

- (a) (i) Name the wildlife conservation areas marked **S, T, and U**  
(ii) Identify the Marine National Park marked **V**
- (b) (i) Apart from Marine and Wildlife name **three** other tourist attractions along the coastal strip of Kenya  
(ii) Give **four** reasons for wildlife conservation in Kenya  
(iii) Explain **four** problems facing wildlife conservation in Kenya
6. (a) Give **three** reasons why it was necessary to conduct a pre-visit before the actual study (3mks)  
(b) State **three** measures that they could propose to be taken to promote domestic tourism in Kenya (3mks)
7. (a) Apart from floods, name any other environmental hazard experienced in Kenya  
(b) State **two** causes of desertification  
(c) Give **two** reasons why it is necessary for Kenya to conserve her environment
8. (a) Differentiate between management and conservation of the environment.  
(b) Give **four** reasons why we need to manage and conserve the environment.  
(c) Explain **four** effects of air pollution on the environment.  
(d) (i) Give **five** measures that can be put in place to combat pollution.  
(ii) Identity **three** human characteristics you may learn from the garbage;
9. (a) Define the term pollution as used in Geography.  
(b) Dither their air pollution name **three** forms of pollution.
10. Apart from desertification, name **two** other environmental hazards experienced in Kenya

## ANSWERS SECTION I & II

### 1. INTRODUCTION TO GEOGRAPHY

1. - It creates awareness /understanding in the people of the environment in which they live hence the need to manage, and use resources sustainability.

### 2. THE EARTH AND THE SOLAR SYSTEM

1. a i) i) Tropic of cancer  
ii)  $66\frac{1}{2}^{\circ}$
- b i) - Causes day and night  
- Causes high and low tides  
- Causes deflection of winds and ocean currents  
- Causes time difference between longitudes  
- Causes pressure difference on the earths surface
- ii) Time difference = 1400 hrs – 1030hrs  
= 0330 hrs  
=  $3\frac{1}{2}$  hrs  
∴ Difference in longitude is  
 $\frac{7}{2} \times 15 = 52.5$   
 $52.5 - 45$   
Longitude is 7.5W
- (c) - Sea breeze  
- Land breeze  
- Anabatic

- Katabatia
2.
    - a i) -  $28^{\circ}\text{C}-24^{\circ}\text{C} = 4^{\circ}\text{C}$
    - ii) - 1803mm
    - b) - the town experiences high temperature throughout the year ( $24^{\circ}\text{C}-28^{\circ}\text{C}$ )
      - the annual range of temperature is small
      - rain fall throughout the year/there is no marked dry season
      - the rainfall patter has double maxima
      - the wettest month is June/the driest month are December and January
      - the rainfall is high i.e. 1803mm
  3.
    - a) Solstice is when the sun's overhead position is over the tropic of caner and Capricorn
    - b) - Causes seasons i.e. spring, summer, autumn & winter
      - Varying lengths of day and night at different times of the year
      - Changes in the position of the midday sun at different times of the year
      - Changes in the position of the midday sun at different times of the year
  4.
    - a i) - Passing star theory
      - Nubular cloud theory
    - ii) Centrifugal force
    - b) - Layers of the overlying rocks exerts pressure hence the interior is hot
      - After formation of the earth the interior cooled slowly compared to the exterior, thus the interior still retains much of its original temperature
      - Radioactivity – mineral elements with the interior react with each other thus exploding to produce heat
  5.
    - a) - Passing star/ the big bang theory
      - Nebula cloud theory
    - b)- The solar system is the group of heavenly bodies comprising the sun and the eight known planets which orbit the sun
  6.
    - .a) - Mercury
      - Venus
    - b) (i) A time zone is a group of neighbouring countries that use the same standard time
      - ii) - On crossing this line from east to West,, a day is gained / the clock has to be adjusted backwards by 24hours
        - On crossing this line from West to East a day is lose/the clock has to be adjusted forward by 24hours.
  - c) - They are circular.
    - They decrease in length Northwards and Southwards
    - They are measured North and South of the equator
    - There values increase Northwards and Southwards
    - They are parallel to each other
  7.
    - a) - It is the sun and the planets orbiting around it.
    - b) - The radio activity process taking place in the interior leads to a lot of energy production.
      - This keeps the temperature in the interior very hot.
      - The overlying materials exert a lot of pressure to the interior resulting to higher temperature.
      - When the earth was being formed the mantle and the core cooled at a slower rate than the crust.
      - As a result the temperature in the interior are still hot.
  8.
    - a i) -Solar/eclipse of the sun
    - ii) - Q-moon
      - T-umbra
    - b) -it cause days and night
      - it causes high and low tides
      - it causes the deflection of winds and oceans currents

-it causes time difference between longitudes

9. a) - Cooled at a slower rate than the outer exposed part
  - Due to the process of radio- activity where atoms break releasing heat
  - Weight of the overlying material that exerts pressure on the core
- b) - Causes seasons
  - Varying lengths of day and night
10. a i) It is the date when the sun is overhead at the equator at mid day
- ii) 21<sup>st</sup> march✓  
23<sup>rd</sup> September✓
- iii) - causes four seasons i.e. winter, summer, autumn and spring✓
  - causes varying lengths of day and night at different times of the year✓
  - causes changes or altitude of the mid-day sun at different times of the year✓
11. a) - U-mohorovicic discontinuity
  - V-the mantle/asthenosphere
  - X-Gutenberg discontinuity
- . b i) - it is made up of solid rocks
  - composed of two layers /sial and sima/continental crust and oceanic crust
  - sial is rich in silica and a aluminum
  - sima is rich in silica and magnesium
  - sima rocks are like plastic/more flexible
  - the top layer of the sima is made of sediments and volcanic lava
  - the bottom layer of sima is made up of basalt/igneous rocks
  - the sima is made up of the basaltic/igneous rocks
  - sima is made up of dense rocks /2.8-3.0 gm/cc
  - the sial is made up of granites/sedimentary/metamorphic rocks
  - the sial rocks are rigid/brittle
- ii) - the core is composed of two parts i.e. inner core and outer core
  - the main mineral of the outer core are iron and nickel
  - the main mineral of the inner core is iron
  - the inner core has a high density i.e. 16-17gm/cc than the outer core i.e. 10.5gm/cc
  - the inner core is made up of a solid rock mass
  - the outer core is molten

### 3. WEATHER AND CLIMATE

1. -population pressure leading to clearing of forest
  - climatic changes/global warming/destruction of ozone layer
  - accidental fires
  - poor methods of farming /overgrazing
2. a i) Aridity refers to a state of dryness or deficiency of rainfall in an area while desertification refers to the encroachment of desert like conditions into productive or arable land ✓✓
  - ii) Weather atmospheric condition of a place over a short period of time
  - Climate- Average weather condition of a given place over a long period
- b)- Moist warm air meets dry cold air mass
  - Mountain slopes adjacent to a valley cause anabatic and katabatic winds
- c) - Sea heats faster than the land during the day
  - Air over the sea rises creating low pressure over the sea
  - Cooler air over the land blows towards the sea
  - Cool air from the land is called land breeze
3. a) - Zone of low pressure
  - High temperature

- High convectional rainfall
- Trade winds converge here
- Moves with movement of the sun
- (b)i) -Variation of solar output
  - Volcanic eruption
  - Variations in the earth's orbital characteristics
  - Variation in atmospheric carbon dioxide
- iii) - Increase in temperature causing rise in sea level due to melting ice
- Changes in wind speed causing erosion
- Changes in seasons leading to severe drought
- Increase in precipitation causing flooding of large areas
- c) - Relief features such as high mountains influence temperature and rainfall pattern
- Presence of large water bodies that modify temperatures of the surrounding lands through breezes
- Continentality- many regions are in the interior of the continents making them receive low amounts of rains
- Winds- some areas are influenced by cold onshore winds that lower temperature of the surroundings
- 4. (a) - Temperature varies between 17C to 24C
  - Lower slopes have higher temperatures than upper slopes
  - Mean annual range of temperature is between 3C to 5C
  - Rainfall is received throughout the year
  - Rainfall is high 1000 -15000 mm
  - Rainfall is double maxima
  - Rainfall is relief- orographic
  - High rain on the wind ward slopes
  - Rainfall is caused by S.E trade
  - Coolest months are between June and August
- (b) - Fold mountains receive heavy rainfall/ snow falls give rise to many rivers for HEP, irrigation, water for domestic and industrial use
  - Wind wards sides receive high rainfall which promote agriculture/ forest growth
  - Leeward side have violent wind which destroy crops
  - Folding leads to exposure of some minerals or bring minerals near surface for mining
  - Folding hinders construction of communication
  - Folding acts as barriers during wars
  - Folding offer sceneries which attract tourists hence foreign exchange
  - Folds mountains make visibility poor hence hindering air transport
- 5. a) Weather is the daily condition of atmosphere taken in short period usually 24hrs while climate is the average weather condition taken for a period of 30 – 35 yrs
- b) - High rainfall/ no marked dry season/ (1500mm – 2000 mm)
  - High temperatures throughout the year/ (24°– 27°)
  - High humidity throughout the year with relative humidity about 80%
  - Rainfall throughout the year
  - Small temperature range/ 4°C
  - Double maxima (March – May and Oct – Nov)
  - Major winds are South East and North East
  - Low pressure all the year/ Doidrums/ Equatorial low
  - Rainfall mainly convectional falling in the afternoon accompanied with lightening and thunderstorm
  - Thick cloud cover all the year/ thick cumulonimbus clouds
- 6. (a) i) - Warm ocean currents raise temperature of the adjacent land/ warm current increase rainfall
  - Cold ocean current lower temperature of the regions/ lower rainfall/ create dryness
- ii) High areas have low temperatures/ Mt areas receive high rainfall

- Mountain sides facing sun are warmer than sides facing away from sun (Aspect)
- b i)- Rainfall of double maxima
- High temperatures throughout the year about 270°C
  - Low temperature range
  - Rainfall falls throughout the year
  - Rainfall is high average 2000mm
  - Low pressure due to over head sun
  - Rainfall is mainly convectional
  - High humidity content
7. a) - Air should be calm so that it can remain in contact with the ground long enough to be cooled below dew point
- Day time should be warm to speed up evaporation and provide a lot of water in the air
  - There should be cloudless nights
- b) - To increase precipitation in the area
- To regulate in the area
  - Forest to help air purification
8. a) i) A fog is a mass of water droplets suspended in the lower atmosphere which limits visibility to less than a kilometer
- ii) - Air must have abundant moisture
- The night should be clear/cloudless to facilitate terrestrial radiation
  - The air should be clam/gentle air currents to help the water droplets in suspension
- b) - Troposphere
- Stratosphere
  - Mesopause
9. a) -it is a large volume of air whose temperature and humidity are fairly uniform and covers an extensive surface area
- b) -it experiences high temperature
- it is a zone of low pressure and the doldrums
  - the zone migrates to the north and south of the equator with apparent movement of the overhead sun
  - it is a zone where the S.E and N.E trade winds converge
  - it is associated with convectional rain and thunderstorms
10. a) - Temperature decreases with increase in altitude.
- Rainfall increases with height upto 300m then it starts to decrease
  - Windward slopes are wetter than leeward slopes.
  - Atmospheric pressure decreases with increasing altitude.
  - Local winds are common, they blow up slope during the day and down slope during night.
  - In temp. regime slopes facing the equator are warmer than those facing the poles
- b) i)- Increases air pollution from industrial activities.
- Deforestation /uncontrolled logging.
- ii) - Widespread changes in the natural ecosystem with grasslands and deserts areas expanding as forested areas shrinks.
- Possible rise in temp. may increase evaporation rates leading increased rainfall in some areas.
  - Increased rainfall will cause flooding of low lying areas.
  - Water stored in polar glacier will melt leading to rise in sea levels and flooding of coastal lands.
  - In temperate regions, winters are likely to be wetter and summer drier.
  - Wetter & warmer conditions may increase pests & diseases thereby affecting humans, crops & livestock.
  - Change in climate is likely to cause extinction of various plants and animal species.
  - Possible drought might increase in most parts of the world.
  - Cause in change in agricultural activities & massive crop failure leading to food

- shortage.
- c i) - A rain gauge consists of a funnel, metallic cylindrical container and a collecting jar.
    - When it rains, water from direct rain drops collects into the jar through the funnel
    - The water collected is then poured into a graduated (in mm) measuring cylinder.
    - The readings taken & recorded.
  - c ii) - Thermometers / six thermometers.
    - Hygrometer.
11. a i) - This is climatic conditions in a restricted area due to small differences of aspect slope, vegetation and human landscapes
- ii) It is a condition where the incoming solar radiations pass through the atmosphere while the outgoing terrestrial radiation is blocked by gases/ clouds/ atmosphere making the earth retain the terrestrial radiation/ re-radiation. (This makes earth to be warmer than it would have been)/ it is a condition where the atmosphere balances the incoming and outgoing terrestrial radiation making the earth to retain optimum heat
- b) - A thermometer / maximum and minimum/ six's thermometer
- A hygrometer/ wet and dry bulb thermometers
- 12 a) -body of air/wind with uniform conditions moving in a given direction
- b) -same temperature
- air pressure-move from H.P to L.P
- earth's movement
13. (a) Tropical convergence zone is a low pressure belt that lies between the tropics where the North East and South East trade winds converge
- b) - The forest is evergreen due to high rainfall and abundant sunshine
- The trees grow tall to complete for sunlight
  - Trees have broad leaves to encourage water loss through evapo-transpiration / transpire excess water due to high rainfall
  - these are mainly hardwoods due to abundant sunshine
  - Trees have buttressed roots to support their great heights and large trunks in the wet soils.
  - Tree roots go deep into the ground for anchorage
  - There are many tree species due to the tropical conditions.
  - The forest has little underground because the canopies block sunlight from reaching the ground
  - The forests have numerous lianas/climbers which twine around the tall trees to reach sunlight in the dense forest.
  - Trees grow rapidly due to the high temperatures and high rainfall
14. a) It is large volume of air/ wind with similar/ uniform temperature humidity and covers over a large area and flows over along distance
- b) A- North East polar winds  
 B- South West westerlies/ S. West winds  
 C - North east trade winds  
 D - South East trade winds
15. a i) - Global warming is the increase of average temperatures on earth as result of green house effect/ gases reflecting back to earth part of heat radiation
- ii) - The orbital position of the earth or effect of the distance of the earth from the sun
- High amount of carbon dioxide in the air from industries
  - The volcanic emption raise heat/ temperature
  - High amount of solar radiation reaching the earth due to depletion of Ozone layer
- iii) - Carbon dioxide (CO<sub>2</sub>)
- Chlorofluorocarbons (CFS)
  - Methane
  - Nitrous oxide (N<sub>2</sub>O)

- b)(i) - Change in the ecosystems with grass land and deserts expanding while forests shrink
- Rise in the sea level due to thawing of glaciers that leads to flooding of coastal low lands
- Rise in global temperatures leading to increased rainfall due to increased evaporation
- Wetter winters and dry summers in temperate regions
- Shrinking water bodies e.g. lakes, rivers and drying up of streams
- Reduced animal and plant species due to adaptation difficulties
- Extinction of some species of flora and fauna
- Low production of food due to failing soil fertility and absence of rain/ too much of rainfall in other areas
- (ii) - High rainfall evidenced by many permanent rivers
  - Cool temperatures from high altitudes e.g. 2000m
- 16. a) Aridity is dryness/ insufficient rainfall, while desertification is the expansion/ encroachment of desert conditions
- b)
  - Use of defective instruments√
  - Personnel may have inadequate /limited skills√
  - Vagaries of nature such as earthquakes√
- c) - painted white to prevent over heating√
  - raised to a height of 121m to prevent contact with direct radiation from the earth's surface√
  - it has louvers at the side to allow free air circulation√
- 17. a)- 2-modified tropical climate of the highland
  - 3-modified equatorial climate of the lake basin
- b) - it receives very low rainfall of less than 250mm annually
  - the mean annual temperature are high above 29°C
  - large diurnal range of temperature
  - day temperature are high
  - humidity is low
  - sand storms are common occurrence
  - there are occasional floods caused by sporadic rains
  - the region is under the influence of dry north east trade winds
- 19. a i) X – Mediterranean  
Y – Equatorial climate
- ii)
  - Rainfall is low/ below 250mm per year
  - Rainfall is erratic/ unreliable
  - Occasional flash floods
  - Temperatures are high throughout the year
  - Intense solar radiation
  - Diurnal range of temperature is large/ extreme hot days and cold nights
  - High rates of evaporation
  - Skies are clear/ high terrestrial radiation
  - Low humidity
  - Strong dusty winds
- b i)- Green house effect is general increase of the temperatures of the globe due to increase in the level of CO<sub>2</sub> and other greenhouse gases. This results into a condition where the incoming solar radiation passes through the atmosphere while the outgoing terrestrial radiation is blocked by the gases and the clouds
- ii) Increase in temperature
  - Effects
    - Rainfall increase
    - Melting of ice caps
    - Rise in sea level
    - High evaporation
    - Abnormal growth of plants

## Change in rainfall pattern

### Effects

- Floodings
- Rise in sea level
- Drought
- Soil erosion by water

## Change in seasonal patterns

### Effects

- Severe winter/ short summer
- Drought
- Shifting of vegetation zones
- Extinct of some species

## Change in winds

- More frequent & more destructive
  - High waves
  - Flooding
  - Wind erosion/ wind storms
- c i) - Temperature decreases with increasing height above sea level. This is because atmospheric air at low altitude is denser than high above. Heat loss is greater at high altitude than at lower altitude
- Rise in altitude cause fall in temperature and a cooling effect that causes condensation of moisture in the air. This leads to precipitation forming at high altitude
  - Atmospheric pressure is higher at low altitude and lower at high altitude. This is because the weight of the atmospheric air at low altitude is more than at high altitude
- ii) In summer, coastlands are relatively cooler than in land areas. This is because the winds bring the cooling effect of the sea to the land, by the time winds reach inland they are heated by warm land resulting in higher temperature over the interior of the land
- In winter the onshore winds bring the warming effect of the sea into the land causing a rise in temperature. By the time these winds reach the interior of the land, they are cooled by cold land thus enhancing the low temperature
- Onshore winds cause a lot of rain in the coastal areas throughout the year. This is because the wind picks up moisture over the sea and drop it on the nearby land. The continental interiors receive less rain, mainly in summer, because the winds have dropped most of the moisture in the coastal lands
- iii) Ocean currents
- Cold ocean currents bring about the cooling effect in the temperature
  - Also bring a dry effect because the cold air is not able to rise
- Warm ocean currents
- Bring a warm effect (rise in temperature)
  - Heavy rainfall because the warm air is able to rise and condense to form rainfall

## 4. STATISTICAL METHODS

1. a ii) - Relatively more difficult to draw/time consuming.
    - Long bar not easy to compare.
    - Number of components to be represented is limited
    - Fluctuation in production over a period of time are not easy to see at a glance
  2. (a) ii) - A better impression of totality and individual contribution.
    - Differences in quantities are easier to see.
    - Easy to read the bars as they start from a common baseline.
    - The value of each bar is easily determined.
- b) - Kenya is not self sufficient in the commodities due to the high population.



- Frequent drought which lead to crop failure cause food shortage thus importation to supplement local produce
- Increased cost of farm inputs leading to low production hence the need to import.
- Occasional illegal imports/smuggling /hoarding of the commodities creates artificial shortage hence the need to import these commodities.
- Pests and diseases reduce the amount of grain harvested thus the need for importation.
- The requirements to maintain the trading quotas among the countries African trading blocks that Kenya imports some of the commodities in exchange of her own imports

3. a i)

DISTRICT / YEAR	1982	CT	1992	CT	2002	CT
TRANS NZOIA	24	24	26	26	40	40
KIAMBU	23	47	25	51	31	71
MERU	25	72	27	78	32	103
BUNGOMA	12	84	14	92	20	123

Milk production in 000 units in selected Districts in Kenya

4. a i) - The year 2009 recorded the highest network coverage in the country
- The year 2007 held the lowest network coverage and uncovered areas respectively since 2009
  - Safaricom network has been the leading in terms of network coverage since 2007 to 2009
  - YU network has been the least in terms of network coverage

ii) - Suitable for absolute totals in different periods

- Gives a good visual impression of the totality
- Easy to interpret

5. a ii) – It's easy to compare the various components within a circle.

- They are simple to construct after angles have been calculated.
- Give clear visual impression of individual components.
- It's easy to determine the value of each component since the size, the sector is proportional to the value it represent.

b)  $= 130,000 - 70,000 = 60,000 \sqrt{1 \text{ mk}}$   
 $\% \text{ increase} = \frac{60,000}{70,000} \times 100 = 600$   
 $= 85 \frac{5}{7} \% \sqrt{1 \text{ mk}}$

6. a) Gold =  $\frac{26}{100} \times 360 = 93.6 = 94^0 \sqrt{1}$   
 Fluorspar =  $\frac{14}{100} \times 360 = 50.4 = 50^0 \sqrt{1}$   
 Soda Ash =  $\frac{32}{100} \times 360 = 115.2 = 115^0 \sqrt{1}$   
 Zinc =  $\frac{28}{100} \times 360 = 100.8 = 101^0 \sqrt{1}$

b) - Good in showing variant types of data√

- Easy to draw√
- Easy to interpret √
- Easy to make comparisons√

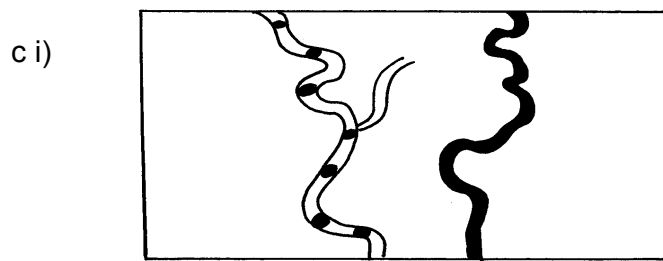
## 5. MAPS AND MAP WORK



1. a i) - Kisumu east 116/2

- Muhoroni 117/1
- Lumbwa 117/2
- Nyakach 116/4
- Kericho 117/4
- Kisii 130/2
- Chemagel 131/1
- Chapatarakwa 131/2

b i) - Presence of tea plantation-tea grows under heavy amount of rainfall

- Presence of forest cover
  - presence of permanent river
- b ii) - R. Kibol
- Scrub vegetation
  - Tea plantation



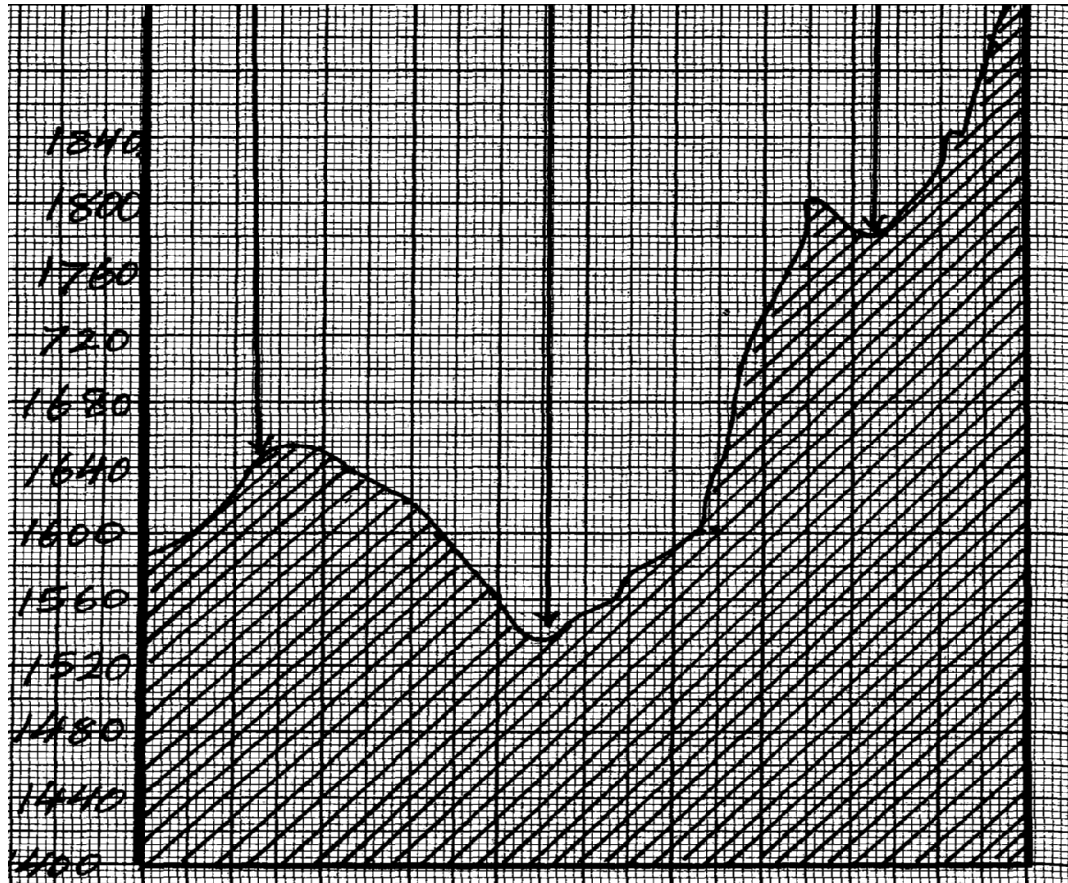
-  -all weather road loose surface
-  -district boundary

- d i)
- the major river is R.yurith
  - river are permanent
  - the river are few

- ii) - Farming
- Forestry
  - Mining

3. a) (i)-  $0^{\circ}20'13.5''S 35^{\circ}19'11.1''E$
- ii) - Power transmission line
- b i) - Trigonometrical station
- Contours
  - Hunhures e.g. along road in grid square 6867
- ii) -  $3.9\text{Km} \pm 0.1$  (3.8km – 4.0km)
- iii) -  $180 + 35 = 215^{\circ} \pm 1^{\circ} = (214^{\circ} - 216^{\circ})$

3. a)



ii)  $VE = \frac{VS}{HS} = \frac{1/8000}{1/50000} = \frac{1}{8000} \times \frac{50000}{1}$

4. a i) - north west ✓  
 ii) -  $000^\circ/360^\circ$  ✓  
 iii) - trigonometrical station: secondary ✓  
 - trigonometrical station :other ✓

- iv) full squares=28  
 $\frac{1}{2}$  squares=26x  $\frac{1}{2}$  =13  
 $41 \times 1000\text{m} = 41,000\text{metres}$  ✓

b iii)  $VE = \frac{VS}{GS}$   
 $= \frac{1}{10,000}$   
 $\frac{1}{50,000}$   
 $= \frac{1}{10,000} \times \frac{50,000}{1} = 5$  ✓

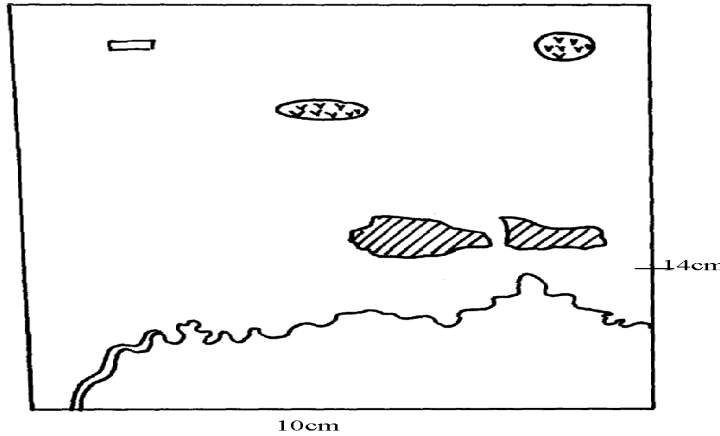
c).

CROP	EVIDENCE
-coffee	-coffee mill (2347)
-Grains(maize, millet, sorghum	-mills, posho mill (4255)
-tea	-tea estate, tea nursery, tea factory. (1x2=2mks)

C.

5. a) X – Savanna grass land  
 Y – Tropical rain forest

- b) - Has very low temperature
- Thin soils and bare rock
- Soil is permafrost
- c)- Mt.Kenya
- 6. a i) - 2020m
- ii) 15' (35°00' to 35°15')
- iii) 36.0km<sup>2</sup> (35 to 37km<sup>2</sup>)
- iv) 28755548
- b i) & ii)



iii) New scale = map scale x scale factor of reduction  
= 1/500m x 1/2 = 1/100000 = 1: 100000

- c) - The forestal area has few/no all weather roads because it is reserved for the growing of trees
  - The all weather roads avoid high hills/steep slopes because construction on/along steep slopes is difficult for example the road from Maraboi through Tamungo to Marumbasi detours to avoid steep slopes and hills.
  - The roads avoid swamps because of their water-logged conditions for example the road from Ainaboi through kabionga to Kiptula avoids the papyrus swamp
  - the roads avoid river valleys and only crosses them unavoidable
  - the roads are constructed on gentle slopes as it is easier to construct them as seen by the construction of roads on the gentler slopes to the East and no all weather roads on the ridge east of river Sondo
  - All weather roads are constructed on ridges/spurs/water sheds due to the gentleness of the slopes for example the road from Maragwa to Maraboi/the road from Ainabkoi to Kerenga
- d i) - Cool temperature as evidenced by the high relief – over 1700metres makes the area suitable for growing of tea bushes.
  - The gentle/indulating slopes as evidenced by widely spread contours allows for proper drainage of soils/mechanization making it ideal for tea farming.
  - The high rainfall as evidenced by forest vegetation/many permanent rivers originating from the area which is suitable for ea growing
  - Presence of labor as seen by the fairly dense settlement/labour lines to work in the tea farms
  - Transport is avoidable as seen by all weather roads for transportation of tea from the farms/transportation of labour
- d ii) Coffee evidence coffee mill in grid square 2347

- 7. a i) 1: 50,000
- 10000cm represent 1 km
- =  $\frac{50,000}{100000}$  = 0.5
- 1 centimeter represents 0.5 kilometers

- ii) - 35°00' – 35°15'E
- iii) - 120° + 1°
- b) - Wood land
- Riverine trees
- Papyrus
- Scattered trees
- Scrub

- c ii) - River Sondo is the main river
- River Yurith flows S. westwards
- Papyrus swamp present to the north and south
- Yurith river has meanders
- Rivers are permanent
- Most rivers show a dendritic pattern
- Dams in grid square 4349 and 4954

- d) - Shops and trading centre
- Presence of roads foot paths
- Dense settlements provide market
- Police post for security

8. a i) -Rift valley
- Nyanza
- ii) -south west direction
- iv) 420557
- b i) - 4.00km=0.1(3.9 to4.1)km
- ii) -use of place names
  - grid reference
  - compass direction
- iii) -forest
- woodland
  - scrubs
  - riverine trees
  - papyrus swamp
- iv) -Tea growing-evidenced by tea factory/tea estates
- live stocks keeping-evidence by veterinary livestock centre
  - cereal crops growing-evidenced by posho mill

(c)-Gentle have dense settlement due to gentle gradient which encourages settlement as evidence by spaced contours.

-Relatively flat areas have little or no settlement due to poor drainage as evidenced by papyrus swamp

-Areas with steep slopes in the western area near Kebenet have few settlements as evidence by closely spaced contours

-There has dense settlements due to fertile soil as evidenced by the growing of tea in estates

- (d) -there are several permanent rivers in the area
- rivers Sondo and Yurith are the major rivers in the area
- rivers with their tributaries for dendritic drainage pattern
- there is a seasonal swamp in grid square 3656
- in the west, rivers flow north-west wards in the south they flow westwards
- there are fewer rivers in the north than in the south-

9. a i) - topographical map.
- ii) - Contours
- Trigonometrical stations.

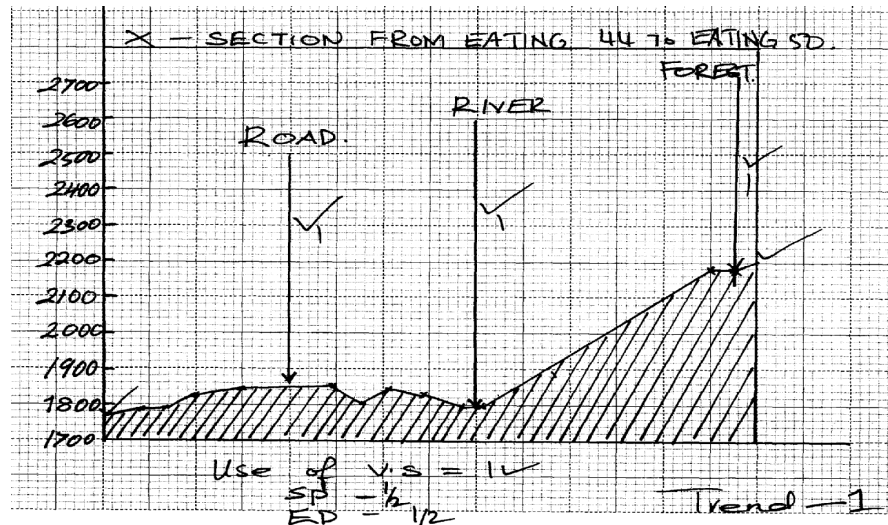
b i)

$$1.3 \text{ cm} \longrightarrow 1 \text{ km}$$

$$1 \text{ km} = 100,000 \text{ cm} \quad 13 \text{ cm} \longrightarrow \frac{1 \text{ cm} \times 100000}{13} = 0.000013 \text{ km}$$

- ii) - Tea. Evidence by changoi tea factory and tea nursery.
- Coffee, evidence by coffee mill
- c i) - The plains are densely settled as the land is flat/gentle land.
- The basins have been avoided as they land is water logged/flooded/swampy.
- Steep slope/escarpment have been avoided because they are unstable for construction of houses/for farming.
- There are few settlement on hilly areas because slopes are gentle.
- ii) - Education/schooling evidenced by Gekonge school, Matongo school, Cheboan school, Kakibei school e.t.c
- Trading evidenced by Health centres, Dispensaries
- Social work evidence by labour lines.
- Transportation evidence by murram, Dry –weather roads.

