trees have dense bushy stand because of the hot wet conditions and ample supply of nutrients.
7. Trees grow in mixed stands in various species that grow parallel to the shore have belts.
8. Trees have grey leathery foliage that appears to float on the water.
9. Trees have medium height due to ample source of water.
10. Trees have short trunks with low tidal range.

CONDITIONS FOR THE GROWTH OF MANGROOVE FORESTS/ SWAMPS.

1. Heavy rainfall of over 1000mm, high humidity levels of 80% and hot temperatures of 24°C - 30°C lead to the growth of the luxuriant mangrove forests.

2. Soils, They grow in coral soils, impervious clays, peat soils, mudflats, alluvial soils, deep saline that facilitate the luxuriant growth of the Mangrove forests.
3. Altitude. They are found at a low altitude of below 200m above sea level which leads to hot temperatures that favour the growth of Mangrove forests.
4. Drainage, Mangrove forests grow in poorly drained soggy water logged and saline water conditions.
5. Relief, They are found on coastal lowlands and broad valleys which favour accumulation of silt, mud, alluvial soils that support the growth of Mangrove forests.
6. Presence of barrier reefs / coral reefs along the coast that prevent the alluvial soils from being swept away by wave action.
7. Presence of low tidal range of water that creates marshy conditions which favour the growth of Mangrove forests.
8. Government policy, Governments have gazetted Mangrove forests leading to their continuous conservation / existence.
9. On the other hand Man is encroaching on the Mangrove forests for extracting building materials / poles, cultivation of water loving plants eg yams, sisal etc hence reducing the areas covered by the Mangrove forests.

Q: Qns

- 1a. Describe the characteristics of Mangrove Swamps?
- b. Examine the condition for the distribution of Mangrove forests
 - Locate them
 - Give the conditions.
2. Account for the growth and distribution of mangrove forests in East Africa?

ii PAPYRUS SWAMPS.

These grow along rivers and lakes in areas of impeded drainage / water logged areas mainly along rivers like Kafu, Kafu, Lebige, Nile, Mpologoma, Rufiji and lakes like Kyoga and Victoria.

CHARACTERISTICS OF PAPYRUS SWAMPS.

1. They have spongy weak stems.
2. They have long fibrous roots to offer them support.
3. Their leaves are threadlike in nature.
4. Their stems appear smooth.
5. Their leaves form clusters (tufts) on top.

CONDITIONS FOR THE GROWTH OF PAPYRUS SWAMPS.

1. Papyrus grow in fresh water conditions.
Moderate to heavy rainfall of over 1000mm which is well distributed throughout the year.
2. Hot temperatures of about 20°C .
3. Moderate to high humidity levels of between 60% - 70% have encouraged the growth of Papyrus swamps.
4. Papyrus swamps require lowlands / broad valleys that encourage water logging and deposition of the alluvial soils that are ideal for their growth.
5. Deep fertile alluvial silt dry soils deposited in lowland areas favour the growth of the papyrus swamps.
6. A low altitude of about 500m above sea level making the temperatures hot thus favouring the growth of Papyrus swamps.

7. Papyrus swamps grow in poorly drained areas / waterlogged mostly in lowlands and broad valleys like Lubigi, Mpologoma.
8. Positive government policy that discourages swamp reclamation of harvesting the papyrus swamps. The government policy also favours conservation and gazettement of wetlands.
9. Human activities like agriculture, settlement, Art and craft have produced the papyrus swamps.

III GRASSLAND SWAMPS.

These grow in lowland semi-arid areas, along river valleys. Examples are found in Northern Uganda and Northern Kenya.

CHARACTERISTICS OF GRASSLAND SWAMPS.

1. They grow in clusters
2. They have thin long leaves.
3. The grasses have sharp blades.
4. The main species include bog, sedge and tree swamps.

CONDITIONS FOR THE GROWTH OF GRASSLAND SWAMPS.

1. Little rainfall of less than 500mm, very hot temperatures of over 30°C, very low humidity of less than 30% have favoured the growth of thin long leaves and tree swamps.
2. Existence of the low lying relief that encourages water logging hence the growth of bog and sedges.
3. Poorly drained areas mainly in the lowlands that encourage water logging hence the growth of grassland swamps.

4. Existence of clay, silt and alluvial soils that are deposited by rivers and low lying areas encourage the growth of tree swamps.
5. Low altitudinal range of less than 500m above sea level associated with hot temperatures hence the growth of the trees with leaves which are sharp.
6. Limited human interference in form of hunting, harvesting, agriculture, settlement have encouraged the existence of grassland swamps.