- Road
- River
- Forest



10. a i)  $35^{\circ}00' - 35^{\circ}15'$
- ii) Map scale 1:50000 i.e. 1cm represents 50000 cm
- $$50000\text{cm} = \frac{50000}{100000} \text{ km}$$
- $$= 0.5\text{km} / \frac{1}{2} \text{ km}$$
- Statement scale is 1cm represents 0.5km/  $\frac{1}{2}$  km

- iii) Contours  
Trigonometrically stations

b iii)  $VE = \frac{VS}{HS}$

$$= \frac{1/2000}{1/50000}$$

$$= \frac{50000}{1} \times \frac{1}{2000}$$

$$= 25$$

- 11 . (a) - The drainage consists of rivers papyrus swamps, ponds and lakes
- River Yurith is the main river
  - River Yurith generally flow West wards
  - The river has many meanders
  - River Yurith has two main- tributaries Itare and Kitoi
  - The area covered by the map are numerous
  - River Yurith has many tributaries that form a dendritic pattern along the course
  - The river yurith is Permanent River
  - There are many disappearing rivers

b)

ECONOMIC ACTIVITY	EVIDENCE
Transportation	Roads/ main tracks/ foot paths Dry weather roads, All weather roads: (Bound surface and loose surface), Air strip
Trading	Shops, Coffee mill/ tea factory/ posho mill factory
Crop farming	Tea nursery/ tea plantation

- c) - Employment to people work there is provided.
- Facilitates agriculture in the regions around.
  - Processing of tea, ready for use.
  - Transportation of people evidence by all weather road e.t.c
- d)- Presence of tea that requires high rainfall.
- Forest
  - Many permanent rivers.
  - Presence of many factories that use a lot of water.

12. a i) Topographical.

ii) 24 54

iii) Calculate the area enclosed by Kendu Kisii. All weather roads bound to the West of the map.

$$7.5 \text{ km}^2 = (7.00 - 8.00 \text{ km}^2).$$

- iv) - Education - evidence school.  
- Medical care – evidence hospital.  
- Administration – evidence Chief's Camp, DC's, D.O's office.  
- Recreation.

b) ii) Vertical scale

Horizontal scale

$$= \frac{1}{20} \times \frac{50,000}{1} = \frac{1}{5,000}$$

$$V.S = 2500$$

- c) - There are several permanent rivers like Itare and Kitoi.  
- River Yurith is the main river.  
- Rivers flow from North Eastern to North Western.  
- There is a swamp / tree swamp around Kabiaga farm.  
- Rivers form dendritic pattern
- d) - The scrub vegetation shows availability of pasture for cattle.  
- The many rivers (like R. Yurith, Itare and Kitoi) in the area shows that there is adequate water for cattle.  
- The high altitude of above 1800m above the sea level indicate cool conditions ideal for cattle keeping.

13. a i) 020°

ii) 556711

iii) map scale 1:50,000

1 cm rep 50,000cm

$$50,000 = \frac{50,000 \sqrt{1}}{100,000}$$

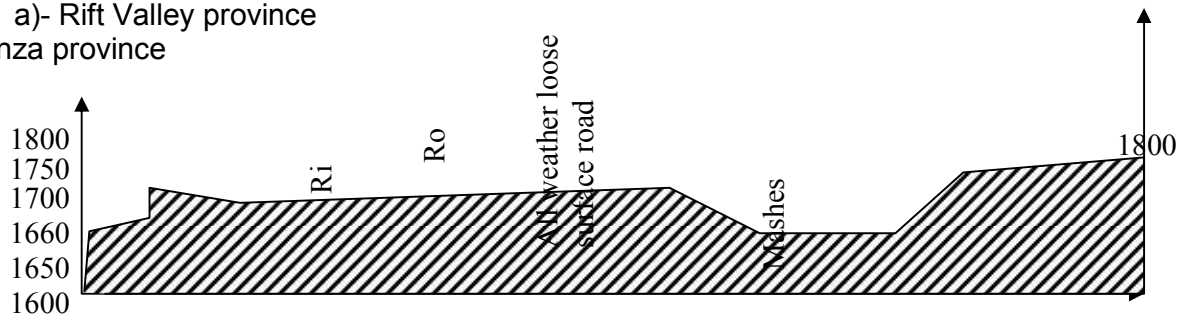
$$= 0.5 \quad \text{Statement scale is } 1\text{cm rep } 0.5\text{km/ } \frac{1}{2} \text{ km}$$

iv) 0° 19'S 35° 18'E

- v) -contours
- trigonometrically stations/pillars
- b i) -education-school/college
- recreational-club/race course
- Health-hospital
- . b ii) - tea growing –tea estate/tea factory
- Trading-shop/markets
- Transportation-all weather roads/dry weather roads, murrum roads
- Quarrying-quarry
- d) -the main river is tugenon
- There are many permanent rivers
- River Kipkwes and its tributan's form Dendntic drainage pattern
- River north of northing 69 flow generally towards the north
- River south of northing 60 flow towards west/south west

14. a)- Rift Valley province  
- Nyanza province

b i)



ii)  $V.E = \frac{V.S}{H.S} = \frac{1}{50m} = \frac{1}{50000cm}$   
 $VE = 10 \sqrt{2}$

iv) – Topographical

15. a i) i) - 402488

ii) - 7.1 ± 0.1 Km

iii) - LUMBWA

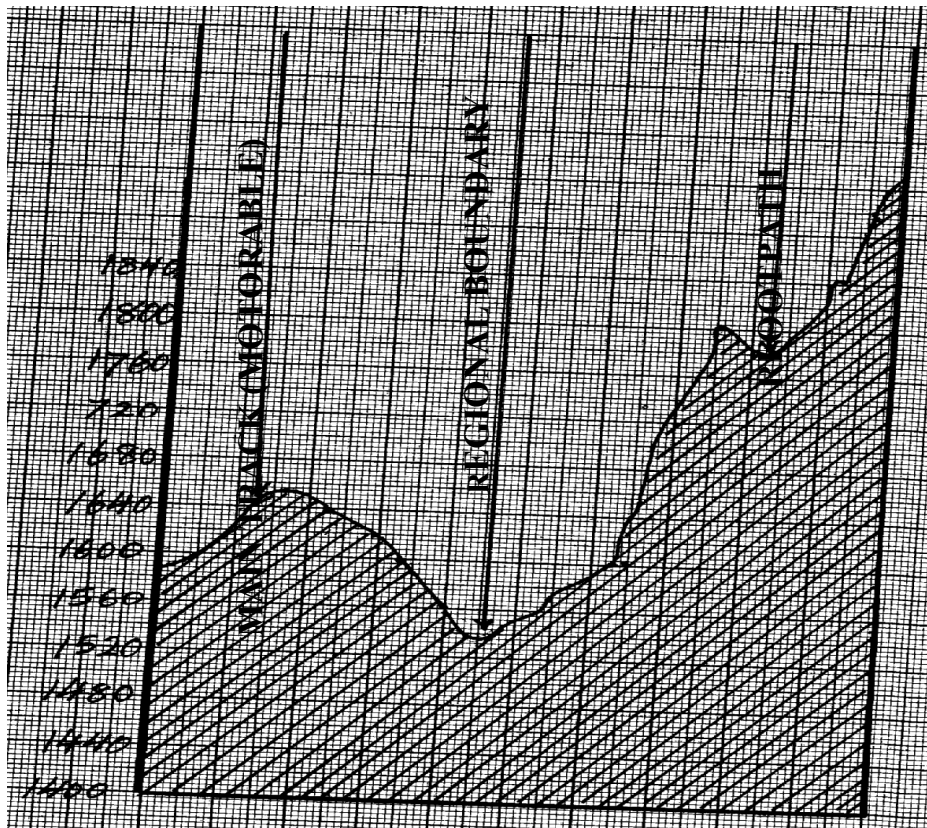
. b i) - 35°00'E to 35°15'E

ii) - 1844 – 1847 m

- . c i) - The southern part of the area covered by the mp is well drained as evidenced by presence of many permanent rivers
- The main river is Yurith that flows South Western wards
- There is a seasonal swamp in the northern part of the area covered by the map
- There are several dams along river Kitoi
- River Sondo and its tributaries form dendric drainage pattern
- River Kitoi and Kimugung re in their youthful stages

ii)





- d i) ) - Steep slopes e.g. along the escarpment have been avoided. There are more settlement on gently sloping regions
- Forested areas e.g. to the south eastern part of the map have been avoided
  - Swampy areas have no settlement
  - Plantation forms have no settlement inside, people tend to settle around the forms
  - There are linear settlements along all weather road loose surface especially in the north eastern part of the area covered by the map
- d ii) - Presence of well developed transport network in the area ensures movement of goods and Services
- Presence of scattered houses in the area ensures there is market provided by those in the houses
  - Tea factories and tea plantation farms is likely indication that people are employed in the area and therefore have better living standards

## 6. FIELD WORK

1. a) - To find out where farmers get their livestock/hides
  - Find out the significant of beef produce to the local areas.
  - ii) - Displaying the filled questionnaires.
    - Displaying photographs taken.
    - Giving a lecture on beef farming.
    - Carry out group discussions.
    - Drawing proper sketches.
- b i) - To find out the various ways in which the power plant benefits the surrounding communities
  - To discover the amount of power generated by the plant
  - To find out the problem facing geothermal power generation in Kenya
  - To find out the power generation potential of the rift valley area
- b ii) - Formulator of objectives before actual field study

- Write to Kengen to seek permission to visit Olkaria
  - Collect all the necessary writing materials
  - Conduct a reconnaissance to the site
  - Prepare a questionnaire for use on the day of study
  - Prepare a working schedule
- c) i) - A pit is dug not too deep or shallow
- The pit is cemented and sealed to prevent gas from escaping
  - Pipes are connected to carry the biogas to the burners
  - Pour the dung and other waste into the digester and mix with water
  - Anaerobic bacteria feed on it giving off biogas
- ii) - Saw dust
- Agricultural wastes
  - Wood
  - Dung

- 2 . a i) - Soils are light in colour
- Soils are sandy/ stony
  - Soils are loose in texture
  - Soils are thin
  - Soils have low moisture content
- ii) 2 columns of time & activity
- Time of departure
- Two activities indicating data collection
- Time back to school

TIME	ACTIVITY
8 a.m	Departure from school
8.30	Arrival at the field
9.00	Testing or feeling of soil texture
	Measuring the alkalinity of soil
	Carrying out experiment on water retention
	Observing of the soil e.t.c.
4 p.m	Going back to school

3. a i) - Savanna vegetation
- Rainforest
  - Bamboo forests
  - Heath and moorland
- ii) - prairies
- steppes
  - downs
  - veld
- iii) - some have thick/fleshy/succulent leaves /barks
- some have long tap roots
  - some have no leaves /have thin/spiky/waxy/needle like leaves
  - some plants have thick/hard barks
  - some plants have thorns
  - some plants are stunted/dwarf like
  - shrubs are common
  - some plants spout during wet seasons (short time)
- b) - fire-often ,large areas of forests are destroyed by accidental and sometimes intended fire. such forests takes long to recover
- diseases causes by pests and parasites attack mainly the planted forests causing many trees to die
  - human activity /settlement /charcoal burning/logging have destroyed many forests areas of which are transformed in to farms and grasslands

- over-exploitation leads to depletion of certain tree species such as Meru oak, camphor and Elgon teak. these trees take long to mature
  - government policy of degazetting of some forests made people free to clear many forested areas
  - prolonged droughts lead to degeneration of forests some of which take long to recover
- ci)
- Conduct a previsit
  - Collect the tools and equipments needed for the study
  - Prepare a working schedule
  - Read secondary sources at information
  - Formulate the objectives and hypothesis
  - Decide on the method of data collection
- ii)
- Hygrometer (wet and dry bulb thermometer)
  - Ordinary thermometer
  - Six's thermometer (max & min thermometer)
4. a i)
- Stating either activities to be carried out during the field
  - Recording the data an types of vegetation
  - Collecting data on vegetation types and conditions favoring their growth.
  - Drawing the structure of plants leaves
  - By classification and characteristics of leaves of different plants.
  - Observing types of roots and stem of the different plants
- b i)
- high population increase
  - poor grazing methods
  - poor management of bench terraces
  - nature of the landscape
  - charcoal burning
- ii)
- loss of top soil
  - siltation of water reservoirs and H.E.P dams on Tana river
  - deposit of sand along river leading to sand harvesting
  - intensification of soil conversation awareness in the district
- iii)- to find out the cause of soil erosion in machakos district
- to find out the effect of soil erosion in machakos district
5. a i)
- formulation of hypothesis /objective
  - reconnaissance survey
  - prepare route map
  - prepare a working schedule
  - carry out secondary research(content analysis)
  - seek permission from relevant authority
  - prepare necessary stationery
  - make travel arrangement
- ii)
- the residents of the area covered by the map sheet do not have access to tea products meant for export
  - The tea plantation does not stretch outside the Belgut district boundary
- b i)
- Factors that influence weathering
  - Types and processes of weathering
  - Effects of weathering on physical and human environment
- ii)
- Draw sketches of features
  - Data analysis
  - Data interpretation
  - Discuss the findings

- 6 .a) i) - Pre – visit/ reconnaissance
- Preparing equipments to be used
  - Asking permission from relevant authorities
  - Setting objectives/ hypothesis
  - Preparing map of the place/ route map
  - Discussion before the field day
- ii) - Climate of the area have direct influence on vegetation
- The vegetation of the area changes with the change of climate
- b i) - Reduced amount of vegetation cover
- Reduced mountain shows in the tropical highlands
  - Severe wind and soil erosion
  - Presence of strong winds
  - Failing of crop yield
  - Reduced size of water bodies
  - High localized temperatures
  - Low plant/ animal population densities
- i) - First hand information would be collected
- Data collected would be reliable
  - It is a quick method of data collection
- . c) - Relief – steep slopes have no / sparse settlements evidenced in western side (KEBEWET AREA) since such slopes are not ideal for erection of houses/ gently sloping slopes have dense settlements as is in control part of near (Chemalul, Kablanga, Kapwaso) areas
- since they form ideal sites for erection of structures
- Vegetation areas with thick vegetation e.g. forests, plantations have scarce settlements (Tea estates and forests in S.E). Such vegetation discourages settlement
  - Drainage – poorly drained places like mashes have no settlements since the places cannot provide firm sites for erection of houses/ well drained places have dense settlements such sites provide water for a domestic use and provide firm sites
  - Transport lines – Areas with good road network have dense settlements for easy transportation of people and goods e.g. along loose surface roads

7. a i) - Reading from secondary sources
- Carrying out reconnaissance
  - Formulation of hypotheses and statement of objectives
  - Division of class into smaller groups
  - Asking permission from relevant authorities
- ii) - Most of the crops grown are cash/ most crops grown are subsistence
- Crop farming is more dominant than livestock keeping
  - Most of the economic activities take place in areas with good transport network
- iii)

ACTIVITY	EVIDENCE
- plantation farming	- Existence of estates
- Livestock farming	- Existence of dips
- Manufacturing	- Tea factory (4647)
- Transport	- Existence of roads
- Trade	- Shops

- iv) – Topographical

b i) INDUSTRIALIZATION

- Has led to disposal of industrial wastes into the lake contaminating /polluting the water and interfering with aquatic life
- Agro-chemicals/industrial effluents washed into the lake has promoted weed loons
- causing the lake to be colonized by weeds/water hyacinth

DEFORESTATION

- Has exposed soils to agents of erosion; the eroded soils have been carried and deposited in the lake siltation. This had diminished the depth of the lake.
- Deforestation in water catchment areas has interfered with the water cycle causing low rainfall and less water from feeder rivers. this has led to drying of the lakes

ii) - observation

- Taking photographs
- Taking measurements
- Collecting samples
- Interviewing/asking questions
- Reading from secondary sources

iii) - In order to write the report/summarize the data

- So as to a group/process/ analyze the data collected
- so that the various groups can report/discuss the findings from the field
- So as to display any collected samples
- So as to assess the importance of the information collected in the field
- To test samples collected from the field

c i) -note taking

- filling in questionnaire
- tabulation
- field sketching/drawing maps
- tallying
- photographing
- tape recording
- labelling samples

ii) -bad weather-raining

- in accessibility of some area
- lack of sufficient data
- illiterate respondent
- arrogant respondents

8.

a)i)- All weather road.

- Loose surface road.
- Dry weather road.

ii )- Formulate hypothesis/objectives.

- Makes a short survey/reconnaissance of the area to be studied.
- Preparation of route map.
- Carrying out literature review/secondary information.
- Organize into groups.
- Make transport arrangements.
- Prepare the necessary stationery and equipment required.
- Prepare a working schedule.
- Seek permission from relevant authorities.

b)(i) - Assemble equipment

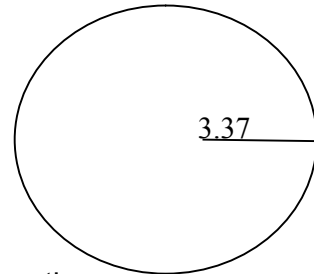
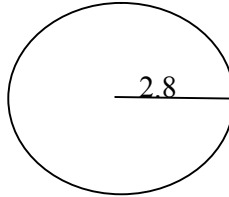
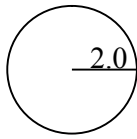
- Depart for the area of study
- Report to the factory authorities
- Embark on data collection
- Report back to the factory authorities

- Report back to school
  - ii) - The class will be able to study the entire course of the river
    - It will enable them to obtain detailed information on each stage of the river
    - It will save on time
    - It will enable the study to be carried out in an orderly way
    - It will encourage participation of all the members of the class/ encourage individual roles
    - It will facilitate more interaction among the group members
- 9.
- a i) - Administering questionnaire observation
    - Collecting samples of rocks/ deposits
    - Drawing sketches/ diagrams/ maps
    - Measuring/ calculating
    - Taking photographs
    - Reading secondary materials/ content analysis
  - ii) - The hot/ scorching sun would make it difficult to collect data
    - Torrential rain/ flash floods/ dust storms would disrupt data collection
    - The rugged terrain would make it difficult to reach certain features
    - Attack by wild animals
  - b i)- Measure distances/ estimation of distances/ heights
    - Collect samples of plants
    - Draw sketches/ transects
    - Record/ take notes
    - Take photographs of plants/ area
    - Count plants
      - ii) - By their appearance
        - Their colour
        - By their leaf size/ pattern/ arrangement/ type
        - By their age
        - By the nature of their barks
        - By the texture of their leaves
- 10 .
- i)- Graphs
    - Pie charts
    - Preparing a written report.
    - Displaying rock samples
    - Displaying photographs.
    - Drawing maps showing distribution of area underlying desertification.
  - b i) - Breaking the rocks.
    - Digging the rocks.
    - Collecting samples.
    - Tasting the rocks
    - Observing the rocks
  - ii)- Tiredness because of rugged /steep terrain.
    - Lack of testing Material.
    - Inadequate resource materials.
    - Accidents e.g slipping/getting cut by rocks.
    - Hindrances by poor /harsh weather conditions.
    - Attack by wild animals.
    - Difficulty in carrying heavy rock samples.
    - Difficulty in climbing /ascending steep rocks.
- 11.
- a i) - To determine the type of soil
    - To find out the soil colour.

- To establish the use of the soil
  - ii) - Inadequate time for detailed study.
    - For further analysis in the lab.
    - Keeping for future reference in the geography room.
  - (b) i) -carried out a reconnaissance /persist
    - identified the tools to be used during the fieldwork
    - prepared a working schedule
    - asked for permission from relevant authorities
    - held discussions in groups
    - state the objectives/hypotheses
  - ii) -hostile weather due to heavy rains
    - attacks by wild animals
    - lack of resource pesos
    - some areas were inaccessible
- 12.
- a) i) -direct observation
    - administering questions
    - taking photographs
    - taking measurements
    - interviewing the local people
  - ii) -to identify the route
    - to prepare time schedule
    - to ask for permission from the local community
    - to identify the particular features location
  - iii) -can be advised on ways of controlling flooding
    - can be advised on several uses of the river and need to conserve it
- 13.
- a ) - long and narrow
    - some are salty
    - some are fresh
    - some have underground outlets e.g Naivasha
    - deep
  - b i) – Helps the researcher to decide on appropriate method of data collection
    - Helps in identifying the appropriate tools to be used during the study
    - Helps the researcher to design a working schedule
    - Helps the researcher identify problems likely to be identified
    - Helps the researcher estimate the cost to be incurred
    - Helps the researcher to familiarize with the area
  - ii) - Note taking
    - Filling in questionnaire
    - Mapping
    - Photography
  - . c)i) - the area is too wide/extensive
    - some areas are inaccessible-steep slopes
    - harsh weather/weather changes
    - field study can take too long
  - c) ii) - report writing
    - class discussions
    - displaying of collected samples
    - asking/answering questions
    - reading more about the topic
    - analysis photographs/tape recorded work/collected samples

14. a i)  $\frac{22}{105} \times 100 = 13.33$   
 $= 13.33\%$

ii)  $\sqrt{\frac{2000}{165\ 000}} = 406.20$  r. 2.0  
 $\sqrt{\frac{2001}{318\ 000}} = 563.914$  r 2.81  
 $\sqrt{\frac{2002}{455\ 000}} = 674.536$  r 3.37



- b) - Moderate to high rainfall/500 – 1270 mm p.a. for growth.  
 - Dry spell for harvesting.  
 - Warm to hot temps/15 – 20°C to facilitate growth/maturity.  
 - Well drained volcanic soils increases yield.  
 - Gentle/undulating topography to facilitate mechanization..
- c i) In Canada cultivation is highly mechanized while Kenya its less.  
 ii) In Canada wheat is mainly for export while in Kenya its mainly for local consumption.  
 iii) The farms in Canada are more extensive and wide while in Kenya the cultivation is done mainly in small scale.
- d) - Used in industries to make alcohol and glue.  
 - Wheat flour is food /bread/ cake.  
 - The wheat stalks are livestock feed.  
 - Straws are used for making papers/ straw gourds/ bedding in cow sheds.

15. a i) Firewood -  $\frac{13400}{45000} \times 360 = 107.20$   
 Kerosene -  $\frac{11200}{45000} \times 360 = 89.60$   
 Charcoal -  $\frac{9100}{45000} \times 360 = 72.79$   
 Liquid petroleum gas -  $\frac{5300}{45000} \times 360 = 42.40$   
 Saw dust -  $\frac{4000}{45000} \times 360 = 32.00$   
 Hydro electricity -  $\frac{2000}{45000} \times 360 = 15.99$

- b i) - Previsit/ reconnaissance  
 - Literature review  
 - Class discussion  
 - Data collection instruments  
 - Preparation of working schedules  
 - Obtain permission  
 - Transport arrangement
- b ii) - Discussion of findings  
 - Write better notes/ draw better diagrams  
 - Display photographs/ maps/ diagrams



- c) i) - Inaccessibility of some parts due to the presence of tendrils.
  - Wild animals' attack/insects sites.
  - Unfavourable weather conditions/cold conditions.
  - Rainfall
- ii) Height of a tree measure the shadow then calculate.  
Diameter of the stem – use a tape measure.  
Trees of the same species – study leaf structures.
- d i) - Foul smell
  - Garbage may harbour smokes which are dangerous.
  - Paths may be blocked.
- ii) - Tree forming should be practiced in the area ✓
  - Agro – forestry should be practiced ✓
  - People should be encouraged to use alternative sources of energy/ energy saving jikos ✓
  - Mature trees felled should be replaced immediately ✓
  - Villagers/ people should be educated on importance of trees ✓
  - Nurseries should be established to provide seedlings ✓
  - Indigenous trees should be planted ✓

## 7. MINERALS AND ROCKS

1.
  - a) - Veins and lodes
    - Beds and seams
    - Weathering products
    - Alluvial/places deposits
  - b) - causes soil erosion/encourages soil erosion
    - derelict landscape/make landscape ugly
    - destruction of bio-diversity
    - creating hiding outs of thugs/thieves
    - create breeding grounds for mosquitoes if the pits are filled with water
2.
  - a) - That is when minerals occur in crevices, crack or faults
    - If they occur in small quantities in cracks or crevices then they are referred to as veins while those in large quantities are said to be in lodes
    - They are formed when minerals in molten form solidify in cracks and faults or crevices
  - b) - tiny marine organisms called coral polyps live in colonies in the sea
    - polyps extract calcium from the sea water to make their shells
    - the polyps die and their hard skeletons of calcium carbonate accumulate into solid mass
    - successive colonies grow
    - space between the dead corals polyps are cemented by Algae to form coral rocks
3.
  - Mechanically formed sedimentary rocks.
  - Organically formed sedimentary rocks.
  - Chemically formed sedimentary rocks.
- 4
  - a) - Dynamic/Regional/Kinetic
    - Contact
      - i)- They are sedimentary rocks which are formed from the hard parts of shells/skeletons of Marine. The rocks are rich in calcium.
      - ii)- Are sedimentary rocks which are formed from the remains of plants that were buried deep in many years. The plants are transformed into rock because of pressure of

- crystal rocks and resultant heat.
- iii)- Coral limestone/dolomite/calcite/chalk/colite
    - Sandstone
    - Gypsum
    - Quartzite
  - c i) - Particles are derived from existing rocks through process of weathering /Erosion.
    - They are then transported by water/wind/ice and are deposited on land/large water bodies.
    - They are deposited in layers.
    - Over a period of time, they are compacted by pressure to form rocks such as alluvial, clay, sand, conglomerates.
  - ii) - Minerals are dissolved from land and are carried in solution into bodies such as lakes/sea.
 

The mixing of water of different types may result in chemical reactions followed by precipitation leading to accumulation at bottom of water body and are compressed into a rock OR

Dissolved minerals can also be precipitated directly from water through evaporation. This happens in very hot regions where there are constricted/shallow bays of lakes/seas, such rocks are known as evaporates.
- 5.
- a) -due to pressure changes/dynamic metamorphism
    - due to intense heat/thermal metamorphism
    - due to a combination of heat and pressure/thermal-dynamic metamorphism
  - b) -Granite
    - Diorite
    - Peridotite
    - Gabbro
    - Syenite
  - c) - The aquifer must be sandwiched between impermeable rocks so that it can retain water
    - The aquifer must outcrop in a region which is a source of water
    - The mouth of the well must be lower than the intake area to allow water to be forced out by pressure
    - The aquifer must dip from a region of water intake and the rock layers must form a broad basin

## 8. MINING

- 1. (a) i) Mining has led to exhaustion of most mineral mines in Kenya e.g. Gold in macalder
  - ii) Fluorspar is mined in Kerio Valley✓
  - iii) Trona is mined on Lake Magadi through redging
    - The dredger accumulates and digs out the minerals✓
    - Inside the dredger, trona is crushed into crystals from the lake bed✓
    - It is then mixed with lake liquor and pumped to the factory on the lake shore✓
    - At the factory, the trona is mixed with water to clear it of impurities✓
    - It is then dried and sent to desiccators for heating✓
    - After heating it is allowed to cool✓
    - After cooling it is then crushed into soda ash ✓
- b( i) - Mining results in the destruction of various species of vegetation✓
  - The destruction of plant like destroys the habitat for wildlife✓
  - ii) - Mining leads to emission of toxic gases from underground✓
    - When it rains, such gases and chemicals are washed into rivers and lakes hence affecting aquatic life✓
    - Heavy machinery used in mining causes noise pollution✓

- Heavy machinery and trucks used raise a lot of dust that causes air pollution
2.
    - a i) - Open cast mining.
      - Underground mining.
      - Alluvial mining.
    - ii) - The value of minerals.
      - The rise of the mineral deposit.
      - Methods of mining.
      - Technology.
      - Capital.
      - Market.
      - Transport cost.
      - Security.
    - iii)
      - By filling the pits or the holes using the heaps of soils.
      - Through planting trees and keeping a wide range of animals thus creating a tourist centre.
      - By changing the pits or holes into a man made lake which could serve as in land fisheries or a sporting centre.
  
  3.
    - a) - As veins and lodes
      - As alluvial deposits
    - b) - By planting trees in the area
      - By filling up the pits with fresh soils
      - By upgrading the abandoned mine into a tourist attraction
      - By keeping a wide variety of animals in the area to restore its natural ecosystem
  
  4.
    - a)
 

Angola	- Nigeria
Libya	- Chad
Sudan	
    - b) Wax                      - Bitumen/Tar/Pitch/Osphel  
 Sulphur                 - Petro – Chemicals  
 Lubricants e.g grease
  
  5.
    - (a) (i) - method used to extract mineral and fossil fuels from the ground
    - ii) - Availability of skills and relevant modern machines are important for specialized mining operators.
      - If the skills /technology is inadequate then there would be need to bring in foreign experts mini therefore becomes dependent on foreign control.
      - High quality ores are economical to extract as they yield a large amount metal/low quality ores are rarely extracted for their metal content is very low.
      - Some rare minerals e.g uranium are exported despite their ores having low mineral content because they are important
  
    - b i)
      - P – Copper
      - Q – Gold
      - R – Trona
    - b ii) - Kimberley
      - Pretorca
      - Jagers Foutein
      - Koffie fontein
    - Unwanted materials /overburden is removed.

- Excavators are used if surface materials are soft but if they are hard then explosive are used to loosen the materials.
- Excavators are used to dig up the mineral deposits.
- The extracted ore is loaded into lorries using excavators and transported to the processing plant.
- Kenya earns foreign exchange from the exportation of trona. This is used to import other essential items like machinery.
- Trona mining has created employment opportunities for many Kenyans thus improving their living standards.
- It has led to the development of related industries e.g glass making industries in Nairobi, Mombasa e.t.c.
- It has led to the provision of social amenities which have improved the living conditions of the people around e.g schools.
- It has stimulated construction of transport lines e.g the Magadi – Konza railway line.
- Has led to the growth of Magadi town.
- Provision of water for both the domestic and industrial use within the area. This has improved the living standards of the people.
- Government earns revenue through taxation.
- Air pollution by dust and smoke emitted from blasting, quarrying & processing of the ores.
  
- Derelict land is dangerous to both people and animals.
- Wastage of agricultural and settlement land as the mine holes become useless.
- Inadequate skilled personnel who are required for the industry leading to reliance on imported skilled workers.
- Insufficient capital for the exploitation of minerals.
- Inaccessibility of some minerals due to hilly or mountains landscape.
- Pollution of groundwater sources as well as rivers by water leakage from processing plants

6 a i) W- Fluorspar      X – Gold      Y – Diamonds      Z – Copper

ii) - Veins/ lodes

- Beds/ seams
- Weathering products
- Alluvial deposits

b) - Mode of occurrence

- Value/ cost of mining
- Size of deposit
- Level of technology
- Capital availability
- Labour supply
- Transport
- Government policy
- Market availability

(c) - Land dereliction – waste agricultural land/ makes land ugly/ limits town expansion

- Health and accident hazards – collapse of mines/ fall in open pits/ drowning in water filled pits/ toxic gases and dust
- Unemployment/ depressed economy – after exhaustion of the minerals
- Conflicts – cross boarder minerals
- Loss of biodiversity – clearing vegetation for mining
  - Soil erosion – clearing of vegetation

- d) - Trona/ soda ash  
 - Flour par/ Fluorite  
 - Limestone/ lime  
 - Carbon dioxide  
 - Gold
7. a) - Under ground/ shaft/ adit/ solution  
 - Alluvial/ panning/ placer/ dredging/ hydraulic  
 - Open cast/ strip
- b i)  $1000 - 800 = 200$   
 $\frac{200}{1000} \times 100 = 20\%$
- c) - Exported to earn foreign exchange for economic development  
 - Creates employment opportunities reducing unemployment/ crime/ improving living standards  
 - Provides raw materials for industries leading to industrialization  
 - Leads to development of transport networks improving transportation trade  
 - Leads to development of social amenities improving the living standards  
 - Led to growth of town – magadi  
 - Led to growth of tourism – revenue  
 - Provides revenue through taxation for provision of facilities
8. a i) - Underground mining  
 - Open-cast mining  
 - Alluvial/place mining  
 (ii) –trona  
 -gold  
 - copper
- b i) - Availability of technology skills and modern machines are important for specialized mining operations
- Inadequate skills, lead to importation of expatriates  
 - Mining operations may up becoming dependent on foreign control
- ii) - High quality ores economical to extract as they yield a large amount of metal  
 - Low quality ores have low metal content and are rarely extracted  
 - Rare metals e.g. uranium are exploited despite the ore having a low mineral content
- iii) - Minerals in remote areas with poor transport systems are less likely to be exploited  
 - Almost all ores are heavy and bulky and are therefore costly to transport. it becomes hard to exploit them in the absence of good transport systems  
 - Deposits at or neat ports enjoy cheap transportation compared to inland deposits  
 - Deposits near the ports are likely to be more exploited
- c) - Exhaustion of the mineral because gold is non re-newable and the old mines in the rand are being depleted  
 - The gold grade being worked now is of poorer quality that of some years back  
 - The mines are becoming deeper hence mining costs have escalated and also required new technology which is more costly  
 - Inadequacy of water for processing gold due to seasonal rainfall received and increased population on the rand  
 - High cost f labour because of increased demand for higher wages and competition from other factors of the economy  
 (e). - Ugliness – all the natural beauty of the landscape has been lost

- Health hazard- mineral exploitation can create open pits that become breeding grounds for mosquitoes
  - Lost productivity – the soil left behind after mining may not be able to support any meaningful economic activity
9. a) x – Non porous rock.  
y - Porous gas.
- b) - It is cheaper to transport oil in crude form.
- Oil refining creates employment opportunities to most Kenyans.
  - Some of the refines by-products are exported to land locked countries in East & Central Africa thereby earning foreign exchange.
  - Oil refining has led to establishment of industries e.g. oil refinery at Changamwe and other related industries such as fertilizer manufacturing, plastic making e..t.c.
10. a) A vein is a small crack containing minerals deposited in crystalline form while a lode is a large crack containing minerals in crystalline form
- b) - waste of Agricultural land
- Waste of industrial land
  - Lightness where land has lost its beauty
  - Health and accident hazards)
11. a i) - Shaft/underground
- Open cast mining
  - Placer/alluvial/panning/slope boring
  - Adit/drift/horizontal/hill dredging
  - Submarine mining
- ii) - Geita
- Mpanda
  - Irambal/Sekenke
  - Musoma
  - Mabuki
- b) - The value of mineral-valuable minerals e.g. gold will be mined since it earns higher profits
- Size of the deposits – should be large enough to justify mining
  - Capital- mining needs a lot of money to pay workers and purchase machinery
  - World market prices which are controlled by international bodies when prices are high more minerals will be mined
  - Transport cost- it is economical to extract ores near major industrial centres because of good transport routes
- c) - Mining leads to pollution of air/water/land/noise
- Mining leads to depletion of land
  - Mining disrupts/lowers the water table
  - Mining leads to loss of biodiversity /plants and animals
  - It leads to soil erosion/degeneration of soil
- d i) - Apply where mineral is dissolved by water
- A well vertical shaft is sunk to reach the mineral
  - Pipes are laid down through this vertical shaft
  - Superheated water is pumped into the deposits of mineral
  - Mineral dissolves in hot water and form a solution
  - Solution is pumped to the surface where it is evaporated and the mineral is extracted
- ii) - Exported to earn foreign exchange
- Generates employment opportunities

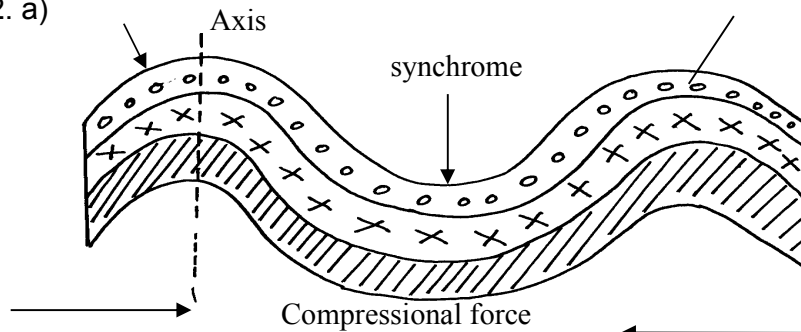
- Has led to development of settlement
  - Has led to establishment of industries
  - Earning higher income hence better living standards
12. a i) - Alluvial mining√  
 - Under ground mining√  
 - Open cost mining√
- ii) - Creation of employment opportunities which helps in reducing unemployment√√  
 - When exported it earns foreign exchange which is used in other sectors√√  
 - Development of related of related industries that helps increase the wealth of the country√√  
 - Leads to provision and improvement of social facilities√√  
 - It helps in the development of infrastructure e.g. roads√√
- iii) - Water shortage for power supply and processing√  
 - Labour shortage and competition from other industries/ sectors√  
 - Increase depth of mines makes mining expensive and risky√  
 - Decreasing quality of one √
- b)(i)- Presence/ deposition of remains of flora and fauna fossils over a long period of time  
 - Presence of non- porous rocks under neath the deposits of flora and fauna√  
 - Deposition of other layers of rocks/ non- porous rocks over the remains of flora and fauna√  
 - Compression of the remains of fauna and flora due to folding of the layer of rocks√
- ii) - Bitumen/ pitch/ asphalt√  
 - Grease/ lubricants√  
 - Resin/ petro chemicals√
- c) - Employment opportunities√  
 - Saving of foreign exchange√  
 - Earning of foreign exchange from exports√  
 - Industrial development√  
 - Earnings would raise the standards of living/ raise the per capita income√
- d) i) - Coal√  
 - Iron ore√  
 ii) - Kilindini√  
 - Dar- es- salaam√  
 - Tanga √

## 9. INTERNAL LAND-FORMING PROCESSES

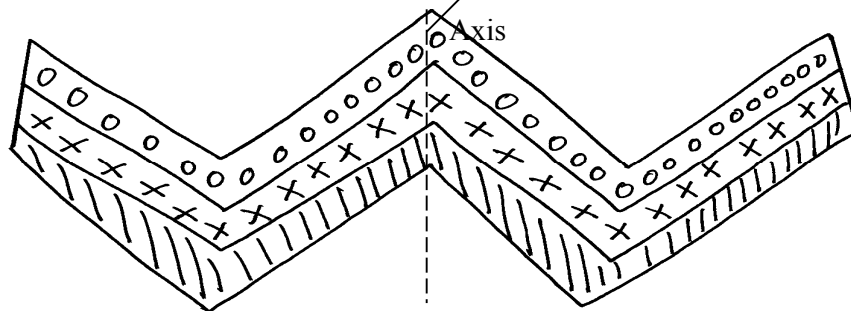
1. a) - it has vertical vent/pipe  
 - compose of alternating layers of ash/pyrodast and lava  
 - it is conical in shape /steep sided  
 - it has side vents  
 - it has conelets/parasitic cones on the sides  
 - at the peak, it may have a caldera /crater/plug
- b) i) Earth quakes are sudden earth movement which cause vibrations/trembling within the crust√√
- ii) - primary/push/p-waves S  
 - secondary/shear waves/shake waves/s-waves  
 - longitudinal/L-waves/lore waves/Raleigh waves
- iii) - volcanic mountains re sources of rivers which provide water for domestic/agricultural/industrial use  
 - volcanic mountains have forests which provide valuable timber used in building and construction industries

- volcanic mountains influence formation of relief rainfall which encourages agricultural activities
- volcanic mountains modify temperatures making them attractive to human settlements

2. a)



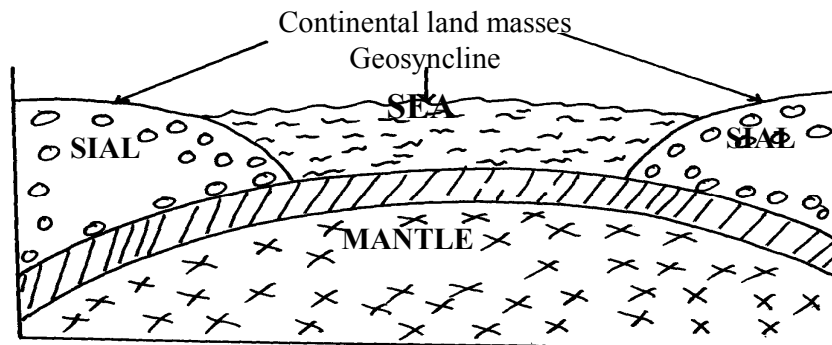
- Formed when compressional forces of equal magnitude and of moderate strength act on crustal rocks
- The rocks bend evenly and the anticline is symmetrical about its axis



- Results from unequal compressional forces acting on crustal rocks
- One of the forces is slightly stronger than the other resulting to limbs that are asymmetrical about the axis

- b i)
- Atlas mountains of Africa
  - Alps mountains of Europe
  - Himalayas mountain of Asia
  - Rockies of N. America
  - Andes of S. America

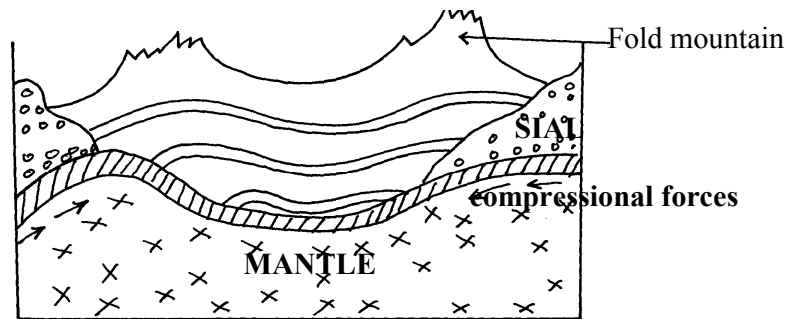
- b ii) - An extensive depression called a geosynclines is formed on the surface of the earth
- The geosynclines is then filled with water to form a sea



- The surrounding land masses are eroded and resultant materials deposited in the geosyncline in layers
- Accumulation and weight of sediments causes the floor of the geosyncline to subside further

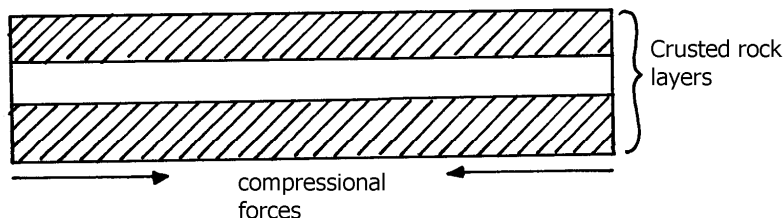


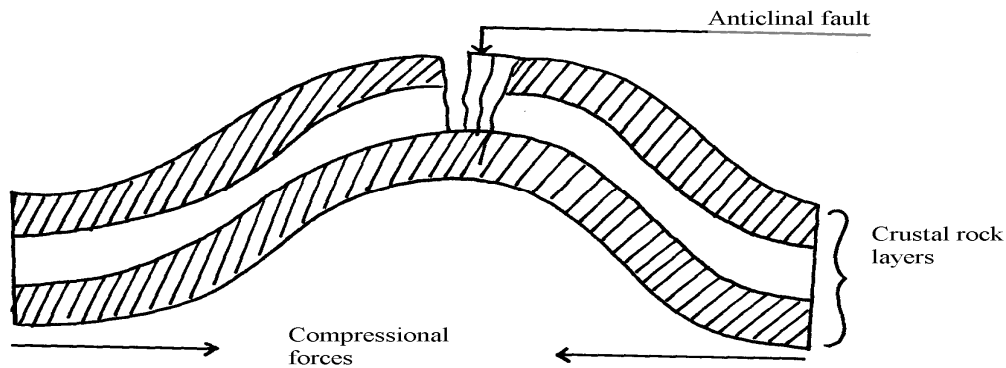
- Further subsidence of the geosynclines triggers off compressional forces drawing higher grounds close
- The layers of sediment in the geosynclines are the folded bending upwards form mountains



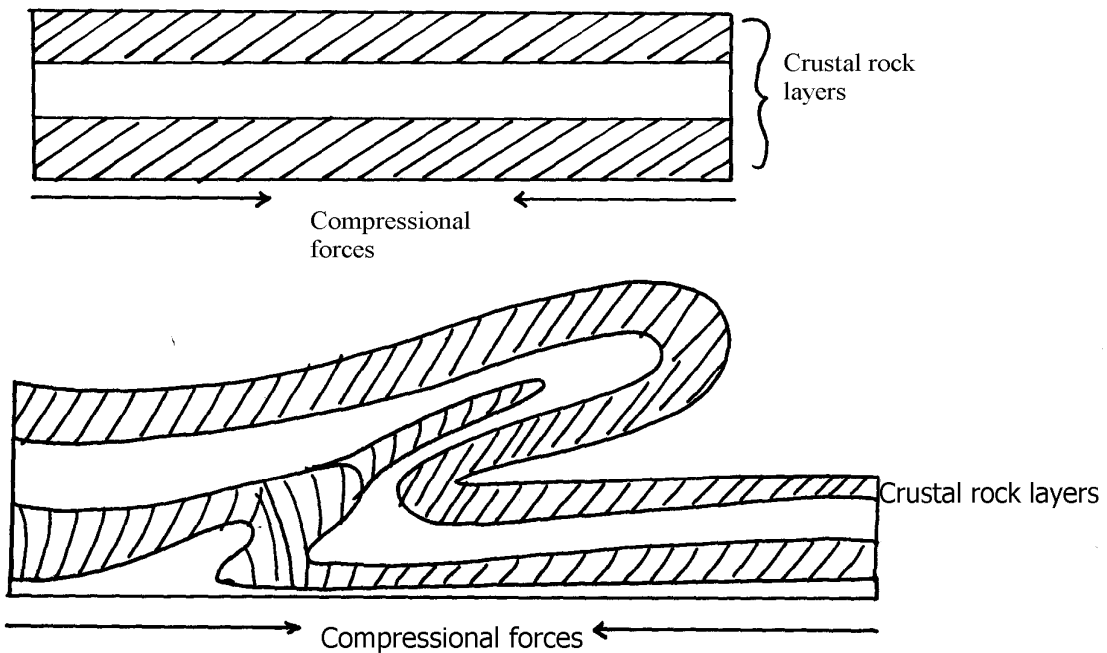
- c) - Fold mountains are often forested on their windward slopes and provide valuable timber for construction
- The windward slopes receive rainfall hence supports agriculture
  - Heavy rainfall and snow that collects in some fold mountains give rise to rivers which in turn provide water for both domestic & industrial use
  - The process of folding could bring valuable minerals to the surface cutting down the cost of mining e.g. coal in Appalachia
  - The unique mountains landscape attracts tourists thus earning the country foreign exchange
3. a) - earthquakes causes lateral and vertical displacement of rocks
- they cause raising and lowering and down warping of parts of the sea floor
  - it causes landslides/slumping
  - it leads to faulting of the crust
  - they lead to volcanic eruptions
- b) - The jigsaw fit of continental margins e.g. Southern Africa and Southern America
- Spreading of the ocean floor- rocks are younger at the oceanic trenches and younger outwards
  - Geological evidence i.e. the rock structure in some continents are similar e.g. South Africa and South America meaning that they were together
  - Palaeoclimatic evidence, similar fossils/ remains have been found in different continents
- c) - Extension boundary/ divergence
- Compression/ convergence
  - Transform fault boundary
  - Conservative boundary
4. a) i) Tectonic plates are rigid blocks that form the earth's crust
- ii) - Pacific plate
  - Nazca plate
- b) i) This disrupts the balance between the sial and sima causing movement of continental masses
- ii) This force themselves in cracks/crevices displacing crustal rocks
  - iii) These cause frictional drag/pull on the crustal rocks causing their movement
5. a) -Isostatic adjustments
- Gravitational pressure
  - Tectonic movement
  - Magma movement (volcanic activities)
  - Energy release in upper mantle
- b) -primary (P) waves

- secondary (S) waves
  - surface longitudinal waves
- 6.
- a) -they are long deep and narrow
  - most of them are salty
  - they are fault lakes
  - b)i) -They are sudden earth movement which cause trembling/vibration within the earth's crust.
    - (ii) - Primary/ puse waves/p. waves.
    - Secondary/shear/S. waves
    - Longitudinal/love/L. waves
  - c ) Extension boundaries are zones where tectonic planets diverge or move away from each other. Space may be created and magma fill the space found in between. While compressional boundaries are zones where tectonic plates moves towards each other. There is thus destruction of materials found at the edges
- 7.
- a i) - Is a sudden and rapid movement/tremor of the earth crust.
  - ii)- Use of change of velocity of seismic waves
    - Use of exotic pre-quake signals.
  - b) - Faulting causes disjointing of the land which results in disruption of transport and communication lines.
    - The presence of fault scarps can cause difficulty in construction of transport and communication lines.
    - It is expensive to construct and communication lines in faulted region.
- 8.
- a) reverse fault
  - b) X-up throw
  - Y-down throw
  - c) - Fire outbreaks
    - destruction of transport and communication lines
    - loss if life and properties/collapse of buildings
    - Change directions of rivers flow
- 9.
- a) -hot springs are place where hot water or steam is emitted from the ground while geysers are jep of hot water or steam and gasses which are ejected explosively from fissure in the ground
  - b) A-crates B-plug C-strato volcano
  - c) i) - Crustal rock layers are subjected to compressional forces
    - This leads to formation of a massive article /up fold
    - Further compression to the same crustal rocks causes stress/tension at the crest of the anticline
    - Eventually a crack/fault and around the crust of the anticline called an anticline fault





- c ii) - Crustal rock layers are subjected to compressional forces
- Intense folding results into formation of an overfold
- With increased pressure the over fold is compressed further to form a recumbent fold
- When pressure is very great, a fracture occurs along the axis producing a thrust plane to form an overthrust fold

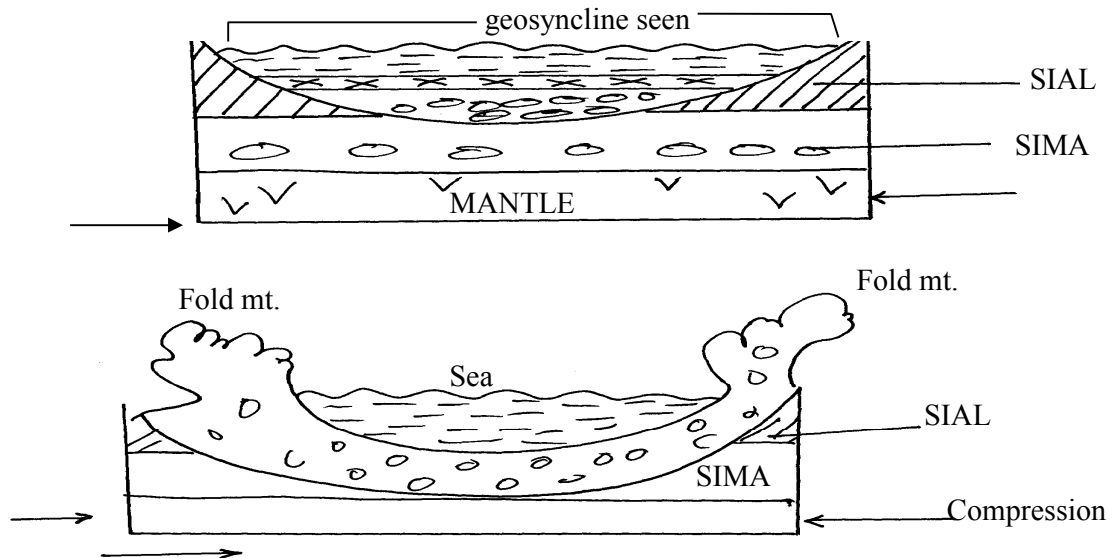


- d i) - Volcanic mountains experience low rainfall on their leeward slopes making them unsuitable for agriculture/settlement/forestry
- Volcanic mountains have steep slopes which hinder transport and communication
- Some volcanic features like mofettes, solfataras steam jets produce poisonous which pollute the environment/are harmful to people
- Some volcanic rock weather to form infertile soil unsuitable for agriculture/forestry
- d ii) - Outpouring of Lava forms a volcanic cone
- When the pressure beneath stops, a hollow, void is left beneath
- The weight of the overlying cone leads to collapse of the top of the cone into the hollow/void beneath
- This leaves a wide depression at the top of the volcano called a caldera

10. a) - It is a theory that states that the crust is divided into blocks of land (plates) that float and move towards, away or parallel
- b) - Compressional boundary  
 - Extension boundary  
 - Transform fault boundary
- c) - Geological evidence – Rock similarities in structure, age and type of rocks found in various continents e.g. in Eastern coast of S. America and Western coast of Africa
- Jig- saw- fit – of continental coastlines. Some coastlines can fit each other when pulled together e.g. Western coast of Africa can fit with Eastern coast of South America
  - Ancient glaciations – All the four Southern continents reveal signs of a period of large scale glaciations at one time. It is evidenced by presence of glacial deposits – Tillites produced by ice sheets in Southern continents
  - Archeological evidence – Some plant and animal remains found in various continents show a striking similarity

11. a i) - Atlas  
 - Cape ranges  
 - Akwapim
- ii) - Atlas  
 - Cape ranges  
 - Akwapim
- iii) - Symmetrical folds have limbs dipping uniformly about the axis while asymmetrical fold one limb is steeper than the other about the axis

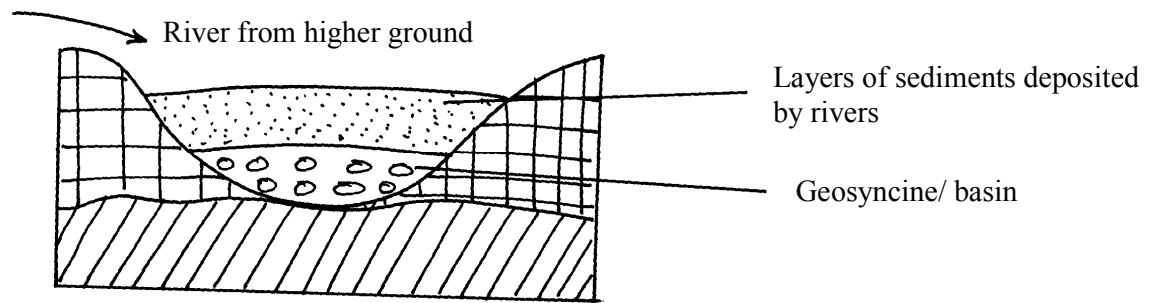
b i)



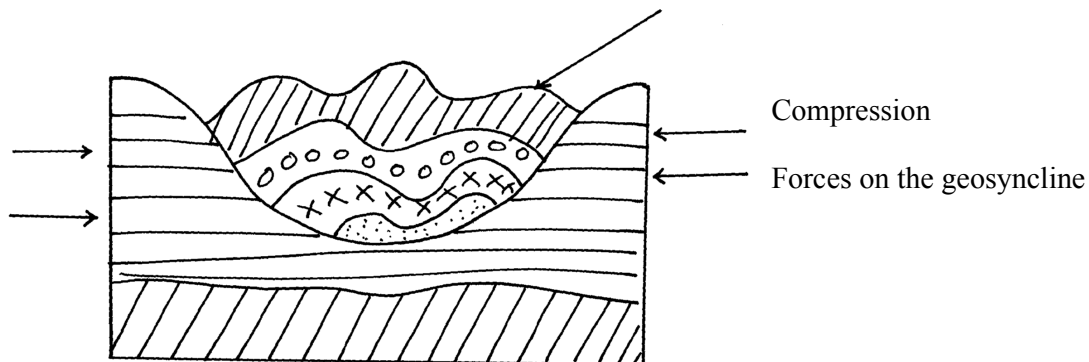
- b i) - Extensive shallow depression called geosynclinal develop
- Sediments from high areas are deposited in the geosyncline
  - Compression on either side push towards geosyncline
  - Sediments compress to form fold mountains which rise above sea level to form fold mountains
- b ii) - Over fold  
 - Recumbent folds  
 - Nappe or overthrust fold  
 - Anticlinical/ synclinal fold  
 - Isoclinal

12. a) - Causes seasons  
 - Varying lengths of day and night time  
 - Changes in the position of the mid-day sun at different times of the year  
 - Causes eclipses  
 b) - Movement of magma within the crust  
 - Gravitational force towards the center of the earth  
 - Convectional currents in the mantle  
 - Isostatic adjustment of sial and sima layer
13. a) - Frequent earthquakes  
 - Presence of faults  
 - Presence of fold mountains  
 b) - Tectonic movements  
 - Volcanicity  
 - Gravitative pressure  
 - Isostatic adjustment  
 - Energy release in the mantle
14. a) - Nature and age of the rocks  
 - Intensity of compression forces  
 b) - May cause a river to disappear  
 - Changes the rivers direction of flow  
 - Forms depressions that are filled with water forming lakes  
 - Faulting across a river forms waterfalls
15. a) - The jig-saw fit✓  
 - Glaciatean/ancient glaciation✓  
 - The coal deposits✓  
 - Sea floor spreading✓  
 b i) - Australia✓  
 - South Africa✓  
 ii) this was the water body that occupied the region surrounding the pangae
16. a) - High demand for hard wood has led to over exploitation  
 - They take long to mature hence can not match the exploitation rate  
 - Population pressure has led to cutting trees to give room for settlement and agriculture  
 b) - Accidental fires which destroy the forests  
 - The Northern part is inaccessible (during winter) for exploitation of the forests  
 - Over exploitation in some areas  
 - Trees take long to mature due to cold climate  
 - Rugged landscape especially mountainous landscape makes exploitation difficult
17. (a) i) A-axis                      B-syncline      C-limb of a fold  
 ii) - The rockets  
 - Andes  
 - Himalayas  
 - Alps  
 - Appalachians  
 iii) - fold mountain  
 - cuesta  
 - escarpment  
 - plateaus  
 - basins

- b) - Geosynclines are formed on the earth's surface
- prolonged and extensive erosion occurs on the surrounding higher grounds
- sediments are deposited in the geosyncline forming thick layers



- the weight of the sediments causes subsidence of the geosyncline leading to accumulation of more sediments
- further subsidence of the geosyncline triggers off compressional forces which draw the higher grounds closer forming fold mountains



- c) - Fold Mountains are water catchments area. They trap rainfall which rivers which that provide water for domestic use
- fold mountains are often forested and provide valuable timber used in construction and building industry (due to high rainfall)
- some fold mountains have valuable mineral deposits such as coal and petroleum for mining
- fold mountains influence transport system enter as barriers or as passed

## 10. PHOTOGRAPH WORK

1. a) i) - Ground close up
- ii) - Photograph (A) – Harvesting of sugarcane
- Photograph B - Transportation of sugarcane
- b) - Kakamega district
- Busia district
- Bungoma district
- Mumias district
- c) - it requires high rainfall of about 1270mm and rainfall should reduce towards harvesting
- Twice to allow for concentration of sugar
- It requires hot climate with temperatures ranging from 20°C to 27°C throughout the year
- It requires a dry sunny period for ripening and harvesting
- It requires well drained soils, with nutrients

- It is grown on fairly level gentle sloping land. This allows for the use machines during ploughing, planting and harvesting
- d)
  - Small farm sizes
  - Pests and diseases e.g. ratoon stunting lowering the yields
  - Corruption in factory management over production
  - Delayed payment kills the morale of the farmers
  - Low earnings from sugarcane production
- 2. (a) i)- Well developed udder
  - Have wide hind quarters, big stomach and small chests
  - Have big milk veins
  - Short legs well set to support their heavy bodies
- ii) - The highlands have high population that offers ready market for the product
  - They have well established infrastructure which is a major factor in dairy farming activity
  - Reliable rainfall and constant supply of water
  - The region has low temperature best for exotic breeds. Survival
  - There is humid condition
  - High quality cover of grass due to fertile soils in the region
  - The high nutrient pasture characteristic

## 11. VEGETATION

1. a) - Pampas of Argentina
    - Veldt of S. Africa
    - Downs of Australia
    - Steppe of Asia
    - Prairies of N. America
  - b) State three characteristics of temperate grasslands.
    - b) - Almost airless except along water courses
    - Grass is tall and nutritious in most areas
    - Grass is shorter, tougher & less nutritious in drier areas
    - Grass withers in autumn
    - It sprouts in spring
  - ii)
    - Some trees are umbrella shaped to reduce evaporation below the stems
    - Some plants have long roots to reach the water table below
    - Some plants have thick/ fleshy/ succulent leaves to store water
    - Some plants/ grass wither in absence of rainfall but have abiding to recover quickly when rain falls
    - Some plant seeds remain dormant for long periods awaiting the start of rainfall
    - Some plants have thin leaves/ spiky/ waxy needle like leaves to reduce water loss
2. a) i) X-rainforest
    - Y-bamboo forest
    - Z-heath and moorland
  - ii) - it consist of a mixture of tree and grass
    - in wetter areas the grass are tall and close to each other
    - in drive areas the grass are shorter and tufted
    - grass dominate the vegetation
    - trees are shorter and more scattered
    - trees are umbrella shaped
    - acacia trees are a dominant species
    - some trees i.e. bamboo have thick barks
    - river valleys have trees and thick bushes

- during drought grass withers/trees shed their leaves
  
- b i) Areas on leeward slope of mountains have different vegetation from those on wind ward slope because they received different amount of rainfall✓✓
- ii) Settlement, farming and mining interferes with original vegetation leading to growth of secondary and dissipation✓✓
- c i) south Africa✓
- ii) Argentina✓
- iii) New Zealand✓
- . d) The frequent outbreak of bush fires destroys the grass retarding its regeneration✓✓  
the increasing human population is encroaching into the grasslands replacing them with settlement and cultivated land✓✓  
pests such as army worms /locust destroy the grass and the vegetation degenerations into a semi- desert type✓✓  
wild and domestic animals overgraze and cause stunted growth of grass✓✓
  
- 3. a i) -Natural vegetation is the plant cover that exists in an area without the interference of external modifying influence especially people and their animals
- ii) -Temperature
  - Precipitation(rainfall)
  - Sunlight
  - Wind
- b i) -The prairies (of N. America)
  - The veid (of S Africa)
  - The pampas (of Argentina)
  - The downs (of Australia and New Zealand)
- ii) -They are conical in shape
  - They have needle-shape leaves
  - In most coniferous forests a thick carpet of mosses occur
  - Forest species are generally few and large tracts of forests can consist of only one or two species of tree(occurs in pure stands)
  - Most of the species are softwoods which mature faster
  - Most species are evergreen but a few she their leaves eg fir,pine and larch.
  - Trees have a widely spread shallow root system for utilizing moisture from the top soil since most of the time subsoil is permafrosted
- c) -some plants have thick leaves and banks for storing water.
  - some plants produce seeds which lie dormant for along time and germinates when the rain falls
  - some plants sheds leaves during the onset of the dry season to reduce loss of water through transpiration
  - trees in the region have long rots to tap water from the water table below
  - tress in the region are umbrella shaped to provide shade that reduces the rate of evaporation around the stem
- . d) - Frequent outbreak of bush fires destroy grass and retard its regeneration
  - frequent drought destroy the grass and so the vegetation degeneration into a semi-desert type.
  - overgrazing of domestic and wild animals causes stunted growth of grasses
  - human activities due to increased population which encroaches grasslands
  - pests such as army worms and locusts destroy the grass, thus reducing the rate of growth
  
- 4. a ) X - Veldt  
Z - Stepper



- b) - Some plants have a short life-cycle this enables them to survive during the short period of wetness.
- Most are salt tolerant (Halophytes) to enable them survive in the saline soils of the deserts.
  - Most plants have succulent leaves that store water to enable them survive the long drought period.
  - Some plants have fibrous stems which they use as breathing surface.
  - Most have deep roots to reach the deeper water table.
  - Some have spines/thorns which protect them from browsing animals.
  - Some are drought resistant & deciduous which enable them shed their leaves during dry season.
5. a i) L is savanna (park savanna)
- ii) - The vegetation is tropical rainforest/ equatorial forest
- The forest consist of mixed variety of tree species
  - The trees shed their leaves at different times of the year/ ever green
  - The trees are tall with large trunks
  - The trees have broad; leaves/ drip tipped leaves
  - The trees take long to mature
  - The tree species are mainly hard woods
  - The forest trees grow close together
  - The forest has numerous lianas/ climbing plants/ epiphytes
  - Some of the trees have buttress roots
  - The forest has crowns that form three distinct canopies/ layers
- b i) - Some plants have thick/ fleshy/ succulent leaves/ barks to enable them store water
- Some have long roots to tap the ground water
  - Some have no leaves/ have thin/ spiky/ waxy/ needle- like leaves to reduce transpiration
  - Some plants have shiny surfaces to reflect light
  - Plant seeds remain dormant awaiting the short rains
  - Some plants have thick/ hard barks to reduce transpiration
  - Some plants wilt in the absence of moisture that have a quick recovery ability
  - Some plants have thorns to protect themselves from browsing animals
  - Most plants are stunted/ dwarf like due to the harsh conditions
  - Some plants are quick sprouting to take advantage of the short lived desert rains
  - Some plants have underground bulbs that remain dormant awaiting short the rains
- c i) - The temperatures are too low to support vegetation
- The surface is mainly bare rock, so no soil has formed to support vegetation
  - Water is always in a frozen state, i.e. snow, so it is not available to plants
- ii) - Vegetation is of aesthetic value as it adds beauty to the landscape
- Vegetation binds soil together using its roots. Its aerial parts reduce the impact of raindrops on the soil. In this way, it protects the soil against erosion
  - Plant remains decay to become humus. This improves the fertility of the soil
  - Some plants are of medicinal value to people. Their leaves, barks or roots are extracted and prepared into medicines, both traditional and modern
  - Some trees are used in the manufacture of paper while others are used for the manufacture of plywood, veneer or production of timber
  - Some plants are eaten by people e.g. bamboo shoots
6. a i) - Natural vegetation
- Derived vegetation
  - Cultivated vegetation
- ii)- altitude√