LAND USE ACTIVITIES ASSOCIATED WITH SWAMPY VEGETATION

1. Crop cultivation of water loving crops like yams, sugarcanes in Kibimba, Kitombero etc.
2. Cattle grazing due to the presence of water available for animals like in the Kafu plains.
3. Brick making due to water loggedness.
4. Study and research activities mainly by geographers and environmentalists.
5. Hunting activities like waterbucks, Antelopes and hippos.
6. Tourism and wildlife conservation like L. Nakuru for flamingos, L. Mburu for Antelopes and crested cranes.
7. Art and craft especially the papyrus swamp are used for making papyrus baskets, Mats etc.
8. Sand and clay extraction for construction purposes for example from the coastal wetlands.

SEMI-ARID VEGETATION / SCRUB AND THICKET VEGETATION.

This is found in the north eastern Uganda, Rift Valley areas of western Uganda, Central Tanzania, North western Kenya, Anker-Marakas Corridor, Northern Kenya, Albert flats, etc.

CHARACTERISTICS OF SEMI-ARID VEGETATION.

- i) The vegetation has bushy thorny trees with shrubs growing in between.
- ii) Many plants have deep tap penetrating roots that enable them to draw water from underground sources given the limited surface moisture.
- iii) Many plants have tiny thorny leaves which help them to reduce the rate of water loss eg acacia and to deter animals which may wish to eat them.
- iv) Some trees are waxy to prevent moisture loss. Some have swollen trunks which they store water for use during the long dry seasons like Baobab.
- v) Many plants produce seeds which are dormant for years until the little rainfall is received and they germinate.
- vi) It is characterized by thickets separated by patches of bare grounds and short grass.
- vii) They consist of bushy thorny trees having a height of 5m-10m tall.
- viii) Many plants complete their cycle within a few weeks before the soils completely dry up.
- ix) Some plants are xerophytic growing in areas of saline soils.

- x) The most dominant plants are Xerophytes. These are plants that are highly tolerant to drought and can survive in dry areas like Acacia, cacti.
- xi) They have thick fleshy appearance on the leaves and stems.
- xii) Some desert plants have thick barks to control the loss of water through transpiration.
- xiii) Some desert plants such as cactus are widely spread to avoid competition for water.
- xiv) Grasses turn yellow in the dry seasons.
- xv) Grasses are short in semi-arid vegetation.
- xvi) Seeds of semi-desert plants have a thick case that protects the inner centre from bush fires, so they are fire resistant.
- xvii) Trees in semi-arid vegetation are drought and fire resistant.

CONDITIONS FOR THE GROWTH OF SEMI-ARID VEGETATION.

1. Climate
 - Hot temperatures of about 30°C with dry winds and high rate of evaporation favour the growth of short grass and scattered trees.
 - Presence of low rainfall of about 350 mm which is unreliable that cannot support luxuriant vegetation cover under such circumstances plants have a short cycle of germination, leafing, flowering and fruiting as well as seed dispersal.

- Very low levels of humidity of about 30% due to the absence of big water surfaces.
- Existence of long drought periods.

2. Soils,

- * Existence of infertile sandy, sheltered soils with limited humus content discourage the growth of luxuriant vegetation hence the semi-desert vegetation can survive.
- * Highly porous soils with a low moisture retention capacity hence scattered trees and grass clusters.

3. Semi-Arid vegetation generally grows on areas of low lying relief less than 1200m above sea level with hot temperatures and limited rainfall.

The leeward side of mountains have also led to the growth of drought resistant trees in areas of Karamoja, Turkana land etc.

4. Drainage

Due to limited surface drainage, dwarf / short / little heath-like plants grow in scattered patterns in areas of salty depressions, Xerophytic plants such as salty bushes grow.

5. Human activities have led to the growth of semi-desert vegetation both positively and negatively.

- * Positively, Conservation policies by the government have encouraged the growth of desert vegetation in areas like Kidepo valley National Park.

Negatively, activities like overgrazing, bush burning, sinking of bore holes, deforestation, charcoal burning have led to the reduction of the vegetation growth leading to scattered stunted grasses.

6. Biotic factors, wild animals feed on and destroy the woodlands and grassland vegetation into dry bushes. Termites and locusts also destroy grasslands leading to emergence of dry scrubs.