- aspect✓
  - terrain and drainage
- b i) A-health and moorland

- B-bamboo forest✓
  - C-rain forest✓
  - D-savanna grassland
- ii) -too cold for plants to survive covered by snow✓  
-rocky surface
- c i) prairies  
Pampas

- ii) - Grazing the plenty tall and short grasses are used for grazing livestock and wild animals
- Reduces soil erosion-savanna vegetation act as soil cover hence reduces soil erosion
  - Habitat for bees and wild animals-trees in savanna are habitat for bees which provide honey and home foe wild animals e.g. gazelles, giraffe
  - Some shrubs and herbs growing in the savanna are used as medicine
  - Fuel-trees provide wood fuel and fuel wood for the people in the tropics
  - Gross increases humus in the soil making areas suitable for cereal farming e.g. wheat and maize

- d )- some plants have long roots to enable them tap water far deep the ground✓✓
- some pants have shallow root system which enables them to take moisture from the soil layers
  - some plants have sunken stomata and waxy leaves to reduce rate of transportation✓✓
  - some plants have succulent stems to allow them store water✓✓
  - some plants are short lived i.e. Complete their cycle within the short wet period✓✓
  - some plants e.g. tubers and corns remain dormant during dry spell until wet period stimulate

7. a i) S- Steppes  
T- Pampas  
Y – Savanna  
Z – Downs

- ii) - the vegetation consists of a continuous cover of grass, the grass is tufted
- The grass is interspersed/mixed with bulbous/leguminous plants/shrubs
  - The grass is nutritious. Grass is tall in moist area
  - The grass is short and tough in drier areas about 15-30cm in height
  - The grass is green in spring/brownish yellowish and strow like in summer/Grass withers in autumn and die in winter/rare grass sprouts in spring/Trees are only found along rivers/ rive rine trees/ trees found in hollows where rain water collects.
  - common grass varieties are gamma graze/buffalo grass
  - In drier, areas, the short grasses form bunches separated by bare soil
  - Tress found along river courses are temperate trees like popler, willo adler

8. a i) - It is a plant cover existing naturally in a place but has been interfered with by man
- ii)
  - Altitude
  - Aspect
  - Soil
  - Climate/ temperature/ rainfall
  - Man's activities

- b) i) - Savanna vegetation
    - Rainforest
    - Bamboo forests
    - Heath and moorland
  - ii) - prairies
    - steppes
    - downs
    - veld
  - iii) - some have thick/fleshy/succulent leaves /barks
    - some have long tap roots
    - some have no leaves /have thin/spiky/waxy/needle like leaves
    - some plants have thick/hard barks
    - some plants have thorns
    - some plants are stunted/dwarf like
    - shrubs are common
    - some plants spout during wet seasons (short time)
9. a) - fire-often ,large areas of forests are destroyed by accidental and sometimes intended fire. such forests takes long to recover
- diseases causes by pests and parasites attack mainly the planted forests causing many trees to die
  - human activity /settlement /charcoal burning/logging have destroyed many forests areas of which are transformed in to farms and grasslands
  - over-exploitation leads to depletion of certain tree species such as Meru oak, camphor and Elgon teak. these trees take long to mature
  - government policy of degazetting of some forests made people free to clear many forested areas
  - prolonged droughts lead to degeneration of forests some of which take long to recover
- (b) Rain forest have closely set trees with these districts canopies.
- This crowns and closeness of the trees form a dense shade for the lower layer which makes arvesting cumbersome.
  - Most trees are tall, and have huge trunks. This makes them cumbersome to be harvested and most of them are heavy to be transported.
- High amount of rainfall.
- This forest lies within the equatorial climatic region where high amount of rainfall is received throughout the year.
  - This means that harvesting of trees can not take place throughout the year because of the very dump condition in the forest and general disturbance caused too much rains.
- Tree species are not found in pure stands
- Rainforest do not have pure stand and this become a problem if one need to harvest only one species meaning moving from one part of the forest to another as one harvest.
- Majority of the species are hardwood.
- These species are hard to be cut and also heavy to be transported

## 12. FORESTRY

1. a) - High demand for hardwoods

- Population pressure which has led to increased deforestation in creation of room for farming and settlement
- Hardwoods take too long to mature and this doesn't match the rate of felling
- b)
  - Agro forestry programme
  - Public awareness and education through mass media
  - Creation of forest reserve
  - Recycling of waste papers to make newsprint
  - Enacting law governing forest conservation
  - Forest research stations to conduct research on new tree species
  - Establishment of government tea zones at the edge of forests to act as buffer zones
- c i) - New found land
  - Nova Scotia
  - Prince Edward Island
  - New Bruswick
- ii) - The landscape is rugged hence does not favour agriculture
  - High rainfall throughout the year favours forest growth
  - Coastal location favour establishment of ports for timber exportation
  - Constant supply of H.E.P for industrial use due to many rivers with water falls
  - Plenty/abundant water supply for processing purposes e.g. bleaching of pulp
  - Ready market in Canada and U.S.A for forest products
  - Cheap means of transport or rivers like Ottawa, Fraser e.t.c
  - Low temperatures in the highlands discourage settlement hence forestry is the main use of land
- d) - In Canada they grow naturally while in Kenya they are planted
  - In Canada they cover extensive areas while in Kenya they cover small areas
  - In Canada they exist in a wide variety while in Kenya the species are limited
  - In Canada they are indigenous while in Kenya they are mainly exotic

2. (a) i) - This is a collective term used to cover a variety of land uses that combine tree growing, pasture and crop production practices on the same piece of land for the purpose of increasing or improving the output of the soil.
- ii) - Remedy to deforestation.
- Source of income.
  - Environmental benefits.
  - Aesthetic saving.
  - Labour saving especially for women who spend more time fetching firewoods.

3. a i) - Pure forest is composed of trees of two or more species
- ii)

Natural forest	Planted forests
<ul style="list-style-type: none"> <li>- consists of hardwood</li> <li>- mixed the species</li> <li>- random occurrence with different canopies</li> <li>- take long time to mature</li> </ul>	<ul style="list-style-type: none"> <li>- mainly softwoods</li> <li>- - pure woods</li> <li>- Planed in rows and of same height</li> <li>- Take 15-30years mature</li> </ul>

- b) - High rainfall in Kenya highlands favours tree growth
- Kenya Highlands experiences cool temperatures ideal for coniferous forests
  - High market for wood products and timber encourages forestry
  - Forestry areas are rugged and steep, discouraging settlement and agriculture
- c i) - Tree planting /re-a forestation
- People are required to seek permits if they have to cut trees
  - Forests reserves have been ser aside to conserve indigenous forests
  - Forestry department carry out research to produce and distribute seedling

- People are educated through mass media importance of the conservation
  - People are being encouraged to use of alternative source of energy/saving jikos
- ii) - Presence of cool to cold climate enhances growth
- High rainfall promotes growth of trees
  - Step and rugged landscape discourages agriculture
  - High local and international market for forest products
  - Low population density in Canada provides more land for forestry
4. a) Agro-forestry involves cultivation of both crops and trees on the same piece of land
- b) - Provides source of firewood and charcoal
- Source of income to farmers after selling tree products like fruits
  - Trees act as windbreakers
  - Trees create micro-climate within the farm
  - Some trees are of medicinal value
  - Trees leaves decomposes to form fertile soils
- c i) - Tree growth is limited to altitudes below 3500 because beyond this level
- the temperatures are too low for tree growth
  - Lower level of tropical mountains have rainforests, which give way to coniferous forests and then to bamboo thickets, with increase in altitude
  - In highland areas where the slope is too steep trees do not grow because the soil is thin due to heavy erosion
- c ii) - Windward slopes of mountains are generally wetter than the leeward slopes thus more forest
- The forest zone starts at a much lower altitude on the windward than on the leeward slopes
  - In the northern Hemisphere, southwards facing slopes are warmer with luxuriant forests, while North facing slopes are in the sun's shadow, cooler and with less vegetation
- d) - People are being encouraged to plant trees and food crops in the same farms
- Regions which previously were devoid of trees are being planted with trees
  - Tree farming is practiced in many parts with the aim of raising trees for future use
  - Mature trees felled are replaced immediately
  - The reduction of wastage e.g. the use of waste paper to produce newsprint
  - People are required to seek permits if they have to cut trees. This reduces the rate of tree felling
  - The forest reserves are patrolled by guards to ensure that fires are reported promptly and also ensure unlicensed people do not cut down trees
  - Forest reserves have been set aside to conserve indigenous species
  - Forestry department carries out research to produce and distribute seedlings to ensure the extension of forests
  - People are encouraged to use alternative sources of energy or energy saving jikos
  - People are educated through mass media on the importance of trees
- e) - Desertification
- Soil erosion/ degradation
  - Extinction of some tree species
  - Loss of plants with medicinal value
  - Loss of aesthetic value
  - Decrease in wild animals
  - Decline in employment for those in forestry related areas
5. a i) Indigenous forest are those trees which have been traditionally growing in the country while exotic forest consists of trees that have been imported into the country.
- ii) - Natural forest grows in the wild while planted forests are tended by man.

- Planted forests are usually softwood while national forest are mainly hardwood.
  - Natural forest takes a longer time to mature as compared to planted forest.
  - In natural forest, trees are scattered while planted forest are found in rows/lines.
  - Natural forest here mixed species of tree while planted forest have pure stand in a given area.
- b) - Temperature (10<sup>o</sup>c – 35<sup>o</sup>c)
- Tropical Ban forest domestic high temperature areas (21<sup>o</sup> – 35<sup>o</sup>c)
  - Human activities
  - Altitude
  - Rainfall.
  - Soils
- c) - Afforestation /Reafforestation
- Legislation
  - Research.
  - Education
  - Alternative sources of energy use.
6. a i) Is the science of cultivation development and managing forests
- ii)- availability of deep fertile volcanic soils in the highlands has led to the growth of thick Forests
- the high reliable rainfall throughout the year in the highland has promoted the growth of thick forests
  - their location in the low latitude region which experience high temperature has led to faster growth and early maturity for most of the trees
  - government's efforts to protect destruction of the natural forests and protect them from human settlement
- b) - there is a wide variety of tree species in a given are. This makes exploitation of valuable species difficult
- the valuable trees are scattered not in pure stands. this makes exploitation difficult and expensive.
  - The buttress roots make the falling cumbersome
  - The dense undergrowth/thick forest any quick generation of plants hinder accessibility
  - Humid climate makes working condition unfavourable
  - The forests form a habitat for dangerous could animals which make the exploitation insecure
  - The hot humid conditions climate encourage pests and disease which are harmful to man and trees
  - The heavy rainfall thought the year results in muddy roads-which makes exploitation difficult
  - Inadequate capital limits the use of modern techniques in the exploitation of forests
  - River transport is hindered by waterfalls and rapids. this make transportation expensive
- c i) - carrying out public campaigns on the value of trees forests through mass media e.g. Radio
- carrying out research on suitability of soils and the effects of pests diseases on forests
  - Established of training institution dealing with forestry e.g. Iodiani
  - reduction of wastage in the forestry industry by recycling waste to produce other products
  - employment of forests guard and officers to guard against destruction of forests
  - creation of forest measure with the aim of protecting indigenous tree
- c ii) - frequent outbid of bush forest destroying forests
- increasing human population encroaching in to the forests
  - pests and diseases destroying some species of trees
  - frequent drought experience in the country destroying the vegetation
  - wild animals and domestic animals destroying vegetation causing stunted growth

7. a i) Forest is a continuous growth of trees and under growths covering a large tract of land while forestry is the science of developing and managing forests including cultivating them
- ii a) - Mainly temperature and precipitation
- Proper growth of tree can only take place where there is heavy precipitation throughout the year.
  - Different plants require different amount of warmth e.g. in tropical regions where rainfall is very high, big trees are common very low temperature discourage tree growth.
- b) - Human beings have destroyed any natural forests to create room for subsistence agriculture and settlement. Deforestation has been rampant while collecting wood fuel.
- At the same time human being are conserving and maintaining trees in other area
- c) - Forests do not grow on steep mountains where the surface is bare rock, the soils are thin and temperatures are low
- The windward slopes of high mountains like Kilimanjaro usually receive higher rainfall and are therefore forested. the lee ward slopes are covered with scrub vegetation
8. (a) - Research is being carried out on soil requirements for different species of trees which enables foresters to plant trees in suitable areas
- Public campaigns on the importance of forests are always being conducted through mass media
  - Alternative sources of energy are increasingly being encouraged to minimize over-dependence on wood fuel e.g. sun, wind, biomass, water, oil, kerosene, and natural gas
  - Introduction and promotion of energy saving stores to reduce the amount of wood fuel being used
  - Timber merchants and those involved in logging are being enlightened on how to improve their cutting practices through rational and selective felling and replanting to replace the ones cut.
  - Improving the infrastructure within the forested area by improving roads and providing roads and providing machinery, saw mills, tractors and seed beds
  - Control of pests and diseases which attacks trees
  - Establish of training and research institutions which specifically deal with forestry e.g. Londiani forestry training college
  - Government has enacted laws that enable effective management of forests e.g. forest bill 2000
  - Creation of forest reserves to protect the indigenous trees and other plant species from extinction
  - Posts for forest guards have been set up within the forest to protect against illegal tree felling

. c)

<p>i)species Kenya There are both exotic and indigenous softwoods</p> <p>ii)problems large tracts of forests especially exotic trees are affected by pests and diseases e.g. Aphids</p> <p>iii)marketing most of the wood products are sold locally but some are exported to Arabian countries, USA and</p>	<p>Canada The main species are of coniferous type (2mks)</p> <p>Large tracts of forests are destroyed by fires and diseases(2mks)</p> <p>Most of the wood products have ready markets in Canada, USA, Britain and Europe</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

- di) - Pines
  - Cypress
  - Eucalyptus
- ii) - Note taking
  - Field sketching
  - Photographing /filming
- 9. a) It is the growing of trees together with crops on the same piece of land at the same time ✓
  - b)- Meru oak ✓
    - Elgon teak ✓
    - Mvule ✓
    - Elgon olive ✓
    - Camphor ✓
    - Mangrove ✓
  - . c) - African pencil ✓
    - Cedar ✓
    - Podo ✓

### 13. EXTERNAL LAND FORMING PROCESSES

1. a) - River Nzoia ✓
  - River Nyando ✓
  - b)- Heavy rainfall from the highlands ✓
    - When a river contains excess water that it cannot hold in its channel ✓
    - Cultivation along river banks ✓
    - Deforestation in the surrounding areas ✓
2. (a) i) - barchans
  - transverse/wake dunes
  - ii) - they lie parallel to each other
    - they rise up to 100m/high and their length can exceed 100km/long
    - they lie parallel to the direction of the prevailing wind
    - they have a sharp knife like crest
  - iii) - availability of sand
    - strong winds blowing in one direction for a long time
    - presence of obstacles e.g. rocks or vegetation
    - occasional rainfall hardening the ground causing deposition
    - presence of ground water reaching the surface
    - human activities like mining, heaping materials on the surface that acts as anchors for sand deposits
  - b) - there is existence of a rock out crop of alternative layers of hard and soft rock/heterogeneous
    - the rock lies on the path of a wind carrying weathered materials
    - through abrasion, the softer parts of the rock are eroded faster than the hard parts
    - wind is more effective near the ground surface
    - the irregular shaped feature is a rock pedestal
  - c) - desert features like zeugen dunes etc attract tourists
    - deflection hollow as/oasis contains water used for irrigation and other domestic uses



- loess is deposited in water areas is fertile and used for farming
  - dwelling are curved out of loess which provide warm and cool home stead during winter and summer respectively
  - desert land forms are ideal for military training testing of weapons and space craft experiments
  - the seasonal streams can be dammed to supply water for domestic use
  - desert features provide suitable scenery for film making
3. a i) - Kenya experience high temperature under which ice-sheets cannot form
- Most parts of Kenya have low attitudes
  - Kenya is found at low latitudes
- ii) - gradient of the land-ice moves faster when the slope is steep
- temperatures-higher temperatures result in to thawing leading to faster movement of ice
  - nature of the slope-when the surface on which ice is moving is rough, it causes friction lowering the speed of the movement of ice
  - size/thickness of glacier-large masses of ice exerts pressure which leads to melting of ice underneath. this increases the speed of ice movement.
3. b i) - two adjacent hallows on a mountain side
- the two hallows are filled with ice
  - the ice erode the side through plucking and deepens the hollow through abrasion
  - through erosion, the back walls of the hollows slowly recede
  - eventually the hollows(cirques)are separated by a knife-edge ridge
  - the ridge is called an arête
- b ii) - a large block of rock stands on the path of on-coming glacier
- the ice plucks off /erode rock fragments from the upper side of the block
  - as the ice moves round and over the resistance rock, it carries the eroded materials to the lee-ward side
  - the lee side does not experience erosion
  - deposits materials on the lee-ward and together with weak rocks forms
  - flat corridors separate them from each other
  - they occur I groups
  - the width of the corridors vary from 25m to 50m
  - where the wind blows from the same direction for long, dunes become gentle on the wind ward and steep on the lee ward
- c) - glacial till provides fertile soils for arable farming
- ice sheets in their scouring effect reduces the land surface and depth to expose mineral seams which become easy to extract
  - out wash plains comprise of sand and gravel which are used as materials for building and construction
  - lakes formed through glaciations can be exploited for various uses such as fishing, transportation or as tourist
  - glaciated feature are tourist attractions
  - glaciated lowlands are generally flat due to erosion and deposition and these are ideal
4. a)- 21<sup>st</sup> March - 23<sup>rd</sup> September
- ii)- because the earth is titled on its axis
- because of the movement of the sun within the tropics
  - because of the revolution of the earth
- b) - it causes the occurrence of day and night
- it causes the deflection of winds and ocean currents

- it causes the rising and falling of ocean tides
  - it causes the variation in time at different longitudes
  - it causes differences in the atmospheric pressure on the earth's surfaces
5. a)- An accumulation of water in a wide hollow or depression
- b) - by erosion
- by earths movements
  - by vulcanicity/volcanic activity
  - by deposition
  - by human activity
  - falling meteorites
  - mass movements e.g. land slides
  - weathering by solution
6. a i) - Desertification is the process through which marginal lands are degraded through climatic variations and human activities/ or encroachment of arid conditions into formerly productive areas
- ii)- Wind deflation is the removal of loose unconsolidated materials by a lifting and rolling action of wind
- Wind abrasion is the process whereby wind picks loose materials and uses it to scratch and grind the earth surface
- I. Wind transportation through saltation: larger fragments of rock are lifted from the ground in a series of hops and jumps within the wind currents
- II. The fine dust are lifted clear off the ground and eventually are blown away by wind currents
- III. Heavy materials are dragged along the ground by wind currents
- b i) - Zeugens are formed in desert areas where alternating layers of hard and soft rocks occur
- The top layer of hard rock is jointed
  - Weathering opens up the joints
  - Wind abrasion erodes the joints widening and deepening them to reach the soft layer of rocks
  - Deflation blows away the loose broken materials
  - Furrows are formed and gradually widened as abrasion continues on the soft rock
  - The hard rock forms the ridges separately the furrows
- ii) - A pre- existing depression is formed through faulting
- Wind eddies remove unconsolidated materials through deflation
  - As deflation continues, the depression is deepened and enlarged resulting into a wider depression
  - The process of deflation is aided by weathering and abrasion
  - With continued deflation, the level of water table is reached
  - Water comes out of the ground and collects into the depression to form an oasis

7. a) - Plastic flowage
- Basal slip
  - Extrusion flow

b)

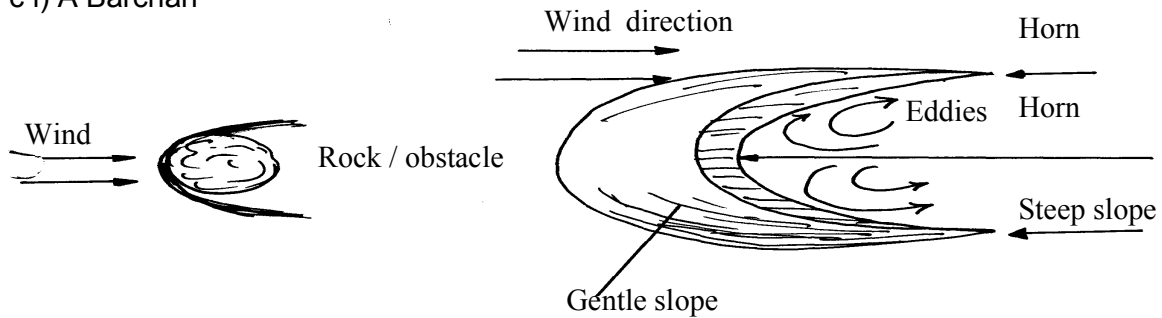
Young river valley	Glaciated valley
Has interlocking spur	Has inundated spur
Has gently sloping cliff	Has steep rock cliffs
Has a V- shaped	Has a U shaped
Follows a winding course	Flat on the floor

8. a) X – Swash Y – Back wash
- b) - Hydraulic action

- Corrosion
  - Solution
  - Attrition
- 9.
- Rainwater
  - Melt water
  - Lake and sea water
  - Magmatic water
- 10.
- a i) - Chemical weathering- is the breakdown or disintegration of rocks as a result of chemical reaction or changes that cause decay of rocks
  - ii)
    - Chemical composition of rocks
    - Presence of moisture/ water
    - Presence of gases
    - Temperature changes
    - Rock permeability
    - Vegetative matter
  - b i) - Water in air combines with carbon to form a weak carbonic acid
    - Carbonic acid reacts with calcium carbonate to form soluble calcium bicarbonate
    - Solution is washed away causing weathering to take place
  - ii) - Water enters the rocks
    - Water breaks down into ions which combine with minerals
    - Rocks break down to form completely new compounds e.g. fluor spar with clay
  - c) - Produces clay that is vital in brick making
    - Weakens rocks making them easier to exploit i.e. mining
    - Important in soil formation
    - Weathered rocks provide scenery for tourist attraction
    - May break down large rocks hence leveling the landscape for settlement
- 11.
- a)
    - Spring tides
    - Neap tides
    - Perigean tides
    - Apogean tides
  - b) - Change direction of flow
    - May force currents to flow along the coastline of the land mass
    - May split currents into two parts and flow in different directions
  - c) - Rainfall that infiltrate into the ground
    - Melt water from the thawing ice
    - Magmatic water that are trapped in the rock
    - Lakes and seas/ oceans that sink into the ground
  - d) - When permeable rock overlies on top of an aquifer
    - When well jointed rocks form a hilly country absorb water via joints which later spring out when water table meet surface
    - When dyke cuts across a layer of permeable rock
    - When a limestone or chalk outcropment is under long impermeable layers
    - When a gently sloping layer of permeable rock alternates with layers of impermeable rock
  - e)
    - Some plants have long roots to reach water table
    - Some have small leaves to reduce transpiration
    - Some have thick stem/ barks to store water
    - Some have leaflets to minimize water loss
    - Some have leathery leaves to reduce water loss
- 12.
- a) Hamada is rocky desert while an erg is sandy desert

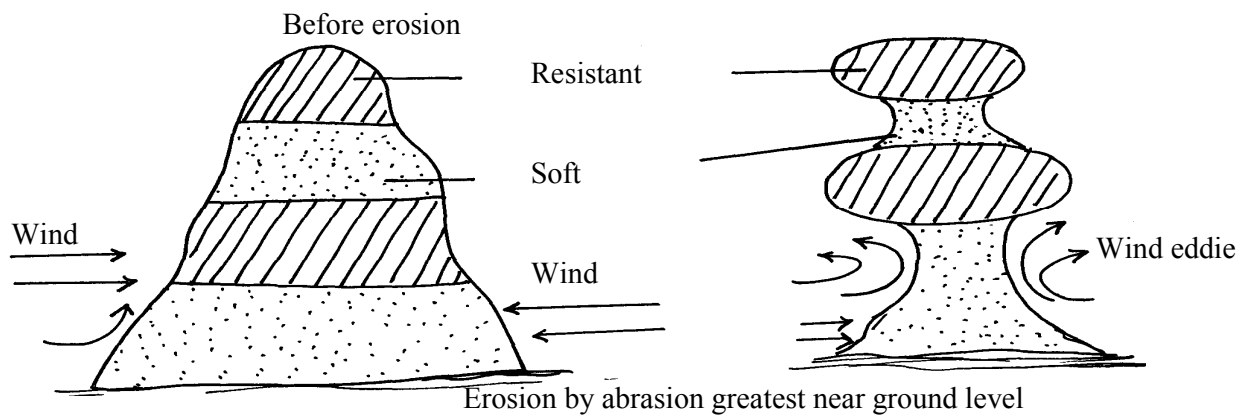
- b) - Deflation – wind remove dry and unconsolidated materials like dust and sand by lifting
- Abrasion – wind use materials like sand as erosive tool, where particles are hurled n rock surface causing undercutting
- Attrition – materials carried by wind rub against each other and against rocks producing rounded land grains

c i) A Barchan

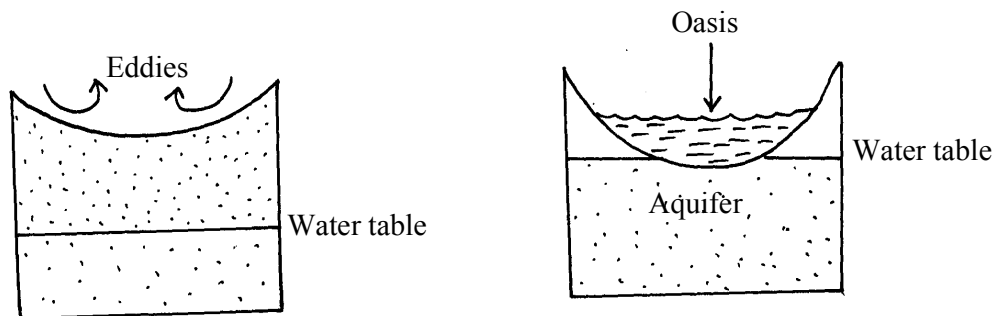


- An obstacle on path of wind e.g. rock/ bush block wind causing deposition
- Materials continue to built until windward side is smooth and leeward side steep forming a moon shaped feature called barchan

c ii)



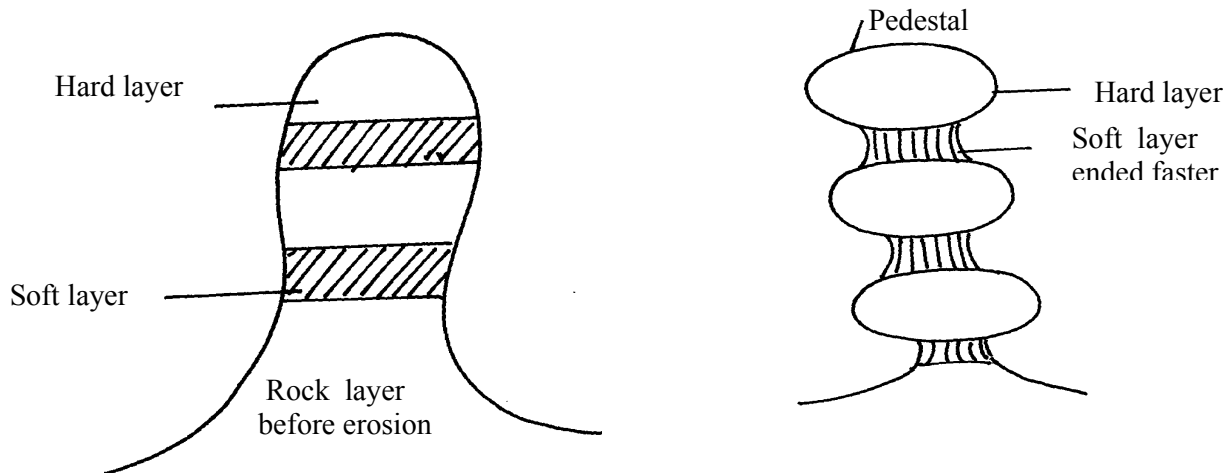
c iii)



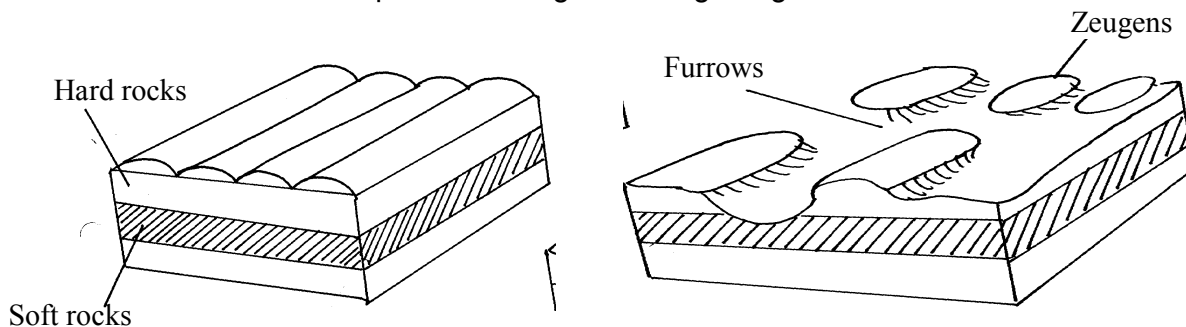
- Pre- existing depression/ localized fault attacked by wind eddies
  - Depression is excavated by removal of unconsolidated materials/ wind erosion by deflation
  - When water bearing rock is reached/ aquifer water oozes out to collect in depression and an oasis is formed
- d) - Alluvial fan

- Bajada
- Salinas

13. a ii) - Presence of loose unconsolidated gravel/ stones/ soil particles that can easily picked by wind
- Presence of little or no vegetation on the surface of desert
  - Presence of strong prevailing winds in deserts
- b) - Deflation – it is the blowing away of any dry unconsolidated materials like dust and fine particles by rolling them on the ground and lifting them up in the air
- Abrasion – materials carried by wind such as sand scratch and grind rocks and ground surface
  - Attrition – particles carried by wind hit against each other and rocks and reduce in size in the process
- c i) - Rock outcrops with alternate layers of hard and soft layers project above the surface
- The softer rocks are eroded by abrasion faster than the hard rock. They are worn out more rapidly than resistant ones. This results in an irregular rock with protruding layers that alternate with hollows called pedestal



- c ii) - Formed where hard and soft rocks lie horizontally
- Weathering attacks the soft layer leading to the formation of cracks
  - Wind abrasion deepens the cracks deepening them forming furrows
  - These furrows separate the ridges forming Zeugens



- d) - Desert land forms e.g. Zeugeus, dunes yardang attract tourists who bring foreign exchange
- Oases provide water for domestic use/ irrigation/ livestock
  - Oases attract settlements
  - Loess provide fertile land for agriculture use

- Rocky and sand surfaces can hinder communication and transportation
- 14.
- a) - An ocean is a large/ extensive body of saline/ salty water occupying large basins between continents while a sea is a large body of saline/ salty water boarding a continent
  - b - Volcanic materials from the ocean floor add salts to the water
    - Some salt is dissolved by sea water from the underlying rocks it is in contact with
    - Some salt is added by rivers that have dissolved it from the land
    - Most of the salt is thought to have been present when water bodies were formed
  - c)
    - Ocean deeps
    - Continental shelf/ continental slope
    - Ocean ridges
    - Deep sea plains
    - Islands
- 15.
- a i) A sea is a mass of saline water occupying depressions at the margins of continents whereas an ocean is a mass of saline water occupying depressions in between continents
  - ii) - As the coastline retreats due to marine erosion resistant rocks are isolated as islands.
    - Deposition of materials across bays, river mouths and lagoons build up barriers which project above the water level as islands.
    - Volcanic eruptions within the sea/ocean builds up islands when materials pile up above the water level.
    - Accumulation of coral into reefs form coral islands
    - When upland coasts sub-merge valleys are drowned leaving ridges /hills above the water level as islands.
  - b i) - Earth movements led to crustal downwarping.
    - A shallow depression was created
    - The areas around the depression underwent uplifting
    - The uplifting reversed the direction of rivers such as river Kagera
    - Water from the rivers and from rain eventually filled the depression forming a lake
  - ii)- Evaporation from the lake leads to high relative humidity in the area
    - Evaporation from the lake increases moisture in the atmosphere leading to increased/high rainfall in the area
    - Evaporation from the lake leads to convectional rainfall
    - The lake encourages formation of lake breezes which have a cooling effect on the areas at the lake shores
    - Regular land and lake breezes modify the temperatures of surrounding areas keeping the diurnal range low
    - The breezes cause reversal of local winds/diversion of prevailing winds such as the Congo air mass
  - c i) Aridity is the state of land being deficient of moisture leading to scarcity/lack of vegetation. while desertification is the slow but steady encroachment of desert-like conditions onto formally productive agricultural land
  - ii) - Continentality/distance from the sea;- Onshore winds drop most of their moisture along the coast reaching the interior as dry wind leading to aridity and desertification
    - Relief barriers/Rain shadow effect; - Rain bearing winds drop a lot of moisture on the windward side of mountains. They thus reach the leeward side of with less moisture as dry winds causing aridity and desertification
    - Cold ocean currents; where on shore winds cross over cold ocean currents, the moisture content of the winds is lowered by the chilling effect of cold currents, the winds thus drop moisture over the sea reaching the land as dry winds that cause aridity and desertification.

- High pressure systems;- Areas with stable, high pressure systems with low humidity and descending air/diverging winds experience aridity since moist air has to rise for condensation to take place.
  - Dry wind system;- Hot and dry winds from land like the harmattan constantly blowing over some regions cause a drying effect the land resulting in development of arid conditions
  - High temperature:- Areas constantly experiencing high temperature have high rates of evaporation leading to arid conditions
  - Insufficient rainfall:- Areas that constantly receive rainfall less than 250mm annually have scanty vegetation, immature soils making the land barren
16. a i ) Chemical weathering is the breakdown/deeny/decomposition insitu of rocks after reaction with other minerals, water or air
- ii) - Grikes and clints
- swallow –holes
  - Dry valleys
  - Dolines
  - urala
  - Polje
  - Gorges
- (b) i) Exfoliation dome
- ii) - In hot climate, where rocks high day temperatures cause the surface of the rocks to expand
- Low night temperatures cause the surface of the rocks to contract
  - The inner parts remain cool as the expansion and contraction only takes place on the rock surface because rocks are poor conductors of heat.
  - As the process is repeated over a long time a curved sheet of the tock/rock shall from the upper part break away from the upper part break away peeling off like onion peels.
  - \*This leaves a round rock mass called an exfoliation dome
17. a) A river system refers to a river and all its tributaries while a river regime is the seasonal fluctuation/variation in the volume of water in a river
- b i) Trellis/ Trellised/ Rectilinear pattern
- b ii) P – Obsequent river                      Q- Secondary consequent river
18. a) - Erratics'
- Boulder train
  - Till
  - Drumlins
  - Eskers
  - Karme
- . b) - Glacier in a low land area comes across a resistant rock
- As the glacier passes over the resultant rock it erodes its upstream side by abrasion smoothening it
  - The downstream side is eroded by abrasion giving it a rugged nature
  - When the ice retreats a rock outcrop with a gentle smooth upstream side and a rugged steep downstream side is exposed called a roche moutonee
19. a) i) U – Zone of permanent saturation /phreatic zone  
V- Zone of intermittent /seasonal saturation
- ii) W - Spring /river source

## Underground water

- An impermeable rock layer sandwiching an aquifer leads to accumulation of underground water

20. a i) -Deflation  
-Abrasion  
ii) – Suspension -fine particles are lifted, cleared off the ground  
saltation -larger fragments of sand particles are lifted from the ground by eddy action  
-The sand particles are moved in a series of hops/jumps within the wind current  
surface creep/traction  
-The heavy materials /small stones/pebbles are tracked along the ground.  
-these materials are rolled for short distance in a process called surface creep
- b i) -zeugen are formed in desert areas where alternation horizontal layers of hard and soft rock occur, -the top layer of hard rock is jointed/has cracks√  
-wind abrasion opens up the joints deepening and widening them to reach the soft layer of rocks√  
-deflation blows away the loose broken materials√  
-furrows formed and gradually widen as abrasion continuous in to the soft rocks√  
-the hard rock form ridges separating furrows√  
-this process creates a ridge and furrows landscape called Zeugen  
ii) -an outcrop rock eg eroded by wind from all sides  
-the rock has alternating horizontal hard and soft rocks  
-hard layers s eroded at a lower rate while soft layer is eroded faster  
-continual erosion through abrasion make hard layer left outstanding  
-near the ground more erosion narrow the base  
-the protruding layer are the bands f resistance rock while the hallows are the areas where the soft layer were positioned
- c i) Hamada  
c ii) loss region have very fertile alluvial soils which are used for agriculture√√  
-desert features such as rock pedestals yardages and sand dunes are tourist attraction√√  
-salty fats are economically used for salt production especially in north Africa√√  
-extensive and bare desert are used as testing grounds for car and jets engines√√  
-desert landscape provides good site for testing military weapons e.g. nuclear bombs
21. a) a lake is a large mass of water in a depressions  
b i) -crater lakes  
-lava dammed lakes  
b ii) -lake Victoria modify the climate of the lake region due to convection rainfall  
- Lake Victoria brings cooling effect on the surrounding area due to Lake Breeze  
-convictional rainfall experienced around the lake is occasionally accompanied by thunderstorms  
-land breeze and sea breeze are due to low and high pressure system√  
c i) -some lakes lacks outlets  
-rock over which lake water is in contact may contain mineral salts  
-some water river to pour into them  
-surface run-off and rivers may dissolve a lot of salt from rocks on while they flow  
-excessive exploration in areas where temperature are high  
c ii) - Naivasha  
- Baringo  
- Turkana



- . d) -some lakes provide water for both domestics and industrial uses✓✓
- some lakes forms tourist attraction site and thus earning the country foreign exchange✓✓
- some lakes provide building materials eg sand✓✓
- some lakes provide water for irrigation hence enhancing agriculture✓✓
- some lakes provide transport routes✓✓
- some lakes are sources of minerals eg magadi
- some lakes provide water for the generation of H.E.P✓✓
- some lakes are sources of fish (food) which is a source of protein for man

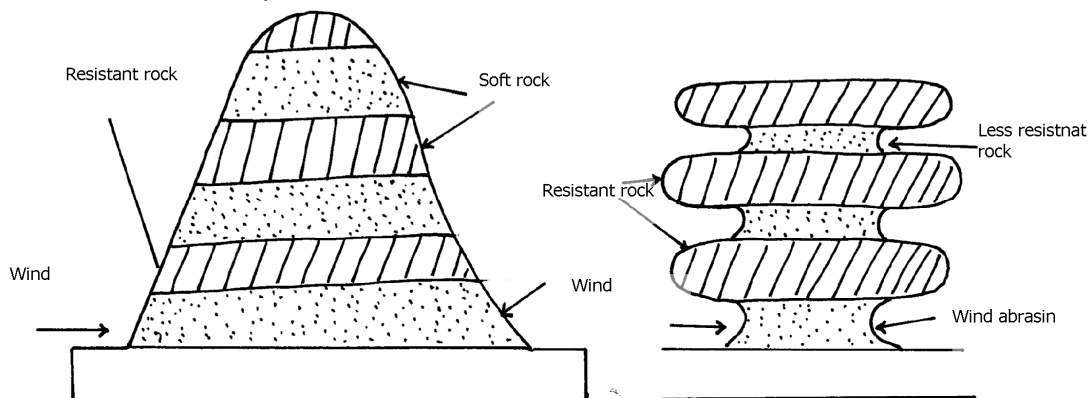
22. a) - spring tides  
 - neap tides  
 - Perigean tides  
 - Apogean tides

b) Ocean is a large extensive body of saline water occupying a basin between continents whereas, sea is a large body of saline water on margins of continents

23. a i) -acidity is the state of land being deficient in moisture leading to scanty vegetation which desertification is the slow but steady encroachment of desert like conditions into formerly productive land

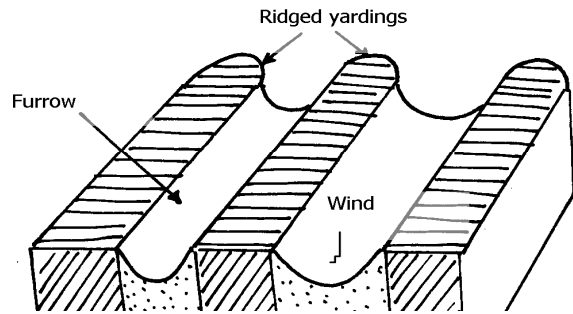
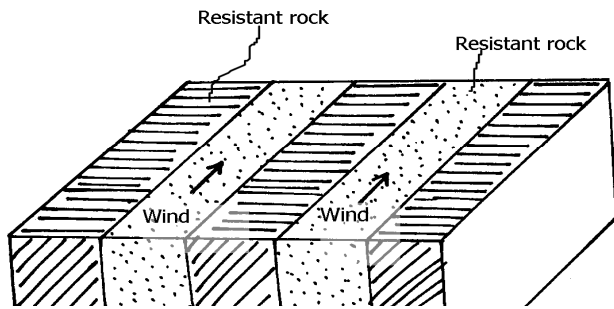
- ii) -abrasion-winds uses the transported materials as tools to grind/scrap the rock surfaces  
 -deflation-wind blows away unconsolidated materials by rolling and lifting them up the air.  
 -attrition-the materials carries by the wind rub against each other, breaking and becoming smaller

- b i) -a rock pillar of with differing degree of hardness lies in the path of moving wind  
 -the rock is acted by abrasion and weathering.  
 -the soft layer is worn out more rapidly than the resistant ones  
 -an irregular mass of rock with protruding layers is formed  
 -the base of the rock pillar is thinner because wind abrasion is more intense at lower level.



- ii) -Massive rocks consisting of alternating layers of hard and soft rocks lie vertically to each other.

- these layers lie parallel to the direction of prevailing winds
- wind abrasion acts directly on the soft rocks
- wind deflation removes the worn-out parties
- large furrows between the hard layers and formed
- The hard layers are left standing as small ridges known as yardages

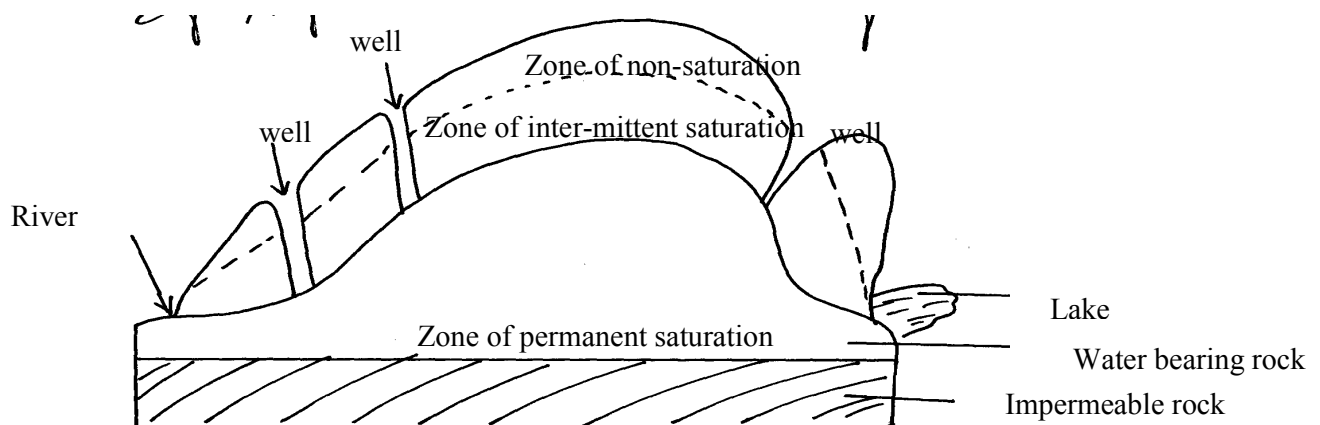


- . c)
  - features like dunes, yardages are tourist attractions
  - extensive and bare desert surfaces are used as testing grounds for military weapons
  - salty flats are used for salt production
  - the loess soils are fertile alumina deposits used for agriculture
  - the loess begins of china have caved dwellings in the rocks which warmer during winter
  
- 24.
  - a)
    - a difference in the resistance of the rock into which the river cuts
    - a river may descend over a sharp edge of a plateau
    - a river may descent over s fault scarp
    - a river descends a cliff into the sea.
    - a river descends a lava barrier
    - a river descends a hanging valley into a flaccid trough
  - b i)
    - at the mature /old stage of a river, The river channel is wider and shallow
    - the river flows sluggishly at low velocity due to due gradient.
    - heavy load is deposited on the river bed
    - the alluvial deposit grow into island/shoals-the river is blocked and sub-divided into small channels called distributaries
    - the water joins again later.
    - the several channels intertwining each other forms river braids
    - the small islands in between them are called aits /eyots /isles
  - ii)
    - knick points
    - river terraces
    - incised meanders
    - abandoned meanders/meanders score
    - rejuvenation gorges
  - . c)
    - two rivers adjacent to each other share a common divide
    - one river is more powerful than the other due to high volume of water from a pirate river.
    - the pirate river erodes vertically and laterally faster than the weaker river.
    - the valley of the pirate river becomes deeper and wider so as the river flows at a lower level than the weaker river.
    - the stronger river extends its valley backwards by head ward erosion
    - eventually the pirate river joins the valley of the weaker river.
    - the head wards of the weaker river are diverted into the stronger river hence a river capture occurs
  - d)
    - has underground drainage
    - rivers from its surrounding have fresh water which dilutes the salts
  
- 25.
  - Due to pressure changes/dynamic metamorphism.
  - Due to intense heat/thermal metamorphism.
  - Due to a combination of heat and pressure/thermal-dynamic metamorphism
  
- 26.
  - a i)
    - Deflation.
    - Abrasion.

- Attrition
  - ii) - Suspension. The fine dust and particles are lifted off the ground. Eventually they are blown away by wind currents.
  - Saltation: Large fragments / sand particles are lifted from the ground by eddy currents. They are moved in a series of hops/jumps within the wind currents. The particles are moved along the ground surface through leaping or bouncing.
  - Surface creep/Traction: The large materials / small stones/pebbles are dragged along the ground by wind currents. These materials are rolled along to desert due to their weight
  - b i) - A pre existing depression formed through faulting or otherwise is exposed to wind erosion.
    - Wind eddies remove unconsolidated materials through deflation.
    - As deflation continues, the depression is deepened and enlarged.
    - The process of deflation is aided by weathering and abrasion.
    - With continued deflation, the level of the water table is reached.
    - Water oozes out of the ground and collects into the depression to form an oasis.
  - b ii) - They are formed in desert areas where alternative horizontal layers of hard rock & soft rocks occur.
    - The top layer of hard rock is jointed / has cracks weathering opens up the joints.
    - Wind abrasion erodes the joints deepening and widening them to reach the soft layer of rocks.
    - Deflation blows away the loose broken materials.
    - Furrows are formed and gradually widens as abrasion continues into the soft rock.
    - The hard/resistant rock forms ridges separating the furrows
  - c) - The loess regions have very fertile soils which are used for cultivation thus giving food to those living in that region.
    - Desert land forms like rock pedestals, yardangs and sand dunes are tourist attraction by earning foreign exchange in a region.
    - Extensive and bare desert surfaces are used for testing grounds for car and sit engine/they provide good site for testing military weapons.
    - Some deflation hollows provide oases which provide water for nomads
27. a i) - Plastic flowage.
- Basal slip
  - Extrusion flow
- ii) - Step slopes/gradient.
- Summer season/high temperature.
  - Less friction
  - Presence of thick and heavy glacier.
- b) - Ice -eroded plains
- Depression.
  - Roche moutonnee
  - Crag and tail
- c i) - Large ice sheets halt their movements on gently sloping low lands. They melt at the terminus (snow line)
- The melt water from the surface and sub glacial parts of ice sheet flow beyond the terminus carrying along fine materials.
  - The melt water deposits fine materials as it flows over gentle land.
  - Pre-existing valleys and depressions are eventually buried by these fluvio glacial deposits.
  - When ice sheet retreats it leaves behind an undulating plain of unconsolidated clay, silt, sand and gravel which is called an outwash plain
- ii) - Glacial erosion widens a valley.
- When glacier reaches its terminus it begins to melt.
  - Ice remains stagnant at the point of melting for several years.

- Moraine is deposited across widened valley to form a ridge of terminal moraine.
  - Glacier begins to retreat towards snow field as it melts.
  - The melt water accumulates behind the ridge of terminal moraine to form a moraine dammed lake.
- d) - The warm glaciated valleys are suitable for livestock farming.
- Glacial upland areas have magnificent features like pyramid peak, an arête which encourage tourism and recreation.
  - Water falls which form at hanging valleys are exploited for generation of hydro electric power.
  - Some U-shaped valley form natural route ways and are suitable for settlement and agriculture.
  - Some fiords form deep, well, sheltered natural harbour and good fishing grounds.
  - Glaciated mountains discourage human settlement, hence growth of forests and lumbering practiced.
28. a) Mechanical weathering is the physical break up of rock material without any alterations in its chemical composition while chemical weathering involves changes in the chemical composition of minerals making up the rock. It's the actual decay or decomposition of rocks.
- b) ) - Climate.
- Topography
  - Nature of the rocks.
  - Plants and animals.
  - Time factor.
29. a)- A spring is a point or a place where underground water flows out naturally onto the land. While a well is a dug in the ground, often with the purpose of getting water

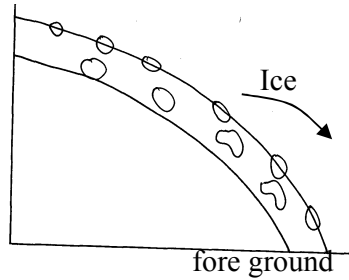
- b)- Zone of non-saturation– lies nearest to the surface. Water passes through this zone as it makes it's way downwards.
- Zone of intermittent saturation – contains water only in wet seasons or after heavy rain.
  - Zone of permanent saturation – contains water both wet and dry seasons.



- c) - The aquifer must be sandwiched between impermeable rocks so that it can retain water.
- Aquifer must outcrop in a region which is a source of water e.g Rain y area/beneath a lake.
  - Aquifer must be dip from a region of water intake and the rock layers must form a broad syncline/basin.
  - Mouth of well must be lower than the intake area. This allows water to be forced to the surface by pressure with no need of pumping it.

- . d) - Acts as sources of rivers.
  - Acts as source of water- wells, springs, boreholes, oases which provide water used in homes and industries.
  - Used for irrigating agricultural land e.g Sahara desert, where dates grow near oases, Taveta- cotton and bananas are grown using water from springs.
  - Settlement – in dry areas, people tend to settle near the springs due to the availability of fresh water.
  - Provision of hot water- water from hot springs may be tapped and pumped into houses through pipes to heat up houses during cold seasons e.g Iceland.
  - Tourist attraction – Hot springs e.g Olkaria, Lake Bogoria etc, valuable mineral salt are deposited and people exploit them for economic gain.
- e i) Is any rugged landscape whose surface rocks are limestone or dolomite and which has been acted on by carbonation and solution by rain and river water to produce features typical of limestone surfaces.
  - e ii) - Rocks should be hard and well jointed.
    - Hot and humid climate.
    - The surface rock and rock beneath should be thick limestone/dolomite/chalk.
    - The water –table in the limestone rocks should be deep below the surface.
  - . e iii) - Tourist attraction
    - Discourage settlement
    - Limestone blocks are used for building houses.
    - Provide a raw material for cement manufacturing
- 30. a i) a. Elbow of capture  
 b. Wind cap  
 c. Misfit/small valley.  
 ii) - Change in the base level.
  - Drop in sea level.
  - Regional or local uplift.
  - Un equal regional subsidence of the land.
  - Increase in the river discharge.
- 31. a i)- Denudation refers to all external land forming process such as weathering, glaciations action of water, wind and wave action which modifies the original landscape. While mass wasting is the down slope movement of weathered materials under influence of gravity  
 ii) - High temperature accompanied by moisture found in the area accelerate chemical reaction thus speeding decaying of rocks.
  - High rainfall and combines with carbon dioxide to form carbonic acid which make some minerals in rock soluble.
  - Secretion of animals in such areas also contribute in dissolving of certain types of rocks.
- . b) - The steeper the slope, the faster the movement.
  - In bare surfaces, Mass movement is faster than in an area with vegetation cover.
  - The heavier the material, the faster the movement.
  - Human activities eg Mining, quarrying, road construction accelerate mass movement.
  - Earth movements eg vulcanicity, folding, faulting accelerate the movement of the materials.
- . c) - It's a slow type of mass wasting that occurs on gently sloping land.
  - Occurs in areas with alternative winter and summer.
  - During summer, melt water results to saturate soil, gravel and weather rock to move downslope as a mass over the still frozen ground on mountain region.

- Melting of snow lubricates the movement.



- di) - Leads to loss of life and destruction of property.
- Destruction of transport and communication lines.
- Accelerate soil erosion on steep slopes.
- Leaves permanent scars on the landscape/derelict.
- It may change the rivers course thus affecting the people and aquatic animals down stream.
- Discourage settlement in areas prone to landslide.

d ii) Rockfall

d iii)- M- cliff

- N-Rock debris (talus)

d iv) - Rainfall

32. a)- Wind is strong/moving at high velocity.

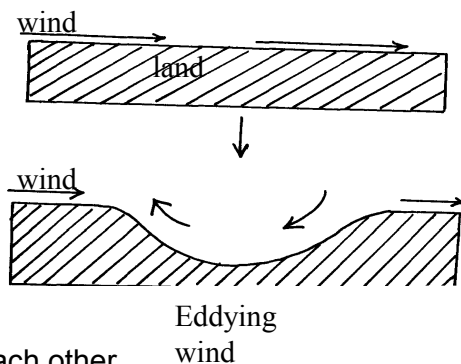
- Absence of intervening obstacles/absence of vegetation cover/flat land.
- Presence of large quantities of loose unconsolidated materials eg sand, gravels.

b)- Attrition – Materials carried by the wind hit against rocks each and in the process are reduced in size.

- Abrasion – Materials/load carried by wind is used to scratch and grind rocks and ground surface.
- Deflation – materials/load carried by wind is lifted and rolled on the ground hence erodes the surface.

c)- Dry unconsolidated materials are removed from the surfaced by wind.

- Coarse materials /heavier are swept away by wind and erodes a pre-existing fault/crack by deflation process.
- Heavier material move along the surface in swirling slops.
- Continued eddying of winds leads to erosion and creation of a hollow called deflation hollow.



d)- They lie parallel toe ach other.

- Rise up to 100 m and about 100 km
- Lie parallel to the direction of prevailing wind.
- Have a sharp knife like crest.
- Separated by flat corridors.
- Occur in groups.

- Where wind blows from the same direction for long, dunes become gentle on the windward side and steep on leeward side.
33.
    - a)- Melting of ice caps and sheets due to global warming and climate change.
      - Uplift of the coastal land due to tectonic forces
    - b) - Warm Ocean waters (20-29)<sup>o</sup>c.
      - Clear and clean water, free from silt/sediments.
      - Salty water.
      - Well oxygenated water.
      - Constant washing by waves, tides and currents.
      - Plentiful supply of microscopic life for food/planktons.
  34.
    - a)- Suspension
      - Surface creep
      - Saltation
    - b) - Availability of sand
      - The strength and direction of wind.
      - The nature of surface.
      - Presence of intervening obstacles on path of wind movement.
      - Presence of vegetation
      - Presence of ground water reaching the surface.
  35. a) - Rainwater
    - Rivers/streams
    - Underground water
    - Melting ice
  35. b)- Size of the depression
    - Total annual rainfall of the catchments area and drainage basin.
    - The number of other sources from which the lake acquired its water
    - Different ways in which the lake water is lost.
    - Rate of sedimentation in the lake.
  36.
    - a i) - A river is a mass of water flowing in a valley
    - ii) A river confluence is the point at which a tributary joins the main river while a river tributary is a smaller river which flows into a bigger one
    - b i) - Water is forced into the cracks on the river banks/ water hits the banks
      - Air in the cracks is compressed
      - Compressed air creates pressure which widens the cracks
      - As the water retreats pressure in the cracks is suddenly released
      - The compression and widening of the cracks repeatedly shatters the rocks
      - The retreating water carries away the loose particles
      - The force of the moving water and the eddying effect sweep away loose materials in the river channel
    - b ii)
      - River water carries sand, gravel and boulders
      - The load is used as a tool for scouring
      - The load is hurled by the river water against the banks/ dragged along the river bed
      - The load chips off the rocks on the bank and the floor (the size of the load determines the rate of erosion)
      - The load being dragged smoothens the river bed
      - Eddy currents rotate rock particles in hollows and widens them into pot holes
    - a) - River capture may occur by head ward extension of the long profile
      - This happens when rivers are sharing a water shed

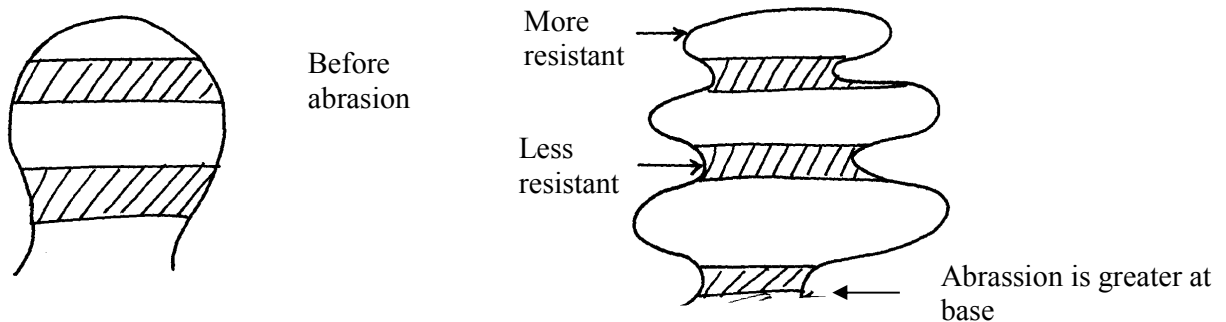
- The actively eroding river gradually cuts back its slope head until it encroaches upon the divide or watershed of the other river
  - Eventually the powerful river reaches the source of the weaker river and diverts its water into its channel
  - River capture may also occur where there are two adjacent rivers
  - One of the rivers has more erosive power than the other
  - The more powerful river erodes both vertically and laterally faster than the weaker one, it flows at a lower level than the other river
  - The more powerful river erodes away the ridge that separates the two by headward erosion
  - Eventually it encroaches into the valley of the weaker river diverting its waters into its valley
- b) - They have a gently sloping gradient/ flat surface
- They have thick alluvial deposits/ silt/ fertile soils
  - They have levees on either side of the river banks, raised river beds
  - Some flood plains have braided channels
  - Some have deferred tributaries
  - Flood plains have river bluffs at their edges
  - They have meanders/ bends
  - Some have deltas/ distributaries
  - Some have ox-bow lakes
38. a) i) Inselbergs, mesas, buttes, gorges, wadis, alluvial fans, bajadas, pediments, pediplans, playas, Salinas
- ii) - An increase in temperatures accompanied by excessive evaporation
- Prolonged period of drought or very low rainfall
  - Existence of cold ocean currents off shore which flow across the path of on shore rain bearing winds
  - Presence of high mountains which block rain-bearing winds and cause a rain shadow effect
  - Remoteness of land in the interior of a continent, far away from the direct influence of the sea
  - Location of an area in a region of anticyclones where winds are descending and diverging
  - Human activities such as deforestation, overgrazing and over drawing of underground water reserves
- iii) - Sandy desert
- Stony desert
  - Rocky desert
- b i) - Strength and speed of the wind: A strong wind can transport more and heavier load than a weak one. The strength of the wind is determined by its speed. The higher the speed the stronger the wind
- Obstacles: Presence of obstacles on the path of the wind block the movement of the wind and reduce its speed through friction. The wind's capacity to transport is reduced by friction with the obstacles
  - Nature of the load: Light particles such as those of dust can be transported in suspension over long distances, while the heavier ones are transported over short distances and along the ground. Heavier pebbles and stones are rolled on the ground if the wind is strong enough
- b. ii) - A pre-existing depression or localized fault is exposed to wind erosion
- Wind eddies remove the unconsolidated materials by
  - Weathering aids in breaking down the exposed rock
  - Wind abrasion excavates the depression by eroding the rock along the weak lines



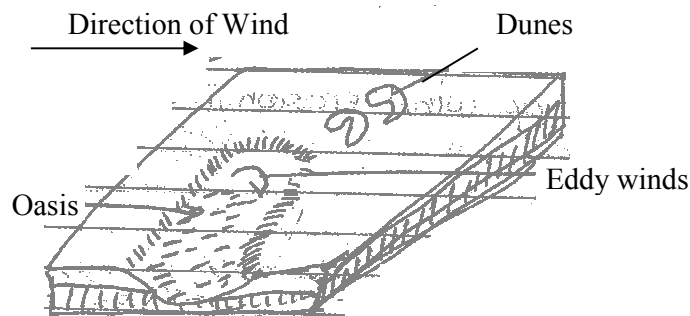
- The depression is deepened and widened as deflation continues to remove the loose materials
  - Erosion continues until the water table is reached
  - Water oozes out of the rock and collects in the depression to form an oasis
39. a) -swash is surge of sea were towards the beach while backwash is water that flow back to the sea from the beach
- b) -fall in sea level  
-rise of land near the sea  
-actual reduction of water
40. a) Diversion of head waters of a river into a system of an adjacent more powerful river
- b) X – Elbow of capture  
Y- Pivate/ powerful river  
Z – misfit stream
41. a) - Accordant drainage system occurs with agreement with the rock structure, nature and slope of land while discordant occurs in disagreement with rock structure and nature
- b) - River must have large load  
- Velocity of river must be low to allow deposition in the river mouth  
- River load must be deposited faster than it can be removed by currents and tides  
- There should be no obstacle on the river course like or swamp to filter materials
42. a i) An area of land with scanty rainfall and scarce vegetation
- ii) - Sandy  
- Stony  
- Bad lands
- . b i) - wind abrasion  
- Wind deflation
- b ii) - Rock of alternating hard and soft attacked by winds  
- Cracks form on the hard surface  
- Wind abrasion erodes joints deepening them  
- Wind deflation blows away material  
- Furrows form as soft rocks are further eroded  
- Hard and more resistant rocks form ridges known as furrows
- c i) - Mesas  
- Buttes  
- Gorges  
- Salinas  
- Bajadas  
- Wadis  
- Playa  
- Pediment  
- Inselbergs
- c ii) - Features of tourist attraction  
- Oasis are sources of water for domestic use  
- Desert land forms are ideal for military training  
- Loess form fertile alluvium soils in wetter lands  
- Seasonal streams can be used to supply water to surroundings  
- Sand dunes and rocky landscape pose problems to transport  
- Loess in China and Europe have dug- in caves which are inhabited in winter to provide

## Warmth

43. a i) - Abrasion✓ - Attrition✓  
 a ii) - the faster the wind blows, the greater the amount of material it can carry✓  
 - fine dust is easily picked up and blown away even by light wind, sand and pebbles are usually along the surface✓  
 - presence of obstacles such as rock bushes on the path of the wind will slow down the wind making it drop✓  
 - Deflation✓
- b i) Alternate hard and soft rocks out crop laid horizontally✓ abrasion is predominant at the base level ✓soft rocks are eroded to produce furrows✓ shaped features is formed called rock pedestal



- b ii) In desert areas wind deflation may create hollows✓. the hollows may be deepened by wind abrasion ✓process to reach the water table.✓ Water oozes out to form oasis✓



- c i) - weathering by solution lakes in limestone areas ✓  
 - deposition by water/ice✓  
 - erosion by wind/ice✓  
 - meteorite falling✓  
 - human activities/damming✓  
 - mass movement✓
- c ii) - lakes are reservoirs acts as sources of rivers✓✓  
 - support biodiversity/support flora and faur✓✓  
 - lakes enable self purification of water/air✓✓  
 - modify local /weather and climate✓✓  
 - regulation of river from overflowing flooding✓✓

- d) - Forms when stalactite continues to grow down wards
  - Stalagmite grows upwards towards the stalactite
  - Eventually the two features meet forming a continuous column called limestone pillar
- d i) - Limestone blocks are used for building houses/ or
  - Limestone is a raw material in cement manufacture which is used in building and construction
  - Limestone landscape is usually rugged thus discouraging settlement
  - Tourist attraction – underground and surface features are conspicuous hence attract tourists

## 14. SOILS

1.
  - a) - Soil profile is the vertical arrangement of various soils in layer showing the sequence of horizons from the surface to the parent materials
    - Soil catena is the sequence of different soils on a slope from the top of the hill to the valley Bottom
  - b) -
    - platy/plate soil structure
    - crumb soil structure
    - prismatic soil structure
    - blocky/block soil structure
    - granular soil structure
    - columnar soil structure
  - c i)
    - Controlling overgrazing
    - Avoiding bush fires
    - Controlling tree cutting
    - Practicing appropriate methods of cultivation e.g. planting cover crops, irrigation, mulching, terracing, contour farming
  - c ii)
    - Leaves & branches reduce the force of rain drops which would otherwise loosen and remove soil particles
    - Rate of infiltration of rain water into the soil is increased by vegetation cover thus reducing surface run off
    - Tree roots which penetrate the soil help to carry surface moisture into the ground. This allows the moisture to gradually percolate deeply
    - Tree roots bind the soil particles together and therefore the soil can not be easily carried away
    - Trees break the force of the wind at the ground and reduces the transportation of soil by wind
2.
  - a i) Soil is the top layer of loose or unconsolidated rock material overlying crustal rocks and on which the plants grow
    - Or - Is an accumulation of rock particles minerals, organic matter, water and air found on the surface of the earth
  - a ii) ) Soil catena : This is the arrangement of soil on a mountain slope from the top of the valley bottom while soil profile is the vertical arrangement of various soils in layer from surface to bed rock
  - b i) - - Climate
    - Seasonal variation of rainfall can cause accumulated concentration of salt in the soil
    - Rainfall provides water which make it possible for rocks to disintegrate to form soil
    - Rainfall also affect the rate at which some soil forming processes can occur (leaching)

- High temperatures increase the rate of weathering by accelerating the raise of bacterial activities which generates some of the organic matter in the soil
  - Wind, ice, water erode, transport and deposit soil particles in other areas leading to the formation of new soils
    - Living organisms
  - Living organisms add organic matter to the soil
  - Areas with thick vegetation lead to the formation of fertile humus laden soils which is quite useful in aeration
  - Bacteria help to decompose organic matter
  - Bacteria fixes nitrogen into root nodules of plants thus enriching the soil
  - Human activities can change the nature of the soil through grazing cultivation, use of fertilizers e.t.c.
- b ii) - Type of parent
- Amount of organic matter
  - Chemical composition i.e. minerals
  - Drainage of the soil or amount of water in the soil

3. a) Relief

Slope influences the type of soil in that on steep slopes the soils that develop are thin, on gentle slopes the soils are deep and fertile. This is because the rates of erosion and weathering are quite rapid on steep slopes than gentle slopes

Drainage

- The amount of moisture in the soil is determined by the slope. Steep slopes have well drained but thin soils
- Hill top has well drained and mature soils
- Valley bottoms develop soils that are poorly drained

Mass wasting and surface run off

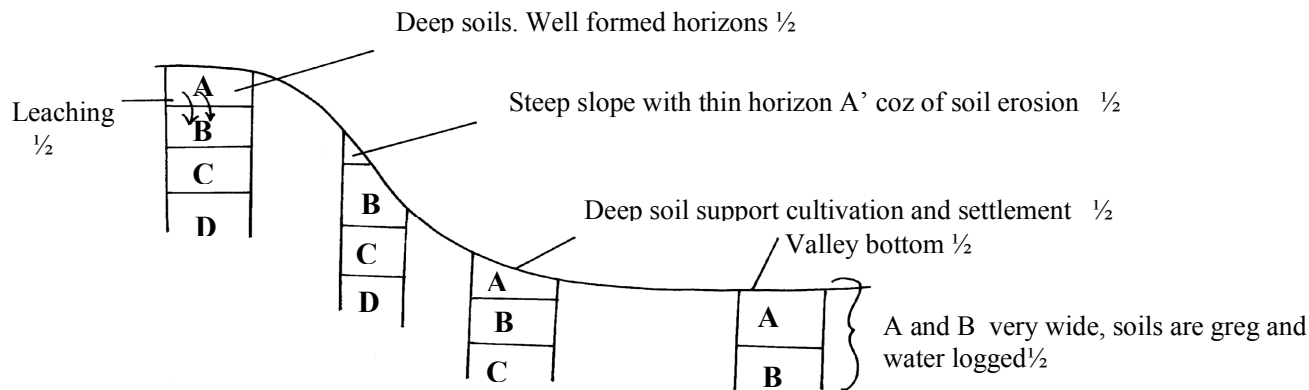
This leads to development of fertile soils at the valley bottom because the top soil removed and deposited there

Leaching

This is the movement or washing of soil minerals from one layer to another which will also affect the type of soil developing

- b i) the vertical arrangement of soil in layers from the top the bedrock

b ii)



- b iii) elluviation  
 illuviation  
 leaching  
 lateralization  
 humification
- calcification  
 gleization  
 ferrilisation

- b iv)- Excess irrigation  
 - Over stocking

4. a i) Soil is a thin layer of natural material on the earth's surface that supports plant and animal life

- ii) - Inorganic matter  
 - Organic matter  
 - Soil water  
 - Soil air  
 - Soil organisms

- . b i) - Parent rock  
 - Topography  
 - Climate  
 - Time

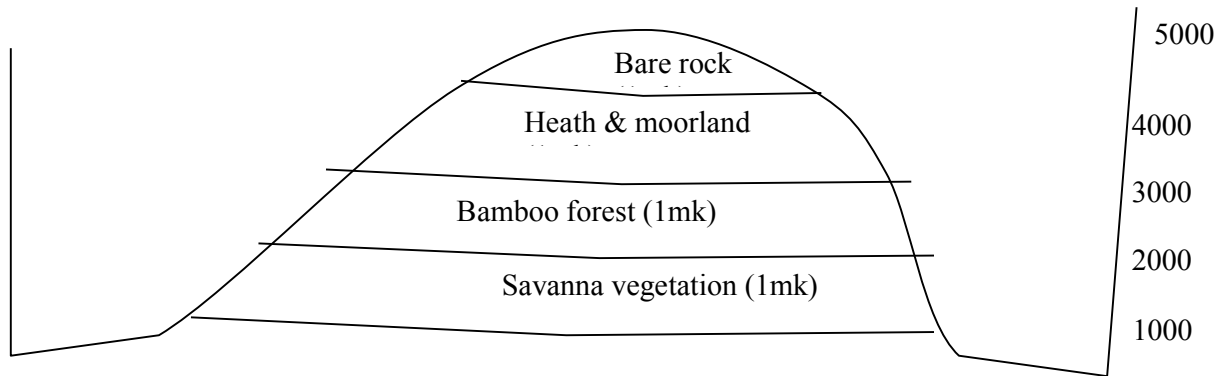
- b ii) - Dense vegetation vital for fertile soils  
 - Micro-organisms like fungi fix nitrogen to the soil  
 - Micro-organisms aerate the soil hence improve porosity  
 - Activities of man i.e. grazing, use of fertilizers, construction

- c i) - Soil air – gases that are available within spaces that separate soil grains  
 - Soil texture- size of individual soil grains

- c ii) - High amount of rainfall promote chemical weathering of acid parent rock materials  
 - Long cold winters and short mild summers in temperate climates reduce bacterial activity  
 - Weathering of parent rock materials releases iron, aluminum, silica and organic acids  
 - Strong acid conditions enhance leaching of bases especially calcium along with iron and aluminum  
 - Silica that is less soluble is left back with the top layers and staining the soil beneath  
 - ash- grey

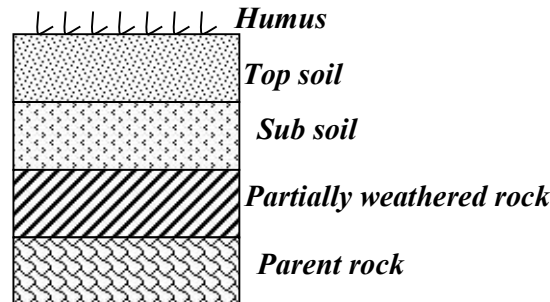
- c iii) - Develop mostly through calufication  
 - Have dark surface horizons  
 - Rich in calcium  
 - Have deep top layers of about 1 meter thick

5 .a)



b i) - Soil catena is the sequence of different soils on a slope

b ii)



a iii) - The soils are light in colour

- They are saline
- They are sandy/ strong
- They are loose in texture
- They are thin
- They have low moisture content

b) - The type of parent rock

- The amount of organic matter/ humus
- The chemical composition/ the degree of iron oxide/ minerals
- The amount of water in the soil/ drainage of soil

c) - During the wet season, mineral salts in the top layer of the soil dissolve rain water

- The dissolved minerals percolate seep downwards from the top soil to the sub soil
- The dissolved minerals are deposited further downwards to the lower layer
- Insoluble minerals such as iron and aluminum are left on the up layers to form a crust of late rite soils

d i) - Burning destroys micro- organisms which are essential for formation of humus which binds the oil particles together

- Burning destroys vegetable matter that protects the soil against erosion
- Burning destroys the nitrogen fixing bacteria making the soil less fertile
- Burning loosens the soil making it susceptible to erosion/ leaching which drains away soluble mineral nutrients

d ii) - This increases the aridity of the soil/ changes the PH of the soil

- The acidity destroys the micro- organisms in the soil/ bacteria/ fungi which could have helped in the formation of humus

d iii) - Monoculture leas to exhaustion of certain minerals from the soil making it infertile leading to its erosion

- Monoculture leads to loosening of soils particulars there by encouraging soil erosion

6. (a) i) - Tundra soils

- Podzols
- Chernozens

- Proure soils
- Chestrut soils
- Red Desert soils
- a ii) - In warm to hot humid regions silica and other bases dissolve in water are leached/percolate when it rains seep downwards from the top soil
  - This leaves iron and aluminium oxides which are insoluble on upper soil horizons.
  - This forms soils on upper soils on the upper soil horizons rich in iron and alluminiumoxides called lateritic soils
- a iii) - They are young/of recent origin
  - They are immature
  - They are insufficiently affected by soil forming processes
  - Characteristics depend on their origin
- b i) - High rainfall can lead to water logging and formation of acidic soils
  - Heavy rainfall also results into surface run off that may lead to sol erosion run-off that may lead to soil erosion
  - Too much rain can alter the soil structure by causing crumb soil to form blocky or columnar structure
  - Heavy rainfall can led to leaching of nutrients from top soil to lower soil horizons depriving the top soil of some nutrients
  - Low rainfall leads to loose soils easily blown away by the wind
  - Excessive drought leads to accumulation of salts in the top soil leading to salination
- b ii) - Soil is baked to make building and construction materials like bricks, tiles/whitewash
  - Soils are used in making pottery/ceramics/sculptures and used by people
  - Some soils contain minerals like apatite which is mined and used to make phosphatic fertilizers
  - Some soils are medicinal
  - Some soils are food to animals and people
- 7 a i) soil catena is the horizontal arrangement of soil on a mountain slope while a soil profile is the vertical arrangement of soil particles in layers or horizons
- a ii) -leaching
  - eluviations
  - uluviation
  - organic accumulation
  - cheluviation
  - precipitation
  - organic sorting
- b i) - seasonal rainfall in temperature and rainfall facilitating the rate of weathering
  - the rate at which organic matter decompose rise in to increase in temperature and rainfall while dry areas are devoid of vegetation covers
- b ii) - micro-organism cause both plants and animals to decay into humus .humus are added o the upper layers of the soil
  - living organisms act on decaying organic matter through humification to form humus. This humus consolidate forming rich soils.
- b iii)- soils formed on steep slopes generally fails to develop or mature because most of the rain water runs of along the surface ,this accelerate erosion which comes away the top layers of soil
  - on rolling and gentle slopes maximum soil development is likely to occur. This is because the rate of soil erosion is matched by the rate of soil formation due to good drainage
- c i) soil degeneration is the decline in the usefulness of soil resulting from either soil mismanagement or environment causes
- c ii) -plant roots which penetrate the soil help to carry surface moisture into the soil
  - vegetation helps to bind soil particles together

- plant cover breaks the force of wind and therefore reduces the transportation of soil particles
- decayed vegetation matter provide humus which binds the soil particles together
- the leaf cover helps to reduce the force of rain drops which would loosen and remove soil particles
- the rate of infiltration of rain water into the soil is increased by vegetation cover thus reducing surface run offs

c iii) -crop rotation

- contour ploughing
- strip cropping
- inter cropping
- bush fallowing
- mixed cropping

8. a i) -this is the sequence or arrangement of different soils down a slope

8. a ii) -the relief/slope/steepness of the land

- the drainage of the area
- the transportation of the soil debris
- the teaching process

8. b) -the production topsoil is lost for ever and this lowers the agricultural production of the land

- the soil left behind after erosion is thin and cannot hold plants firmly in the ground.
- continued loss of soil through erosion destroys vegetation cover turning the area into semi- arid/desert.

-soil erosion causes water reservoirs to be filled up by silt adding extra cost of dredging.

-sediments which are carried into rivers/lakes/oceans may contain industrial effluents which kill aquatic life.

-gullies as a result of erosion expose water onto the surface leads to lowering of the water table

8. c) -develop best in areas which are cool and sufficiently wet

-soluble soil constituents are moved downwards

-it leads to severe absence of bases throughout the soil profile resulting to low PH and an accumulation of hydrogen clays

-there is an accumulation of acid organic matter in horizon A leading to intense teaching of bases and clays

-iron and humus are deposited in horizon B

9. a) - Living organisms.

- Organic matter.

- Soil minerals.

- Soil matter.

- Soil air.

b i) - Climate influence type & rate of weathering.

- High rainfall influence leaching process runoffs resulting from high rainfall increases rate of erosion.

- It influence rate of decomposition

b ii) - Influence soil profile.

- Parent material influence soil structure.

- It influences soil colour.

- It influences mineral composition.

- It influences soil texture.

c i) - Over cultivation exhausts the soil fertility.

- Monoculture exhausts soil minerals.

- Clearance of land for agriculture interrupts nutrient cycling.



- Application of fertilizer changes the P.H.
  - Construct of roads, mining, quarrying destroy soil structure.
  - Application of fertilizers change soil PH
- c ii) A-TOP SOIL  
 B- SUB-SOIL  
 C- PARTLY WEATHERED ROCK  
 D -PARENT ROCK
10. a) - A lake is an accumulation of water in a wide hollow or depression  
 b) - By erosion  
 - By earth movements/ volcanic activity  
 - By deposition  
 - By human activity  
 - By falling meteorites  
 - By mass movements e.g. land slides  
 - Weathering by solution
11. a i) Soil is the upper most surface layer of unconsolidated material which lies on the surface of the earth and in which plants grow/ soil is an accumulation of rock particles or minerals, organic matter, water and air found on the surface of the earth  
 b i) - Seasonal variation of rainfall can cause accumulation/ concentration of salts in soil  
 - Rainfall provide water which make it possible for rocks to decay/ disintegrate to form soil  
 - Rainfall can affect the rate at which some soil forming processes can occur (leaching)  
 - High temperatures increase the rate of weathering/ accelerate the rate of bacterial activities  
 which generates some of the organic matter in the soil  
 - Water, ice and winds erode, transport and deposit soil particles in other areas leading to the formation of new soils (for example loess)
- b ii) - Valley bottoms/ gentle slope encourage the formation of deep and fertile soils due to deposition/ accumulation of minerals  
 - Steep slopes encourage erosion of the top layer of soil thus slowing down formation of soil/ have thin soils  
 - Flat plains/ flood plains are saturated with water therefore slows down soil forming processes  
 - Slopes influence arrangement/ sequence of soil/ soil catena  
 - Some slopes are more exposed to the sun/ rain which influence weathering of parent rocks/ soil formation (aspect)
- c i) - Humus helps to improve soil porosity by aerating the soil  
 - It improves the moisture – retention capacity of the soil  
 - Humus provides essential minerals to the soil  
 - It improves the soil texture
- c ii)- They are thin and shallow  
 - They are sandy or stony  
 - They lack humus or have low organic matter content  
 - They are generally saline  
 - They are coarse- textured and quite porous  
 - They are alkaline because of high content  
 - They have low moisture content
- d i) - This occurs on gentle slopes which are bare  
 - When heavy rain falls, water spreads over a large area  
 - As water moves, it removes the top layer of soil evenly over the area
- d ii) - It occurs on steep slopes  
 - Rain water cuts deep grooves/ channels/ rills on the slopes

- The channels are widened and deepened to form gullies, through which soils are carried away
- . d iii) - Soils are sources of valuable minerals
  - Soils are used raw materials for pottery/ ceramics/ tiles/ bricks
  - Soils are used for agriculture
  - Some soils are mixed with herbs and sold for medicinal purposes e.g. clay/ sold directly for food
- 12. a) - It is a careful management/protection of soil against erosion and exhaustion
  - . b) - Ploughing along the contour
  - Controls grazing
  - Stripping cropping

## 15. AGRICULTURE

- 1 . a i) Land reclamation is a process by which unproductive land is converted to productive land and used for crop or animal farming. Rehabilitation is the restoration of land that has been destroyed through human activities to its former usefulness/productivity
  - ii) - Bush fallowing
    - Mulching
    - Planting trees
    - Filling the pits/gulleys
    - Planting cover crops
  - b i) - To occupy detainee labour from Mwea detainee Camp
    - To utilize the black cotton soils in growing rice
    - To increase agricultural production
    - To settle and create employment for former detainees
  - ii) - Diseases e.g. Bilharzia and malaria caused by water snails and mosquitoes, weaken and even kill the farmers hence affecting productivity
    - Stagnant water is the breeding grounds for water snails and mosquitoes
    - Fluctuation of world prices due to competition affects agricultural production
    - Poor payments for farmers produce that kill their morale
    - Monoculture practice has led to soil exhaustion resulting to use of fertilizer that increases cost of production
    - Mismanagement of irrigation bodies leading to losses of farmers killing their morale
2. a) - Construction of productive dykes/walls to enclose area to be reclaimed
  - Construction of ring canals to carry water from the reclaimed area into the sea
  - Installation of pumping stations to pump water from the enclosed area
  - Water is pumped out of the area enclosed by the dyke
  - Reeds are sown to get excess water and prevent growth of weeds
  - Drainage ditches were cut in the land and drainage pipes laid
  - More pumping stations were put up in order to drain excess water
  - Soil treated with chemical to lower salinity
  - Drained land was flushed with fresh water to remove salts from the soil
  - Pumping out of the water and crops planted or grown
- b) - Improves distribution of fresh water for domestic use
  - Control of floods to the south west
  - Controlled seas invasion inland
  - Improved accessibility through development of roads and railways
  - Improved tourism in the area

3.
  - a i) - Trans Nzoia
    - Nakuru
    - Uasin Gishu
  - ii) - Land is ploughed manually/mechanically
    - Sowing of seeds are done at the onset of rains
    - Two seeds are sown in holes of 2-5cm in rows of 1m apart
    - Application of fertilizers or manure is done during planting
    - Weeding and thinning is done to remove weak seedlings
    - Top dressing /nitrogenous fertilizers is applied after weeding when the crop is 30-45cm high
    - The crop is ready for harvesting in 4-8months depending on variety of seeds and altitude
    - Harvesting is done manually
  - b) - Maize is a staple food
    - Maize stalk serve as cattle feed
    - Maize is a raw material for industries
    - Stalks, leaves and cobs are important source of organic manure
    - Maize cobs and stalks are used as fuel in varied areas
    - Provide employment /income
    - Saving foreign exchange
  
4.
  - Unfavourable weather conditions/ prolonged drought lead to destruction of crops hence low yields/income
  - Pests and diseases e.g. stalk rot, corn ear worm, silk worm, birds e.t.c. which attack crop reducing yields
  - Poor/low prices
  - High cost of farm inputs reduce farmers profits
  - Poor marketing strategy leading to low prices
  - Monoculture leading to soil exhaustion
  - Poor storage facilities
  
5. a) - Friesian
  - Jersey
  - Guernsey
  - Alderney
  - Ayrshire
  - Sahiwal
 b) - Low temperatures ideal for exotic breeds
  - Fertile soils, which support quality pasture
  - Reliable and constant water supply for the animals
  - A high population, which provides ready market for dairy produce
  - Has humid conditions suitable for the growth of pastures
  
6. a) - French beans
  - Cabbages/kales
  - Celery
  - Spinach
  - Pawpaw
  - Mangoes
  - Avocadoes
  - Passion fruits
  - Carnations
  - Gladioli
  - Roses
  - orchids

- b) - Netherlands has a higher urban population than Kenya.
  - There is high demand for both local and foreign horticultural products in Netherlands than Kenya
  - Farmers in Netherlands have more access to the capital needed for horticultural farming than in Kenya.
  - There is more advanced and appropriate technology in Netherlands which has enhanced horticultural farming than in Kenya.
  - Netherlands unlike Kenya has a highly skilled labour for production and handling of agricultural products.
  - There is more advanced horticultural farming related to research in the Netherlands than in Kenya.
  - Netherlands unlike Kenya has well organized marketing procedures/co-operatives/auction markets which are conducive for horticultural farming
  
- 7.
  - a) - Vegetables/tomatoes/onions/carrots
  - Fruits/oranges/ pineapples/ plums/ mangoes/ flowers/roses
  - b) - Horticultural crops are highly perishable this necessitating faster means of transport
  - Same are light in weight which makes it easy /suitable for air export
  - There is high demand for produce thus this need to supply urgently
  - High market prices are able to pay compensate for the foreign charges
  
- 8.
  - a)(i) It's a traditional way of keeping large number of animals by nomad communities who move from place to place in search for pasture and water.
  - ii) - Frequent livestock raid by neighboring communities or amongst themselves
    - Animals are grazed communally
    - They use natural pasture for grazing in the livestock
    - It is practiced in area with low and unreliable rainfall
    - Their movement is determined by availability of water and pasture
    - Different types of animals are kept
    - Animals are kept for pride
  
- 9.
  - a i) – Jersey
    - Guernsey
    - Aishire
  - ii) - Ghee
    - Cheese
    - Butter
  
  - b i) - Cool climate/ moderate temperatures which are suitable for survival of exotic breeds
    - High rainfall that favours growth of pasture and fodder
    - Deep volcanic soils which favour pasture and fodder growth
  - b ii) - Attack by diseases such as East Coast Fever and pests e.g. ticks may cause death of the animal hence total loss to the farmer
    - Poor roads delay delivery of milk to collecting centers hence losses due to milk getting spoilt
    - High cost of farm inputs discourages dairy farmers
    - Mismanagement of the framers co-operatives discourages farmers due to delayed/ low or non- payment
    - Drought reduces fodder and water for the livestock causing death or low production
    - hence losses to the farmer

c i)

Kenya	Netherlands
1. Done on small scale	Done on large scale
2. Done in Kenya highlands mainly	Done in the whole country
3. Zero grazing and out door grazing on pasture	Only zero grazing on fodder

- c ii) - New K.C.C  
- Brook side

10. a) - Jersey  
- Ayrshire  
- Guernsey  
- Cross breed
- b) - Disease such as rindpest may lead to death of animal  
- Inadequate pasture during the dry season..  
- Failure to collect milk due to glut in production.  
- Delayed payments which discourage the farmers.  
- Poor roads which are inaccessible during rainy season.
11. a) - Gently sloping land  
- Deep, well drained volcanic soils  
- Moderate rainfall/ 500mm – 1270mm p.a  
- Warm conditions/ temperatures of 15C – 20C  
- Warm/ dry/ sunny spell for ripening and harvesting
- b) - Prolonged drought which lower yields  
- Attack by pests (such as dusty brown beetle, quela birds, aphids, cereal weevils and diseases e.g. stem rust, brown leaf rust, glumme blotch  
- Exploitation by middle men  
- High costs of transport due to poor roads  
- Shortage of storage facilities
12. a i) - Rift Valley  
- Central  
- Eastern.
- ii) - Manitoba  
- Alberta  
- Sasketchewan
- b) - 500-12700mm RF/moderate rainfall.  
- Dry sunny spell for ripening/harvesting  
- At least 3 months to temp 15<sup>0</sup>C – 20<sup>0</sup>c for maturation or growing of wheat.  
- Volcanic soils to sustain production.  
- Gentle /fairly level/undulating land enables mechanization to take place.  
- Deep /fertile/well drained soils for production of wheat.
- c) - Farmers in Canada are more mechanized while those of Kenya are less mechanized.
- Canada has more capital than Kenya which experiences financial problems.  
- Farmers in Canada are more skilled/have a long history of wheat production than in Kenya which is still developing.  
- There is advanced research in Canada providing yielding seeds/better farm inputs/control of pests & diseases/overcome limitation of whether than in Kenya where research is poorly done.  
- Farmers in Canada has more extensive tracts of land which are suitable for wheat growing than those in Kenya which are small in acreage
- d) - Canada exports wheat hence earns foreign exchange. Which is invested in other

sectors of the economy.

- Wheat farming is a source of employment any Canadians who earn income raising their living standards.
  - Industrialization as many industries that deal in wheat products have been established. Leading to economic diversification.
  - The wheat farmers earn income through the sale of wheat raising their standards of living. Canada is self sufficient in food as wheat is the main cereal food consumed
13. a) - Narok
- Uasin Gishu
  - Nakuru
  - Parts of Baringo
  - Trans mara
  - Nyandarua
  - Trans Nzoia
  - Keiyo
  - Laikipia
- b) - Gentle slope to allow mechanization
- Altitude between 1500-2900m to reduce cases of diseases outbreak
  - Moderate rainfall between 500mm to 1,270mm to supply moisture for growth
  - Warm temperature between 15°C to 20°C to allow production
  - Warm dry sunny spell which enhances ripening of wheat and harvesting
- c i) - Wheat is ground into tiny particles. This is done in flour mills
- Tiny particles are sifted out as flour
  - The yellow flour is bleached
  - Bleaching gives white colour to wheat flour
- c ii) - Wheat is sold on local markets
- Procedures sell wheat or millers e.g. Unga limited
- d i) - Inadequate capital limiting expansion of farms and level of mechanization
- Pests like dirty brown beetle, aphids, quelea birds damage wheat causing low yield
  - Diseases like stem rust, leaf rust, glume blotch lead to low crop yields
  - Heavy storm/rainfall cause flattening of wheat causing rotting of wheat
  - Price fluctuation lowering productivity /profit
  - Inadequate storage facilities causing wastage
- (ii) Canada has more extensive tracks of land suitable for wheat growing while in Kenya farms are relatively small.
- Canada has a higher level of mechanization while in Kenya the level is relatively low/machines are slowed
  - Farmers in Canada are more experienced due to longer history of wheat production while in Kenya the level of advancement of techniques is low.
  - Advanced scientific research in Canada enables the production of higher yielding seeds than in Kenya where the level of research is low.
  - Wheat farmers in Canada specialize in wheat production while in Kenya they practice mixed farming (any 2x1=2mks)
14. a) - High temperature between 20°C to 27°C.
- Dry sunny conditions
  - High rainfall ranging 1200-1500mm
  - Deep fertile soils
  - Well drained soils
  - Gentle sloping areas to allow mechanization
- b) - Land use conflict/competition from cash crops
- High cost of inputs which was limited mechanization

- Impassible /muddy roads during rainy season
  - High rise of cattle diseases like East Coast fever
  - abrupt and extensive drought lowers production
  - Mismanagement of co-operatives resulting in delayed payments killing the moral of farmers
15. a i) -Nigeria  
 - Coted'ivoire  
 -Cameroon
- ii) - heavy rainfall-1270mm-1500mm per year  
 -high temperature-between 21°C and 26°C throughout the year  
 -high relative humidity –over 75%throughout the year  
 -deep fertile and well drained soils  
 -Protection from sunshine and wind by banana plants and other shady trees  
 -low altitude below 700m above sea level
- b)-The pods are harvested using long sharp knives, collected and pulled at a central place  
 -The pods are then split open with a sharp knife and beans are scooped out by hand  
 -The beans are put in heaps on mats, covered with banana leaves and are allowed to ferment for 5 to 6 days during which the juicy pulps drain away  
 -The fermented beans are washed and cleaned spread on tables covered with mat to dry in the hot sun  
 -The beans are turned frequently as they dry and slowly they turn brown  
 -The dry beans are put in sacks and sent to the buying centers. There the dry beans are weighted and graded ready for export.
- c) - Pest like capsid bug mealy bug destroy the crop  
 - The swollen shoot disease attacked the tree shoots and the black pod disease affects the pods reducing the yields  
 - The strong harmattan winds break the branches and cause premature ripening of the pods  
 - Fluctuation of prices in the world market discourage the farmers  
 - Poor transportation facilities make it difficult for the farmer to deliver the crop in time  
 - Labour is sometimes in short supply, leading to delay in harvesting
16. (a) i) horticulture is the cultivation of vegetables, fruits and flowers for commercial purpose  
 ii)- there is higher local demand for horticultural crops in the Netherlands than Kenya  
 - The Netherlands has long history of horticultural crop production and hence has established foreign markets than Kenya  
 - Netherlands farmers are well organized making it easy to access loans whereas few Kenyans access loans  
 - Netherlands has advanced technology while Kenya has low –level advancement of technology  
 - Netherlands has well development transport network while in Kenya the transport network is poor  
 - Netherlands has highly skilled labour for production and handling of horticulture whereas -- Kenya has a shortage of skilled labour in this field  
 - In Netherlands there is advanced research in the industry while in Kenya research is less advanced  
 - Netherlands is centrally situated in Europe which gives the country an advantages of Europe market
- iii) - the plants do not suffer the effects of excessive rainfall, hailstone and strong winds  
 - The plants will not be affected by drought because they are constantly watered  
 - The spread of pests and diseases is easily controlled  
 - it is easier to control the amount of moisture that the flower require  
 - uniform and constant climatic conditions for the plants are created  
 - the flowers are grown throughout the year

17. - Temperature ranges from 15degrees c to 20 degrees c(moderate temperature)  
 - Warm dry sunny spell for ripening  
 - Rainfall between 305mm and 1015mm  
 - Volcanic, well drained soils  
 - Gently sloping/fairly level land
18. a) - High rainfall which is well distributed throughout the year ensure abundant supply of water for the animals and pasture.  
 - Fertile volcanic soil ensure high quality nutritious cover of grass.  
 - Cool condition/temperature averaging 18<sup>0</sup>c which is ideal for the survival of exotic breeds/slow breeding of pests & disease.  
 b i) Dairy farming in Kenya is mainly pasture dependant while in Denmark it is mostly dependant on fodder  
 ii) In Kenya, most dairy products are consumed locally while dairy products in Denmark are mostly exported to foreign markets
19. a) - Aberdeen Angus.  
 - Charolais  
 - Shorthorn  
 - Santa gertridis  
 - Hereford  
 - Red Angus  
 - Galloway  
 b) -Extensive rolling grassland which allows the cattle to graze freely.  
 - Fertile soils of the Andes Mountain which give rise to healthy natural grass for feeding the animals.  
 - Moderate temperatures of about 24<sup>0</sup>c during summer and 10<sup>0</sup>c during winter which ensures continuous growth of grass for feeding the animals.  
 - Moderate rainfall of about 1000mm which ensures growth of nutritious natural grass pasture/pampas.  
 - Adequate water for the animals.
20. a i) ) X- Alberta  
 Y -Saskatchewan  
 Z- Manitoba  
 ii) - Warm summers with average temperatures of about 15<sup>0</sup>c  
 - Sunny late summers for ripening of wheat.  
 - Extensive undulating and uninhabited low lands.  
 - Rich dark – brown chernozen soils rich in potassium and phosphates/less acid soils.  
 b) - Central province.  
 - Rift valley province.  
 - Eastern province.
21. a) Horticulture is the growing of fruits, flowers and vegetables for export market while market gardening is the growing of fruits and vegetables for local market (nearest urban centre)  
 b) - Hot and wet climate for growth of tropical crops and cool and wet conditions for temperate crops  
 - Fertile soils of volcanic origin  
 - High demand for the products both locally and internationally  
 - Investment by large companies providing the capital needed for horticulture production



- Availability of technical and financial assistance from friendly countries
  - Well organized marketing system
22. a)- It refers to the extensive grazing on natural pasture involving constant or seasonal migration of people and their livestock
- b) - Pastoralists move from place to place in search of water and pasture
- Land is grazed communally, though animals may be owned by individuals
  - A large number of animals is kept resulting in overgrazing and serious incidents of soil erosion
  - There is controlled cross- breeding of animal within each herd
  - The animals are generally of poor quality due to diseases and low quality feeds
  - Animals are considered as a source of pride and not income
  - Cattle are kept as a sign of wealth, paying pride price and slaughter during cultural festival
  - Different animals are kept i.e. cattle, sheep. Donkey e.t.c.
23. a) - Improved veterinary services
- Increase milk prices
    - Good performance of co-operatives
    - Government effort through the ministry of livestock development
- b) - Breeds kept are similar
- Use of co-operatives
  - Artificial insemination is used
  - Open and zero grazing is done
- c) - Creation of employment
- Earns Kenya foreign exchange
  - Self- sufficiency in milk production
24. a i) Total tones = 100800  
 1 5cm rep 100,800 tonnes.  
 Flowers :  $\frac{42800 \times 15}{100,800} = 6.324 \text{ cm} = 6.3 \text{ cm}$   
 Oranges:  $\frac{20600 \times 15}{100,800} = 3.363 \text{ cm} = 3.4 \text{ cm}$   
 Tomatoes:  $\frac{20300 \times 15}{100,800} = 3.02 \text{ cm} = 3.0 \text{ cm}$   
 Carrots:  $\frac{15400 \times 15}{100800} = 2.29 = 2.3 \text{ cm}$

DIVIDED RECTANGLE SHOWING HORTICULTURAL CROPS IN TONES PRODUCED IN KENYA IN THE YEAR 2000

FLOWERS	ORANGES	TOMATOES	CARROTS
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- a) ii)  $42500 - 15400 = 27,100 \text{ tonnes}$
- iii)  $\frac{15400 \times 100}{100800} = 15.828 \% / 15.3\%$
- b i) - They are easy to draw.

- They are easy to read/interpret
  - They give clear visual impression of individual components.
  - They allow easy comparison.
  - They can be used to represent a wide range of data.
- ii) - Moderate rainfall of 800 – 1200 mm
- Suitable for horticultural farming.
  - Cool and wet temperate crops.
  - Hot and wet climate favours the growth of tropical crops.
- c - Pests and diseases such as tomato blight attack the tomatoes and lowers the yields leading to low income for the farmers.
- Most roads are impassable during the rainy season leads to delayed delivery of the horticultural crops to the collecting centre lowering the quality subsequently the profit to the farmers.
  - High costs of farm inputs reduces the farmer profit margins.
  - Prolonged drought/hail storms in some areas destroys the crops leading to heavy losses.
  - Stiff competition from Netherlands and Israel which reduces the international market.
  - Inadequate refrigeration facilities leads to deterioration of the quality of horticultural products and subsequently the profit to the farmers is lowered.
25. a) – Freshian - Aryshire
- Jersey - Guernsey
- b) - Creation of employment
- Establishment of other related industries
  - Milk is a source of protein hence healthy population
  - A source of income to farmers
  - Government collects taxes from sales of dairy products
  - Cow dung is used manure hence increased productivity
  - Dairy products are exported hence earning foreign exchange
26. a) – Tea
- Coffee
  - Horticultural products
- b) - Kenya exports mainly agricultural commodities that fetch less revenue
- Price fluctuations in the world market which make it difficult to plan ahead
  - Competition from cheaper commodities that are imported into the country
  - Inadequate transport and communication facilities
  - Inadequate capital to expand trading activities
  - Fees paid in form of trading license discourage traders
  - Smuggling of goods (cheaper) from neighboring countries
  - Poverty among the people which reduces their purchasing power
27. (a) - Food supply
- Industrial raw materials
  - Draught animals/ beasts of burden
  - Storage of wealth
  - Medium of exchange
- b) - Sinking boreholes/ harvesting rain water
- Cross breeding
  - Discourage overstocking
  - Extension services
  - Credit availability
  - Cattle dips
  - Diversification e.g. bee keeping
  - Sensitization on quality/ selling e.t.c.

28. a) – Operation costs
- Market expenses
  - Price fluctuations
  - Government policy
- b i) - Is a beverage
- Is an industrial raw material for making cocoa butter, chocolates, confectionaries cosmetics, soap and drugs.
  - Cocoa husks are used as fertilizer.
  - Cocoa shell is used as mulch.
  - Cocoa husks may used as fuel.
- ii) - Pests such as the capsid destroy the cocoa tree.
- Diseases such as swollen shoot and black pod destroy the crop.
  - Fluctuation of cocoa prices.
  - Short labour supply.
  - Flooded feeder roads delay collection of the crop.
  - Bush fires destroy the crop.
  - Strong winds e.g the harmattan cause a drying effect.
  - Low cocoa prices
29. a) Horticulture is the growing of fruits, vegetables and flowers for the export market while market gardening is the intensive cultivation of fruits and vegetable mainly for urban markets
- b) -Roses
- Orchids
  - Carnations
  - Gladio
- c) - Inadequate capital to buy the necessary farm input
- Low production of milk from indigenous breeds
  - Low managerial ability of the farmers
  - Poor pasture leading to low quality breeds
  - Inadequate labor supply
  - Competition from imported milk and milk product by unscrupulous businessmen
  - Diseases and pests
  - Delayed payment to the milk producers
  - Poor transport network
  - Prolonged drought
30. a) - Loss in livestock and crops production.
- Low agricultural production.
  - Low agricultural economic growth.
  - Reduced production agricultural land
  - Overcrowding in areas receiving adequate rainfall leading to land degradation.
- b) - Honey from bees is a major source of food as well as medicine.
- It is a major source of income in arid and semi-arid areas of Kenya.
  - It provide alternative and effective use of marginal areas where crops may do well.
  - Bee wax is used in making candle.
  - Bees are not expensive to maintain
31. a) - Traditional diet.
- Land ownership/Inheritance.
  - Religion.
  - Gender roles

- Foreign influence
  - b) - Gentle sloping terrain.
    - Extensive pieces of land with low production.
    - Adequate capital to set up large farms.
    - Availability of skilled labour.
32. a) - High temperature throughout the year (21 – 27°)
- Plenty of sunshine during ripening period.
  - Heavy rainfall well distributed through out the year.
- b) - Cooking fat.
- Soap/both for washing and toilet soap.
  - Cosmetics.
33. a) - Pollution is the contamination of the environment with substances which are harmful or poisonous to human, plants and animal life.
- b) - Land /Soil/Ground pollution.
- Water pollution
  - Noise pollution.
- c) - Temperature ranging between 15°c – 30°c
- Mean annual rainfall which should be between 400 – 1750 mm.
  - Soil should be deep, well drained but with good water – retaining capacity.
  - Altitude of between 1500 – 2200m.
  - Windbreaks essential for protection of tea bushes against damaging wind.
  - Shade.
- d) – Pests and diseases.
- Tea bushes are commonly attacked by different pests and disease.
  - Such pests include black tea thrips, red spider mites, red crecise mite and weevils.
  - Diseases include root rot.
34. a) - Aberdeen Angus
- Hereford .
  - Short horn
  - Sahiwal
- b) - Establishing priority orders by creating awareness among leaders.
- Identifying methods of approach that include retorted inclusives and dept. of Agriculture.
  - Educating farmers on strategies to improve their systems of livestock farming.
  - Investigating the prevailing market situations and make appropriate recommendations.
  - Creating Ranching schemes in arid and semi arid (ASACS) areas to improve livestock farming.
  - Identifying possible financial institutions to farmers such as AFC and banks and advise farmers accordingly.
  - Providing dipping facilities to improve the health of animals.
  - Building dams to improve water in Reserves for the animals.
  - Encouraging farmers to adopt modern methods of breeding beef cattle to improve on quantity.
  - Introducing pedigree British cattle in some suitable districts or cross breeding with indigenous breeds to improve on the quality of the animals
- c-- Unreliable and inadequate rainfall leading to inadequate pastures.
- High temp. in most parts which makes it difficult to raise cattle of good quality.
  - Pastral tribes come for quantity rather than quality, land/herds of poor animals steadily ruin pasture land.
  - Hard ancient rock that underlie Kenya produce poor soils prone to erosion. Natural grass is poor and not good for quality animals.
  - Climate conditions of Kenya encourage spread of nagana

- d i) - Well distributed rainfall throughout the year from growth of good pasture.
  - Subtropical temp. with summer temp. raising above 24<sup>o</sup>c lower winter temp. of about 10<sup>o</sup> c favours growth of grass.
  - Gently sloppy Lorain provide good natural grazing landscape with good pasture.
  - Fertile soils washed from foot/hills of Audes losses that are fertile and encourage growth of pastures.
- d ii) - Provide employment in various section e.g. stockmen ranches.
  - Improved feeder road to enable farmers transport cattle to the urban centres.
  - Earns foreign exchange used in other section of economy (Your exports).
  - By-products like hides used as raw materials to industries thus encouraging industrial growth.

## 16. LAND RECLAMATION AND REHABILITATION

1.
  - a) - Perkerra
    - ahero
    - KAno
    - Bunyala
    - Bura
    - Hola
  - bi) - The black cotton clay soils found in the area suitable for irrigation because they retain water
    - The gentle-sloping land enables water to reach the farm by gravity
    - Presence of rivers Thiba and Nyamidi provides regular and abundant water for irrigation
    - The un-reliable and inadequate rainfall received in the area makes it necessary for irrigation
    - More land is available for future expansion
    - Availability of labour from high population
  - ii) - Stagnant ware encourages its breeding of snails and mosquitoes increasing incidences of Bilharzia and malaria
    - Quelea birds which feed on rice grain lowers drop yield
    - Siltation in canals reduces capacity to hold enough water for irrigation
    - Fluctuating water volumes reduces water for irrigation
    - Poor marketing strategies
    - Delayed payment to farmers lowers their morale
    - Shortage of capital to finance farming activities such as ploughing
  - c) - The scheme produces the bulky of Kenya's rice saving foreign exchange
    - The scheme provides employment and income to thousands of people
    - Roads have been constructed in the area to transport rice form fields to markets
    - Social amenities like schools and hospitals have been provided improving standards of living
    - Floods that used to occur during rainy season have been controlled
    - The scheme has provided land to landless people enabling them to grow food crops
2.
  - a)
    - Irrigation of dry lands.
    - Clearing jungles.
    - Tsetse fly control.
    - Afforestation
  - b)
    - Flooding in the Yala and Nzoia plains has been controlled.
    - Hectares of land has been reclaimed for agricultural and settlement purposes.
    - The project has brought water borne diseases under control.
3.
  - a) i) Land reclamation is bringing back the useless land into more useful while land rehabilitation is bringing the land that has been misused by man into being useful
  - ii) – Basin irrigation
    - Overhead irrigation/ drip
    - Trickle irrigation
    - Canal irrigation

- Shadoof Archimedean screw, sakia water wheel
- iii) – Irrigation ensures a steady and reliable supply even in arid area while rainfall may fail in a given year
  - River water used for irrigation may bring in silt which makes soil fertile and leads to more yields unlike pure rain water
  - Enables cultivation throughout the year maximizing use of land while rainfall could be seasonal
  - Water drawn for irrigation may also be used for other purposes in the farm
- b i) – To settle the landless people
  - The presence of rivers Thiba and Nyamindi
  - Availability of the black cotton soils – good for rice
  - To employ detainees during the days of emergency
  - Unreliable nature of rainfall in the area
- ii) – Availability of reliable water supplies from river Thiba
  - Presence of fertile black cotton soils with high water retaining ability
  - Gently sloping land making it easy to mechanize and cheaply irrigate by gravity flow
  - Presence of high temperatures favouring rice growing
  - The unreliable nature of the rainfall made it necessary to irrigate
  - The soils were impervious thereby reducing the need to build concrete hence lowering costs
- iii) – Disease – malaria & bilharzias
  - A lot of time is spent to tend crops
  - Presence of numerous weeds
  - Mismanagement of the scheme
  - Delayed payment to the farmers
  - Few extension officers
  - Pests i.e. quela birds
  - Siltation in the canals
  - Expensive human labour
- c i) A polder is an area of low – lying reclaimed land enclosed by dykes, which protect the land against high water level that has to be maintained outside the area
- ii) – Construction of ring canals to drain water out
  - Construction of ditches within each polder which leads water to a pumping station
  - Drying of land through planting of trees/ plants
  - Desalination of the soil through chemical, flushing and planting hardy plants
  - Dividing of land into economic units
  - Laying down of good infrastructure
  - Settling of people in villages
  - Spreading of soils to improve fertility
  - Addition of fertilizers
- iii)- Control of floods of the area to the South West
  - Improved control and distribution of the regions fresh water
  - Damming has cut off salination and pollution of inland waters. This has led to the reduction of salinity of soil hence high yields
  - Islands that were isolated are now within easy reach of developed areas
  - The area is a good site for industry and a tourist resort
- . d) - Artificial insemination A.I is more widely used in Denmark than Kenya
  - There is an experience of high quality yields throughout the year
  - In Kenya, there is a practice of mixed farming while there is specialized farming in Denmark
  - Dairy product in Kenya are consumed locally whereas they are for export in Denmark
  - In Denmark it is highly mechanized while in Kenya it is low mechanized
  - In Denmark, it is evenly distributed all over the country than in Kenya where it is concentrated in highlands

- Denmark dairy farming rely on fodder while Kenya depends mainly on grass pasture
  - Denmark has got an advanced technology in preservation of dairy products in Kenya
  - Denmark has got a well managed co-operative societies than Kenya
4. Heavy expenditure by the government in giving them pensions, money that could have been used to improve other sectors of the economy
- Through economically unproductive, they require care and feeding which is expensive
  - Through unproductive economically, they require people to take care of them, hence wasting man power that could be used on productive ventures
5. a i) - Maize
- Beans
  - Tomatoes
  - Vegetables
- ii) - Availability of gently slopping land that allowed irrigation water to move by natural force of Gravity
- Availability of permanent source of water from R. Thiba and Nyamindi which provided water for irrigation throughout the year
  - Existence of black cotton soils (clay) which hold water on the surface longer for use in irrigation fields
  - Sparse population in the region which reduced the cost of resettlement
  - Stagnant irrigation water in the fields serve as breeding grounds for water bone diseases nectars e.g. bilhazia workers and mosquitoes
  - Leaching of the soils due to over irrigation
  - Mono culture which reduces productivity of the soil
  - Interference with the life's of the people and animals who depend on the waters of these lines down stream
- . c) - The scheme has created employment which has improved the living standards of the people
- It has saved foreign exchange through production of rice that could be otherwise imported/ which is invested in other sectors of the economy
  - It has facilitated urbanization e.g. Mwea town which has expanded trade opportunities
  - Has increased productivity by turning less productive land. Hence adding food for consumption and sale to get income
- d i) - Perkerra irrigation scheme
- Yala swamp reclamation/ Bunyala
  - Ahero irrigation scheme
  - Bura
  - Nola
  - West Kano
  -
- ii) - Is a source of carbohydrates
- Rice foliage is used as fodder
  - It is a source of income through sale of rice
6. a) Land reclamation is the process by which wasteland is converted into farmland for growing crops and keeping animals.
- Land rehabilitation is a process of restoring land to its former productivity.
- . b) - Irrigation
- Drainage of swamps.
  - Tsetse fly control and clearing of jungles
  - Afforestation
- c) - Land reclamation by drawing rivers & marshlands
- Upgrading sandy and barren areas through. Use of fertile soil or application of fertilizer
- d) - To control the seasonal flood of river peskerra.

- To utilize excess water of river pekerra that used to go to waste.
  - Presence of flat and gently sloping terrain which enables flow water by gravity.
  - Fertile loamy soil.
  - Dry condition of the area.
7. (a) - Improvement of standard of living.
- Settlement of the landless.
  - Saving on foreign exchange.
  - Rehabilitation and development of the areas.
  - Control of environmental hazards.
  - Creation of employment.
  - Growth of urban centres.
  - Availability .
- b) - Creating of a large fresh water lake in the middle of the country lake ijsse
- The reclamation polders have attract towns that love improved infrastructure & social amenities.
  - Has shortened the coastline distance by about 32km.
  - The protection of high titles by dykes.
  - Lake ijsse have help in reducing the salt content of the neighbouring regions.
  - The total flooding on the coastlines are has been completely reduced.
  - Reclaimed land is fertile and suitable for liable cultivation producing crops such as wheat.
  - The slayer sea has improved the drainage .
  - Reclaimed areas are used for settlement recreation and industry
8. (a) - Rice
- Onions
  - Green grams
  - Pepper
- b i) - Presence of rivers Thiba and Nyamidi which provide water for irrigation
- Gently sloping land enabled water to reach the farms by force of gravity
  - Extensive land for future expansion of the scheme
  - Fertile soils in the area which were suitable for crop production
  - Sparse population which made it easy and cheap to resettle people
  - Low supply of rainfall received necessitated irrigation
- ii) - To eradicate tsetse flies and hence provide conducive healthy living conditions for man and animals
- To enhance the keeping of quality livestock in the area
  - To provide land for farming
  - To provide land for human settlement
- iii) - Building gabions to check the speed of water
- Agro-forestry
  - Re-afforestation
  - Gazettement of forested areas to discourage human settlement and human activities
9. a i) Is land in the Netherlands that has been reclaimed from the sea and enclosed by dykes.
- ii) - Rye                      - Tomatoes                      - Flowers
- Barley                      -Oat                      - Fodder crops
  - Suagr beet                      - Potatoes                      - Wheat
- b) - Protective dykes/sea walls are constructed enclosing the part of the sea to be reclaimed.
- Rings canals are constructed.
  - Pumping stations are installed to pump out sea water from the area enclosed by the dyke.
  - Water is pumped out of the area enclosed by the dyke
  - Drainage ditches and more pumping stations are made on the land being reclaimed.
  - Drainage pipes are laid below the soil.
  - The area is divided into rectangular portions using inner dykes and ring canal.
  - The drained land is flushed with fresh water to remove salt from the soil.



- Soils are treated with chemicals to remove salinity
  - Pumping water from the polders is a continuous process to prevent water from accumulating in the reclaimed land.
10. a )      Ahero                      Perkerra                      Hola/ bura  
               West kano                      Mitunguu  
               Dana                              katila                      Kibwezi  
               Taveta                              Gezira                      Bunyala
- b) - The area was sparsely populated thus making it easy and cheap to resettle the people  
 - The presence of river Thiba and Nyamindi which would provide water for irrigation  
 - The black cotton soil in the area which was suitable for irrigation because they retain water  
 - The fertile soil was suitable for crop production  
 - The gentle land would allow water to reach the farm through gravity  
 - The unreliable/ inadequate rainfall received in the area made it necessary for irrigation to be practiced
- c ) - People who live in the area were originally nomads but now lead a settled life  
 - Farmers earn income after selling rice and other crops which enables them to improve their standard of living  
 - Tenants have access to credit facilities which they use to improve crop production  
 - The establishment of the scheme has created employment opportunities for the people in the area  
 - Roads linking the scheme to the market centers have been improved
- d) - Stagnant water encourages breeding of snails and mosquitoes which spread bilharzias and malaria respectively  
 - Silting of canals/ weeds in the canals reduce the flow of water into fields. The farmers spend extra time and money dredging the canals  
 - Delayed/ low payment discourage farmers  
 - Diseases and pests e.g. giulea birds attack the crop which lead to low yield of rice  
 - Expensive farm inputs such as fertilizer reduce the framers profit margin  
 - Roads are rendered impassable during rainy seasons hence delaying delivery of rice and other crops to the market
11. a i) -Land reclamation is the process through which unproductive land is made useful for agriculture or settlement where as land rehabilitation is the process of restoring land to its former productive state.
- ii) - Afforestation.  
 - Reafforestation.  
 - Bush fallowing.  
 - Use of grass strip and cover crops.  
 - Mulching.  
 -Constructing bunds (making ridges of soil across a slope)  
 - Manuring.  
 - Constructing of cut-off drains (digging open trenches across slopes.)  
 - Controlling grazing (division of land into paddocks, allowing different sections found to regain pasture.  
 - Construction of drainage trenches (digging trenches to drain off excess water)
- b i) - Is land in Netherlands that has been reclaimed from the sea and enclosed hot dykes.
- ii) - Rye                      - Oat                      - Wheat                      - Barley                      - Potatoes  
       - Sugarcane                      - Flowers                      - Tomatoes                      - Fodder crops
- (c) - Protective dykes /sea walls are constructed enclosing the part of the sea to be reclaimed.  
 - Ring canals are constructed on the interior sides of the dykes.  
 - Pumping stations are installed to pump out sea water from the area enclosed by the dykes.  
 - Reeds are planted to help dry out the soil and prevent weeds from growing.  
 - Drainage ditches and more pumping stations are made on the land being reclaimed.  
 - Drainage pipes are laid below the soil.  
 - The area is divided into portions using inner dykes and ring canals.

- The soils are treated with chemicals to lower salinity.
  - The drained land is flushed with fresh water.
  - Pumping out water from the polder is a continuous process to prevent water from accumulating in the reclaimed land.
- d i) - The presence of River Perkerra which is a tributary of Suguta river in Kerio Valley provide water for irrigation.
- Gently sloping land which permits the flow of water by gravity hence reducing costs of pumping water to the fields.
  - Presences of clay soils rich in mineral nutrients enables variety of crops to be grown.
  - Presence of extensive land which makes large scale cultivation of crops possible.
  - The area is semi-arid hence the need for irrigation farming.
- ii)- Farmers earn incomes which improve their standards of living.
- Irrigation schemes have created settlement for landless people.
  - Many people have been employed in the farms and other sectors within the irrigation schemes such as transport and processing factories.
  - It has facilitated reclamation of unproductive land, thus increasing land for farming. This has led to increase in food production.
  - Some crops grown through irrigation are exported, thus earning foreign exchange. The rice grown in irrigation schemes meets most of the domestic requirements thus saving foreign exchange that would have been used to import it.
  - It has facilitated development of infrastructure in the irrigated areas. Roads have been built to help in the transportation of inputs and commodities.
  - Social amenities such as schools and hospitals have been constructed thus improving the level of literacy and health of the people in the irrigation schemes.
  - Industries that use raw materials produced on the irrigation schemes have been developed.
  - Rice mills have been established on the rice irrigation schemes.
  - Some market centres in the irrigation schemes have grown in size due to increased trading activities e.g. Wanguru in Mwea irrigation and Margat near Perkerra irrigation scheme.
12. (a) i) Land reclamation is the practice by which less useful land is converted into more useful land While Land rehabilitation is the process of recovery/restoration of land which has been misused and destroyed through human activities
- ii) - Bush clearing
- Sterilization of the male fly
  - Use of traps
  - Spraying /use of insecticide
  - Creation of buffer zones
  - Killing or transfer of hosts
- b) (i) – Yala
- Bunyala
  - Kalusi (maragua-Euelyptus)
- ii) - The need to control seasonal floods from river Perkerra
- The presence of river Perkerra as a source of water for irrigation
  - Availability of fertile loaming soils
  - The area is gently sloping
- The dry condition of the area necessitated the use of irrigation
  - The need to occupy the large population of ex-detained in a productive way
- c) - The stagnant water in the plot and lands encourages the breeding of snails and mosquitoes which spread Bilharzias and malaria. this weakens the farmer causing low labour input hence low production
- Mismanagement of the irrigation projects leading to the collapse of several schemes

- Pest and diseases are attack the crops leading to low production(mention of pest here is important i.e. quelea bird)
  - Poor payment for farm produce which discourages the farmers
  - Poor extension services to provide for the badly needed technical advice to farmers leading to low productivity.
  - Shortage of water during dry season reduced the land under cultivation and hence reduced earnings
  - Frequent silting of canals which is expensive to dredge reduces the amount of water required for irrigation
  - Inadequate labour which is largely required in the schemes hence burdening the farmer to hire for planting, weeding and harvesting which reduce the profits obtained.
- . d) - Floods caused by the tides has been completely checked by construction of dams and dykes
- The dams and dykes have completely cut off movement of salty sea water inland
  - There is plenty of fresh water for domestic and industrial use
  - The distance from Missigen to Rotter dam was shortened by 50KM opening up the area for industrialization
  - More recreational opportunities were created by the newly formed lakes becoming a tourist attraction
13. a) - Irrigation
- Control of pests and diseases
  - Afforestation/reforestation
  - Control of floods
  - Control of soil erosion /construction of gabions
- b) - Protective dykes/sea walls are constructed enclosing the part of the sea to be reclaimed
- Ring canals are constructed
  - Pumping stations are installed to pump out sea water from the area enclosed
  - Reeds are sown to both absorb excess salts
  - Soil is treated with chemical to lower salinity
  - The drained land is flushed with fresh water to remove salt from soil
14. a) - Swamps
- Dry lands
  - Eroded lands
  - Pest and disease infested
- b) - Regular and reliable
- Silt increases fertility
  - All year farming
  - Reduces year farming
  - Reduces salinity of soil
  - Dams control floods/ are used for fishing

## 17. FISHING

1. a i) P – Norway Q- Japan
- ii) - The areas have cool waters which have abundant planktons-main food for fish
- The areas have shallow continental shelves which allow light to penetrate for planktons to grow
  - Convergence of warm and cool current results in upwelling of ocean waters bringing mineral for fish and plankton from sea bed to the surface
  - Cool waters encourages thriving of numerous fish species
  - Most of the coasts are indented providing secure bedding grounds for fish
  - The sheltered bays provide suitable sites for building fishing ports
  - The large population in these areas provides ready market

- The rugged landscape limits agriculture thus people turn to alternative economic activity
  - Cool climate provides natural preservation for fish
- 2.
- a) i) R – Trawling
    - S –Basket fishing
  - (b) (i) Basket fishing
    - The basket channel shaped to allow easy entry for fish
    - At the mouth, there is a non-return valve which restricts the outward. The basket
- is
- held in the position with ropes/stones/ sticks downstream
  - The basket is left in that attracted position for sometime then removed for landing of fish
- (ii) Trawling
- A bag – shaped net is attached to the ship trawler
  - The nets mouth is kept open by other boards
  - The upper part is kept a float by corks floats
  - Weights are used to keep the lower parts of the net at the sea bed
  - The trawler drags along the net
  - After sufficient fish is caught the net is hauled to the trawler
- c) - Fishing is restricted to specific reasons to allow for breeding and maturing of fish
- Standardizing size of nets to ensure fingerlings are not caught
  - Licenses are issued to prospective fishermen to control their number and to ensure there is no over-fishing
  - Fish farming is being encouraged to ensure sufficient supply of fish.
  - There is restriction of the disposal of untreated waste into the sea
  - Artificial fertilization is carried out in special hatcheries to sustain the supply of fish/restocking of over fished waters
- 3.
- a) i) It is the rearing of fish in ponds
  - ii) - The government through the fisheries department has set up fish ponds and hatcheries as demonstration farms
    - Establishment of research institutions to investigate aspects of fish farming(breeding) diseases
    - Expansion of markets through intensified campaigns aimed at encouraging more people to eat fish
    - Extension officers have been sent to the field to advise on fish farming techniques
    - The government has encouraged the establishment of co-operatives which give credit facilities to fish farmers
    - Establishment of national food policy which encourages diversification of food aid as source of protein leading to setting up of fish farms
  - b) - Inadequate storage and preservation facilities which cause heavy losses on the landed catch/leading to low catch
    - Occurrence of strong sea waves causing accidental drowning/destruction of fish vessels
    - Poor fishing equipment which confine the fishermen to a few metres of continental shelf leading to low catch
    - Sparse population in the north coast and alternative economic activities in the south coast that lead to small market for fish
    - High prices of fish which discourage many people from eating it regularly
    - Local fishermen face stiff competition from foreign fishermen mainly from Korea and Japan who have adequate and advanced facilities for deep sea fishing
    - Warm Mozambique currents and deep continental shelf which discourage the flourishing of fish
    - Regular coastline /few sheltered bays hence few sites for fish landing and breeding grounds
  - c) i) - North-West Atlantic
    - North-East Atlantic

- North – East pacific
- North –West Pacific
- ii) - Presence of extensive and shallow continental shelf which allow light to penetrate to the sea bed encouraging the growth of planktons used as fish food
- Upwelling of ocean waters caused by convergence of warm Kuroshio and cold Oyashio currents bring minerals for planktons from the sea bed hence attracting fish
- Japan has indented coastline/several bays which provide secure breeding grounds for fish
- Sheltered bays provide suitable site for building ports/landing sites e.g. Hakkodate
- Rugged landscape/mountains with infertile soil in some areas which does not favour agriculture hence make people resort to fishing
- Numerous islands had exposed/provided the fishermen access to marine life
- The area has cool waters which encourage thriving of fish
- 4. a) - A vein is a small crack containing minerals deposited in crystalline form while a cove is a large crack containing minerals in crystalline form ✓
- b) - Waste of agricultural land ✓
- Waste of industrial land ✓
- Ugliness where the land has lost its beauty ✓
- Health and accident hazards ✓
  
- 5. a i) ) - Trawling.                      - Line fishing                      - Use of barriers
- Use of herbs                      - skinning                      - Harpooning
- Use of baskets                      - Use of gills nets                      - Use of hand lanes
- ii) – Cod                      - halibut                      - haddock
- flounder                      - hake                      - herring
- mackerel
- (b) i) - Sheltered inlets and estuaries form ideal sites for fishing villages and ports.
- They also offer ideal site for fish breeding because of calm water and availability of the planktons.
- (ii) - When warm currents meet cold currents the temperature of water is regulated.
- This condition is ideal for the survival of fish.
- Convergence of these currents improve circulation of oxygen and dispersal of nutrients for the fish
  
- (c) (i) Provision of the necessary infrastructure such as transport routes to enable exploitation of fishing grounds located in remote areas.
- This will reduce over exploitation on a few accessible fishing grounds like L. Victoria.
- (ii) Fishing Farming
- The development of fish farms complements the fish being caught from natural waters
- (iii) Restocking of over fished grounds.
- Over fished waters are restocked using finger lings from hatcheries or obtaining them from the overpopulated fishing grounds.
- (iv) International agreements on territorial waters.
- i. Countries have full sovereignty over territorial water extending for 19 km from the coast.
- A further 19 km zone in which the coastal state can take action against those who break the law.
  
- 6. i) – Smoking.                      - Sun drying.
- Salting                      - Use of refrigerator.

(ii) - The fishermen are required to have a licence from the government

This prohibits illegal fishing, over fishing and indiscriminate fishing.

- Inadequate capital.

Most of the fishermen use traditional methods of fishing which greatly reduces their catch.

They lack adequate funds to enable them purchase modern fishing gear and refrigeration equipment.

--Introduction of new species.

- The introduction of new fish species in the lake has affected the breeding of indigenous fish.

- For example Nile Perch was introduced in the lake in 1960s, it now accounts for more than 80% of the fish harvests, after having caused the disappearance of more than 200 endemic fish species and yet it's not a popular species.

- Presence of weeds.

- Fishing in lake Victoria is greatly hampered by the grown of water hyacinth along the shores of the lake.

- The weed chokes the fishing boats, hence the infested areas are avoided by fishermen, yet they contain a lot of fish.

-Accidents

- Accidents affecting fishermen are common on L. Victoria.

- Have canoes and boats capsize in the lake due to the strong winds and storms prevailing in the areas.

- The fishermen loose their fishing gear and equipment, as some of them drone.

- Regional Conflicts.

- There has been boundary conflict between Kenya and Uganda over Migingo Island on L. Victoria.

- This has caused the fishermen to have fear since most of them are molested or attacked by Uganda Security groups.

7. - The continental shelf is narrow

- Poor transport connection to the fisheries

- Local fishermen do not have adequate capital

- The coastline is fairly straight

- the water is too warm for fish breeding/lack of upwelling of water

- There is low demand for fish

- Fishermen lack modern equipment preservation facilities/storage facilities

- Inadequate skills/inadequate research technology

- Competition from developed countries

8. a i) - Seine nets

- Trawler nets

- Gill nets

- Drift nets

ii) - West N. America

- N.E Asia

b) - Over fishing – reduced stocks

- Pollution – killing fishing

- Poor transport network – delay reaching market/ go bad

- Poor market/ fish imports – reduced earnings

- Inadequate capital – poor equipment/ preservation/ marketing

- Fish diseases – death of fish

- Weeds – difficulty to fish

- Boundary conflicts – fighting/ destruction of equipment

c) - Source of income/ employment – reduce unemployment/ improve living standards

- Tourist attraction/ sports/ marine park – forex for developing

- Rich in nutrients – health
  - Development of industry
  - Health/ feed on mosquito- reduce malaria
  - Feeder roads – improve transport
  - Forex – country development
- d) - Sagana
- Kabarau
  - Kibos
  - Homa bay
  - Aruba
  - Haller park/ nature trail
9. a i) -Pelagic
- Dermersal
  - nadromous
- ii)- Presence of numerous foods that form inlets which provide good breeding grounds for fish
- The ruggedness of the immediate land discourage agriculture and livestock farming thus making fishing a good alternative
  - The prevailing warm Atlantic drift makes the area ice – free throughout the year thus fishing is carried out
  - The grounds have large continental shelf which are abundant in plankton
  - The dense population in western Europe provides a ready market for fish
  - The low temperature conditions in high latitudes encourages flourishing of fish
  - The highly developed technology in the region has contributed to the development of fishing
- iii) - Formulation of law against indiscriminate fishing
- Restocking the over fished areas
  - Licensing fishermen and use of standardized nets of permitted mesh sizes
  - Prohibiting disposal of effluents into fisheries
  - Introduction of new species in the existing fisheries
  - Research of fish species their habit and migratory trends
  - Personal should be trained on how to manage fisheries
- 10 a) - Drifting method.
- Seining method.
  - Lining method.
- b) - It is washed by cold ocean current which influence temperature of water favouring the survival of fish.
- It has plenty of planktons than the Eastern coasts.
  - It has sheltered inlets/harbours which favour the thriving of fish and construction of fish harbours.
11. a) - Seining
- Trawling.
  - Line fishing.
- b) - Privacy/sea robbery making fishermen to lose fishing equipment and their catch.
- Water weeds such as hyacinth impede movement of vessels.
  - Storms sometimes cause accidents in the lake.
  - Territorial disputes with other countries such as Uganda.
12. a) - fishing is restricted to specific seasons to allow breeding licenses are issued to prospective fishermen to control their number
- the size of nets introduced in fishing are standardized to ensure young fish are not caught
  - fish farming is encouraged to ensure adequate supply
  - there is restriction/control on water pollution
- b) - large market both local and foreign

- modern fishing equipment is being used in fishing
  - it has a large continental shelves/indirected coastal land
  - low temperature which discourages agriculture hence venturing into the sea as source of income
13. a) - Seining  
- Long lining
- b) - The Coastline is fairly straight/regular/has few indentation  
- The Continental shelf is narrow  
- The water is too warm for the breeding of fish  
- Local fishermen do not have adequate capital/have inadequate preservation facilities  
- Local fishermen face competition from developed fishing countries e.g. Japan  
- There is low demand for fish in the local market  
- Poor transport connections to fisheries resources
14. a) Pelagic fish are the fish that mainly live near the surface or at the shallow depths or lakes and seas, while demersal fish are those which live at or close to the bottom of water bodies
- b) - Over fishing – Some fish species in the fresh water lakes have been over- harvested to the extent that natural replacement has been limited
- Pollution – Some industries release their wastes directly into rivers, lakes and oceans. The wastes are hazardous and make the water bodies inhabitable for fish
  - Inadequate capital – Most fishermen use traditional methods which reduces their catch
  - Inadequate transport – Due to the poor maintained roads the fishermen don't reach the market on time
  - Introduction of new species – This introduction has affected the breeding of the indigenous fish
  - Presence of weeds – Weeds like hyacinth traps the fishing boats hence the areas are avoided

## 18. WILDLIFE AND TOURISM

1. i) P – Sibiloi  
Q - Serengeti  
R - Murchison falls

. a) National park	Game reserve
<ul style="list-style-type: none"> <li>• Its fenced off</li> <li>• Managed by the central government</li> </ul>	<ul style="list-style-type: none"> <li>• There's no fence ground it</li> <li>• Managed by the local authority of the area they are located</li> </ul>

- b) - Establishment of game parks
- Outlawing illegal hunting and trade in game trophies
  - Setting up of wildlife protection agencies
  - Public education campaigns
  - Protecting the endangered species
  - Animal translocation programmes
  - Encouraging the formation of wildlife clubs and societies in institutions
2. a) Game reserves are areas where wildlife is protected but some limited human activity may be allowed while game park are gazetted regions where settlements hunting and cutting of plants is no allowed whatsoever
- b) - poaching by illegal hunters has reduce the population of animals
- pollution caused by industrial and domestic refuse has greatly affected marine life
  - soil erosion due to improper farming methods has led to degradation of wildlife habitat
3. a) Balance of payment is the difference between visible exports and imports and also



invisible exports and inputs in the value of trade taking place between two countries.

- b) - They are perishable.
  - Some are bulky making transportation difficult.
  - Are of low value
  - They are exhaustible/supply may fluctuate negatively depending on season.
  - Inadequate capital/ for expansion since a large capital outlay is needed.
- 4. a) - Remoteness caused by poor means of transport
  - Insecurity in the areas
  - Human wildlife conflict where man kills wildlife
  - Hostile climate e.g. drought which leads to death of wildlife
  - Settlement in the people in places meant for game parks and reserves
- . b) - Negative attitudes towards local tourism limits the number of people who engage in tourism
  - Inadequate local campaigns and advertisement of tourist attractions/ special packages lead to low public awareness
  - Familiarity with the tourist attractions among the local people makes them fail to appreciate their beauty and value
  - Insecurity from poachers in national parks and game reserves scare people away from visiting them
  - The high cost of accommodation in the game lodges discourages local tourism
  - The roads leading to tourist sites are poorly maintained, discouraging people from visiting such sites
- 5. a) - Poaching which has led to decline in the number of some animal species.
  - Encroachment into conserved land by human settlement.
  - Drought in the National Parks and game Reserves which sometimes cause death of wild animals
  - Overgrazing in the National parks and game reserves cause soil erosion.
  - Inadequate capital has made it difficult to adequately conserve wildlife.
  - Over-exploitation of water resources e.g. fish, seaweeds which pose danger of extinction
  - Migratory behaviour of wild animals which makes it difficult to eradicate /control occurrence of pest and diseases.
- b) - Political neutrality which removes any travel restrictions to the country
  - Fluency in many languages that enable easy communication accessible
  - Hospitality of the Swiss that encourage tourists.
  - Trained personnel who provide excellent services.
  - Effective systems which make it easy for transaction to be made

## 19. ENERGY

- 1. a) - Saudi Arabia ✓
  - Iraq ✓
  - Iran ✓
  - Kuwait ✓
  - United Arab Emirates/ Abu Dhabi/ Bahrain/ Bahrain Island ✓
  - Qatar ✓
- b) - Earning foreign exchange ✓
  - Improvement of hospitals and schools ✓
  - Development of manufacturing industries e.g. petrol chemicals ✓
  - Creates employment ✓

- Development of towns and cities√
  - Incomes/ profits have made the countries have high per capita income√
  - Revenues and royalties earned from oil have enabled those countries to invest abroad thus increasing their wealth √
2. a) - A multi purpose project is a project that serves more than one purpose e.g. HEP, irrigation, fishing √
- b) - Seven forks project√
- Kariba project√
  - Aswan high dam project√
  - Akosombo dam project√
  - Cobra Basa project√
3. a i) The sun, wind, water, wood, waves and tides, geothermal steam, biomass and animal
- ii) - It is always available as long as it is blowing
- It is cheap source as we do not pay for it
  - It is clean source which does not pollute environment
  - It can be produced on small scale for local consumers
  - The land occupied by windmills can also be simultaneously used for cultivation of crops
- b) i) Geothermal power is electricity which is generated from the earth's internal heat that reaches the surface through geysers and hot springs
- ii) - It is relatively cheap to produce
- Generation of electricity is continuous because steam is continuously being produced naturally
  - The cost of operating of geothermal plant is relatively low
  - Geothermal steam is renewable source
  - It is a clean source of energy which does not pollute the environment
  - it helps reduce over-dependence on exhaustible sources such as fossil fuels
- .c) - Government bureaucracy and political interference
- Inadequate capital for investment
  - Lack of skilled labour
  - Inadequate technology
- d) - People are being encouraged to use energy-saving devices such as the energy-saving Stoves
- the government is encouraging the use of alternative sources of energy such as wind, the sun and biomass.
  - there is development of wood fuel programme through a forestation and reforestation involving planting of quick-growing trees.
  - The government uses consumer prices to discourage unnecessary uses of oil as fuel
  - People are being encouraged to switch off electrical gadgets when they are not being used
  - People are also encouraged to have proper maintenance of motor vehicles to reduce the amount of fuel consumed
4. a i) - Refers to the chain of negative reactions emanating from a acute shortage of essential energy
- ii) - Over reliance on one source of energy (oil)
- High increase in oil prices by oil producing countries
  - Hoarding of oil to create artificial shortage leading to skyrocketing of prices
  - Depletion of fossil fuels
  - War which hinders mining and supply of oil to the world market
- b i) - Coal
- Uranium
  - Petroleum
- ii) - Turkwel power project

- Sondu Miriri project
- iii) - Steep gradient that allowed fast flow of water (water falls) to turn tubing to produce Electricity
  - Permanent source of water from RTana which provided plenty and regular supply of water to turn turbines and provide electricity throughout the year
  - Sparse population in the region which reduced the cost of resettlement
  - Impermeable soils in the region which reduce water loss from the reservoir through see page
  - Presence of hard basement rock which provided firm foundation for construction of dams
- 5. a) - Inexhaustible
  - Versatile- many uses
  - Reduces dependence on oil
  - Cheap/ free access everywhere
  - Minimum maintenance cost
  - Environment friendly
  - Can be stored
- . b) P- Masinga  
Q – Kamburu  
R – R. Kindaruma
- . c) - Industrial growth – creation of employment/ goods
  - Transport – employment/ enables trade
  - Agriculture e.g. tractors e.t.c. – food production
  - Water supply – industrial use
  - Health e.g. X- rays – healthy work force
- . d i) - Reduced industrial production – shortages/ lose of employment
  - Increased prices/ fares – limits purchase/ travel
  - Domestic problems e.g. darkness/ cooking e.t.c. reduced standards of living
- . ii) - Put off gadgets not in use
  - Keep gadgets in good working condition
  - Use of public transport
  - Increase capacity of public vehicles
  - Better roads – avoid traffic jams e.t.c.
  - Use fewer lighting bulbs
  - Minimise outdoor advertising i.e. bill boards
  - Energy saving jikos/ stoves
  - Use low capacity cars
- 6 . a) - Renewable sources of energy are those sources that are continually being replaced or regenerated.
  - They are considered inexhaustible
- b i) - Presence of steep gradient of where there is a waterfall through out the year to make the operations economical
  - Hard basement rock to provide a firm foundation for the construction of a dam and accommodate weight of the reservoir
  - Presence of a deep valley-where there is a deep valley or river gorge, it provides space for the reservoir therefore saves on the costs of constructing a dam.
  - Presence of non-porous rocks to prevent seepage of water from the reservoir
- ii) - Adequate capital to develop more plants in Olkaria and other potential areas
  - Low level of technology in exploitation of geothermal
  - Economical imbalance between the cost of setting up a station and the subsequent power outlay hence need for more stations.
  - Potential areas are scattered and located in remote sparsely populated areas which are not potential markets for electricity produced
  - High transmission costs of the potential markets

- c i) - It leads to an increase in prices of imports and other locally manufactured goods.
  - Third world countries spend huge sums of money on importation of crude oil
  - Affects balance of trade since earnings from exports will be lower than imports.
  - Results into inflation since the government passes the costs to consumers
  - Oil crisis lowers GDP of third world countries since there will be more expenditure than investments
  - It causes recession making an economy unable to create more jobs
  - Causes a rise in living standards of people
  - Increase production costs in other industries
- c .ii) - Reducing the consumption rate of energy by encouraging people to put off electricity when not in use
  - Rationing of power by the distributing company
  - Encouraging the use of public vehicles, proper maintenance of vehicles to cut down on the amount of petroleum used/consumed
  - Encouraging the use of alternative sources of energy like biogas and solar energy that can be renewed hence saving on non-renewable energy sources.
  - Ensuring the development of energy saving devices e.g. jikos which use wood/charcoal
  - Development of industrial machines which can use coal that is cheaper as an alternative form of energy
  - Reduction of taxes on gas and solar panels to cut down on the use of wood fuel
- 7. (a) - Leads to increase in prices of imports which result in material shortage lowering of the gross domestic products (GDP) and creates a recession hence economy cannot be able to create more jobs
  - Leads to inflation i.e. the rise of prices of various commodities leading to reduced consumption of goods and services hence drop in profits
  - Increase in price of other forms of energy due to higher transport and production cost
  - Decline in agricultural production due to decrease in and under maize and wheat and reduced tourist activities due to the hike in oil prices that result in higher transport costs. air fares rise steeping making it expensive for tourists to travel
  - Depletion of foreign exchange reserves due to the increase in the oil import bill, the country spends a lot of its revenue on purchase of unrefined oil
    - Environmental degradation due to search for alternative sources of energy hence demand for harcoal and wood fuel causing deforestation and soil erosion
- b) - To conserve energy means the efficient utilization of energy to avoid wastage
  - Encouraging he use of solar for heating and lighting
  - Encouraging Kenyans to put off electricity gadgets when they are not being used
  - Proper maintenance of motor vehicles
  - Encouraging the use of public transport instead of personal cars
  - Encourage the use of energy saving jikos /stores to reduce wood fuel used
- 8. a) Is usually portrayed as a question of price and supply uncertainties and the rapid depletion of fossil fuels
  - b) - Destruction of forest as alternatives source of energy
    - Promote erosion due to deforestation
    - Destabilize ecological balance
    - Facilitate desertification due to deforestation
- 9. a)
  - Oils.
  - Natural gas.
  - Coal.
- b) - Kenya would save foreign exchange it used to spend on oil inputs and channel the funds to projects.
  - More industries would be established because industrial fuel would be cheaper/increase in investments. .

- More job opportunities would be created in the oil sector and other related industries thereby improving standards of living of Kenyans. .
  - Transport costs would reduce leading to cheaper commodities in the market. .
  - Kenya would earn more foreign exchange through oil exports and these earnings used to develop other sectors of the economy. .
  - Infrastructure of social amenities improved leading to better standards of living.
  - c) - The government is encouraging the use of alternative sources of energy such as ,  
Geothermal biomass, wind & sun.
  - The government is developing modified programmes through afforestation, reafforestation & planting of fast-growing trees.
  - Controlling importation of vehicles with high engine capacity.
  - People are encouraged to use energy saving jikos.
  - A lot of emphasize is being put on protecting the existing forest by resettling people ]who have settled on forest land.
  - Encouraging the use of public transport by improving it so as to reduce the number of private cars on the roads.
10. i) - Conducting reconnaissance
- Preparing relevant tools & equipment.
  - Preparing working schedule.
  - Forming groups.
  - Content analysis/doing more research.
- ii) - Direct observation.
- Interviewing.
  - Administering Questionnaire.
  - Photographing/filming.
- iii) - Lighting.
- Heating.
  - Powering machines.
11. a i) - Coal
- Natural gas
  - Uranium
  - Petroleum products/oil
- ii) - a large and constant volume of water harvested from large river with large volume of water through out the year
- a deep narrow valley/gorge to minimize the construction cost.
  - Sparse population in order to minimize relocation/resettlement cost
  - A fall water /water fall-water falling from a high point to supply force required to rotate the tribunes
  - A hard basement to reduce the amount of water that will seep into the ground and provide storing foundation for the dam
  - Adequate capital for dam construction, transmission of power and compensation displaced people
- b i) Energy crisis is the price and supply uncertainties that are usually accompanied by the rapid depletion of fossil fuels
- ii) - overdependence on oil and its products
- depletion of wood fuel
  - exhaustion and deepening of coal mines
  - artificial shortages cause when some countries decide to conserve their resources
  - wastage and misuse of energy
  - wars/disagreements within oil producing countries
- iii) - every crisis has led to petroleum price adjustment causing a general inflation and the prices of various commodities.
- Some industries in the economy are affected to a points where they lay off some of

- their staff
- The price increase usually leads reduced consumption of goods and services leading to a drop in profits
12. a) - Petroleum
- Gas
- b) - Fishing
- Irrigation
  - Industrial/ domestic use
  - Water ways
  - Tourism
  - Regulate river flow
  - Water storage
- c) - There could have been bumper harvest of maize locally.
- There might have been sufficient food for all.
  - The country may not have experienced famine to necessitate emergency importation.
- d i) - Rift Valley
- Western
  - Central
  - Coast.
- d ii) - Maize stalk is used as cattle feeds.
- Cobs /stalk is used as fuel.
  - Grain is used as human food.
  - Industrial material – oil.
13. a) E – Owen falls Dam in Uganda  
F – Akosombo Dam in Ghana  
G – Kariba dam in Zambia/ Zimbabwe
- b) Renewable sources of energy are those that have the capacity to be regenerated/ reused
- e.g. sun, wind, water while non-renewable sources of energy are those that can be exhausted if not well managed such as coal, petroleum and natural gas
- c) - Availability of large volume of water from the River Nile
- Presence of a natural water fall, the Owen falls; to turn the turbines
  - Presence of a hard basement rock to support the weight of the reservoir
  - Availability of a ready market for the power from the surrounding high population
- d) - High seasonal fluctuations in the flows of the river regime especially in times of drought
- Inadequate capital since H.E.P require high capital outlay which many African countries lack and they rely heavily on foreign aid
  - Poor maintenance of machinery at power production stations caused by inadequate capital to buy spare parts for the machines
  - Siltation of reservoirs caused by poor farming methods upstream and lack of machinery to remove the silt from the reservoirs
  - Small markets for HEP hinder production due to high poverty level of the population found in the counties
  - The bigrivers such as Niger, Nile, Volta, Zambezi and Orange have their waters reduced by
  - evaporation because they pass across dry regions

## 20. INDUSTRY

1. - Created variation in prices of petroleum products
- Led to mushrooming of many petroleum products dealers
  - Encouraged importation of refined petroleum products
  - Caused frequent price adjustments by oil dealers
  - Created widespread / availability of petroleum products

2.
  - a) Industrial inertia is the tendency of an industry to maintain its location and activities after factors of its initial location have ceased
  - b)
    - Presence of an already established transport system
    - Availability of skilled labour
    - Utilization of out-puts of other plants as raw material
  - c)
    - it would encourage setting up of industries in the areas thus stimulation decentralization of induction
    - it would reduce the cutting down of trees and electricity would be available for domestic use.
    - It would attract/improve social amenities in rural area reducing the need for people to move to urban areas
    - Most people would invest in the rural area which would led to higher standards of living
    - It would encourage development of horticultural farming to have ideal storage f perishable products
3.
  - a) -it is the inability of an industry to move from an area through original location factors here changed/exhausted/are no longer existing
  - b) - it has resulted in pollution leading to environmental deterioration
  - it has led to rural-urban migration depriving the source area able bodies people
  - it has led to un even economic development
  - other economic activities e.g. agriculture production have been underrated in favour of industrial activities
  - due to technological advancement some people have been rendered jobless
4.
  - a) An industry is an enterprise or a commercial profit making undertaking while a factory refers to the structures or buildings which may house an industry
  - b)
    - Transport
    - Communication
    - Banking
    - Insurance
    - Trade

## 21. TRANSPORT AND COMMUNICATION

1.
  - a i) – Demand
    - Availability of infrastructure
    - Topography/ terrain
    - Capital availability
    - Political factor
    - Historical factors
    - Climate
  - ii) – Difficult terrain – This makes it difficult to develop transport and communication i.e the great rift valley, the rugged scarps inselberg and numerous rocks out crops
    - Harsh environments – e.g. Sahara desert and many isolated others
    - The harsh desert climate associated with low population. Suvch makes it uneconomical to construct the transport and communication facilities
    - Non – navigable rivers
 This is due to
    1. Fluctuating water levels
    2. Presence of rock outcrops
    3. Rugged terrain i.e. many rivers have rapids waterfalls
  - (b)
    - i) A – L. Michigan
    - B – L. Huron
    - C – L. Erie
  - ii) - To provide cheap water transport for bulky commodities like coal and iron ore to industrial centres around the great lakes

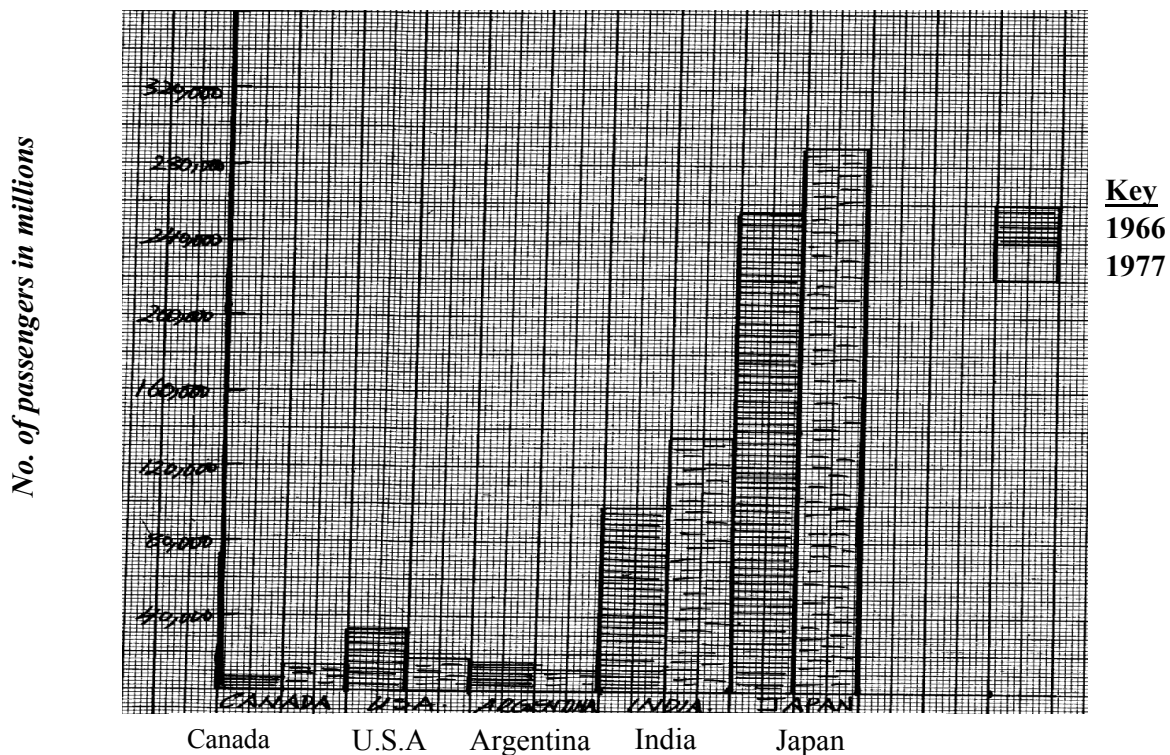
- To shorten the route to external markets especially for wheat from Canadian prairies and manufactured goods from the Great lakes
  - To expand manufacturing industries along the entire route, provide employment and develop towns
  - Increase agricultural production and tourism
  - Open up this part of America for international trade
  - To ease strain on American railways
  - To increase HEP production along parts of the Seaway e.g. at Niagra waterfall and at dams constructed along the route
- iii) – The long sault and Lachine rapids between Ontario and Montreal hindered navigation. Waterfalls e.g. Niagra was preserved for HEP and tourist attraction. This was solved by construction of alternative route i.e. Welland canal
- Shallow ports e.g. Montreal that could not handle large ships – they were dredged and deepened
  - Problems of trans-shipment along the seaway causing delay. Seaway has been widened to accommodate large ships and these can now sail through the water way without stopping
- c)
- Reduces deterioration of Nairobi – Mombassa highway due to reduction of tankers
  - Has reduced cases of accidents especially on Nairobi – Mombasa highway
  - Very fast and convenient means of transporting such highly risky products since the products are firmly sealed in the pipe
  - Less labour used after installations i.e. cuts down on labour costs
  - It cuts down on occurrences of fuel spillage and pollution causes by derailment or accidents on trail or roads
  - Different kinds of petroleum products for various industrial and domestic uses can be conveyed one pipeline
  - Ensures constant supply of petroleum
- d)
- It has promoted international cooperation created by no distance
  - has led to expansion of trade for aircraft goods especially those with perishable goods to international market without delay
  - Has provided many people with employment opportunities e.g. pilots, engineers e.t.c.
  - has resulted in loss of life especially when passenger plane crashes people die in large numbers
  - It has resulted into environmental pollution through discharge of wastes and fuel into the space
  - Has led increased terrorism through plane jacking
- 2.
- a i) Transport is the movement of goods and people from one place to another
- ii) Road, pipe land, railway
- b i) N – 500 canal  
Q – New York state Barge canal.
- Lakes marked      O – Lake Michigan      P - Lake Erie
- Port marked      M – Duluth.
- ii) - Accessibility to raw materials which has led to extensive industrial development in the area.
- Cheap means of transport in import and exports has encouraged internal and international trade.
  - Provision of H.E.P from the dams for both domestic and individual use.
  - Growth of port and towns like Duluth etc. have become points for various economic activities.
  - The sea way is a tourist attraction which generate income in the region.
  - Employment opportunities have been created in the transport industry thus raising the living standard of the local people.
  - The lakes and the dams are a source of water for both domestic and industrial use.



- The two countries earn some revenue from toll charges levied on ships that use the route
- c) - Communication enhances trade
  - Many people are employed in the communication sector.
  - It promotes international and domestic tourism.
  - Governments disseminate information through the media.
  - Communication promotes international understanding which leads to increased trade thus boosting economic development.
- d) - African governments do not have adequate capital for modern transport equipment/system.
  - Stiff competition from well established air lines in the developed countries.
  - High insurance cost of planes discourages investment in air transport.
  - Mismanagement of African national air lines incur huge losses.
  - Some regions in Africa are not served by direct flights and thus increases the cost of travelling to passengers.
  - Small/low volume of passengers and cargo makes it expensive for some airlines to operate.
  - Insecurity in some parts of Africa is also discouraging the use of air transport.
- 3. a) Communication is the exchange of information, ideas, messages or opinions among people.
- b) - Liberalization of airwaves/licensing of more private radio stations/TV stations.
  - Introduction of the fiber optic cable to enhance communication via internet /e-mail fax (telefax)
  - Licensing many companies to provide cell phone services.
  - Liberalization of the press.
  - Expansion of telephone facilities.
  - Liberalization of postal services.
  - High competition from faster and more efficient electronic mail.
  - High cost of installation.
  - Vandalism of telephone equipment.
  - Mismanagement
  - Poor reception /overlapping of telephone line.
- 3. c) - High competition from faster and more efficient electronic mail.
  - High cost of installation.
  - Vandalism of telephone equipment.
  - Mismanagement
  - Poor reception /overlapping of telephone line.
- 4. a) - Trade would grow and develop in Kenya
  - There will be more diplomatic ties with rest of East African states.
  - More Kenyans will get employment in other East African countries
  - Kenya would earn more revenue paid by the users from East African states
- b) - Inadequate road signs make the drivers to cause accidents
  - Slippery roads lead to accidents
  - pot-holed roads surface cause vehicles to breakdown
  - Traffic jams, especially in urban centres cause delays
  - Narrow roads/bridges makes the drivers to strain and cause accidents
  - Inadequate drainage system of roads especially in towns cause accidents
- 5. a i) – Road
  - Railway
- 5. a ii) - Fluctuations/ interruptions e.g. freezing
  - Obstacles – usually unseen
  - Limited network
  - In case of accident losses are certain and enormous
  - Relatively slow

- Expensive – ports/ harbours/ facilities
  - May be in uneconomical areas
  - Contribute to water pollution
- b) - Influence of choice of location of economic activities – moving of raw materials/ finished Products
- Expands markets size – possible to move goods and transfer information
  - Employment creation – reduce unemployment/ improve living standards
  - Information/ movement hence tourism hence forex
  - Revenue through tax – development
  - Dissemination of information brings about change
  - Leads to urbanization
- c) - Creation of trans Africa high ways to increase connectivity
- Creation of international railways to increase connectivity
  - Regional economic integration to increase trade hence the need for networks
  - Establishment of natural networks and transport/ communication companies to increase local transport/ communication
- d) i) - It is an artificial water way
- ii) - Suez
- Panama

6. a i)



- ii) - Easy to construct/draw
- Easy to compare
  - Easy to read
  - Give clear visual impression
  - Depict data more accurately

6. b)  $\frac{6000-4800}{4800} = \frac{1200 \times 100}{4800}$   
 $= 25\%$

6. c) - African countries have railways of different gauges which make it difficult for them to join

- The counties were colonized by different European powers who constructed railways to transport raw materials from the interior to the ports within their own colonies
  - Political difference /different political ideology /political stability among African countries hinder efforts to construct railway line to link them
  - African counties produce similar goods hence there is limited trade between them and this does not warrant them to construct railway lines
  - Railways are expensive to construct/inadequate capital and hence expensive to construct
  - Parts of Africa are unproductive so it would be uneconomical to construct railway lines
  - Variation in terrain has hindered the development of various lines
6. d)
- narrow roads where heavy traffic limit ease of movement and overtaking
  - the pot-holes sections of the roads may cause tyre burst/vehicle breakdown /may make drivers who are avoiding potholes crash vehicles
  - The narrow bridges may cause vehicles to crash
  - Sub-standard surface may cause vehicles to skid/overtake
  - Dusty roads may reduce visibility leading to accidents
    - 160 - muddy roads during rainy seasons may cause vehicles to collide
7. a i)
- News papers and magazines
  - Radio and television
  - Telephone/mobile phones
  - Internet
  - Carrier service
- ii)
- Provide a reliable continuous flow of the commodity being transported
  - It is relatively cheap/inexpensive to operate
  - It is a safe mode of transporting oil, gas and water
  - Are free from accidents/accidents are minimal
  - It does not pollute the environment unless there's a leakage
- bi)
- Airports are very expensive to build
  - Buying and maintaining the aircraft is a very expensive venture
  - In case of accidents there are usually few survivors and the losses are very high
  - It is very expensive to travel by air
  - The transport of bulky goods on planes tedious is and expensive
  - The government requires a lot of land to put up airports
  - The cost of insuring plane is very high
  - Running airlines requires skills and personnel
- ii) - Creation of employment opportunities as they are industries. This leads to raising the standard of living of the people.
- Promotes international and domestic tourism hence earns foreign exchange to the countries concerned
  - Expansion of new trade areas and markets hence boosts industrial, commercial and agricultural activities hence development
  - Leads to increased mobility of labour thus reducing cases of labour shortages in industries and other sectors
  - It has promoted international understanding as people are able to interact and learn about each other
  - It generates income for the government and the people of the country. The income earned boosts the economic development of the country
  - Growth and development of different settlements is influenced by the availability of transport networks. As towns develop other facilities expand hence economic development
- c i) - To regulate the difference water levels along the sea way through dredging
- To smoothen the river channels by removing the existing rock outcrops, rapids and small
  - To regulate the flow of St. Lawrence River through the construction of dams and locks
  - To promote trade and industrialization in the two countries

- To remove the silt that was brought about by depositing between lakes Erie and Huron
- ii) - Soo canals
- Welland canal
- Trent canal
- New York state barge canal
- 8. a i) (i) Lake marked P – L. Erie
- ii) River marked Q – Deroit river.
- iii) Canal marked R – Soo Canal
- iv) Part marked S – Dulult.
- b) - Provides easy means of transport for both imports and exports, thus encouraging internal and external trade.
- It has led to growth of parts and towns along its course.
- Due to accessibility top raw materials, there has been industrial development in the area.
- The dams along the route provide hydro-electric power for industrial and domestic use.
- The sea way is a tourist attraction which generates income in the region.
- The sea way has created employment opportunities in the transport and industrial sector raising the standards of living of the people in the area.
- Tariffs charged earns the country incomes.
- c) - Most rivers in Africa pass through different climatic regions with alternating wet and dry seasons. This makes the volume of water fluctuate from season to season making it difficult to use the rivers.
- Many rivers in Africa have rapids and water falls which hinder the movements of vessels.
- Some rivers in Africa have floating vegetation that makes it difficult for vessels to move through them.
- Many rivers in Africa are either short, too shallow or too swift making navigation on them difficult.
- Rivers are affected by siltation at their mouths and along their courses. This reduces its depth required for the vessels to move.
- African countries have insufficient capital to use in the development of water ways, ports and for purchasing vessels.
- African countries have inadequate technology. This hinders the process of developing river transport.
- Some rivers in Africa flow across different countries. This calls for negotiation between countries concerned. This hinders the development of river transport.
- Most of the rivers pass through unproductive areas making it uneconomical to develop
- d i) - Liberalization of airwaves/licensing of more private radio stations (T.V. stations).
- Introduction of E- mail /internet/ Fax. e.t.c
- Introduction of mobile phones/cell phones/pagers.
- Expansion of telecommunication facilities to new areas.
- Liberalization of postal services.
- ii) -Development of other faster and more efficient means of communication e.g. electronic mail has led to reduces use of telephones.
- High costs of installation and maintenance of telephone lines limit the number of the subscribers.
- Vandalism of the telephone equipment renders most of the telephone services unavailable to would be users.
- Mismanagement in the organization that provides telephone services has made it difficult to expand the services to many areas of the country.
- Poor reception/overlapping of the telephone lines limit the use of the facility/description by natural hazards.
- Lack of modernization of telephone in some areas causes delay and discourages the use of telephones.

9. (a) Is the parking of goods in large standardized box – like structure which once filled in a factory /exporter can be transported
  - b) - Saves space in ships as their dimension is more or less uniform.
  - It speeds up the process of handling goods hence saves time.
  - It is relatively cheap as it requires little labour.\reduce loss of goods as they are sealed at the exporter premises and delivered to the importer without the seal being broken.
  - Reduces loss of goods through breakages and spoilage.
  - Checking of goods is fairly easy.
10. (a) (i) - Facilitates faster business transactions due to fast means of transport hence increasing volume of trade
  - Through M- Pesa and M- Kesho it has facilitated money transfer for business hence increasing trade transactions and investment
  - It has created employment which improves the living standards of the people
  - The company pays taxes which are used to improve other sectors of the economy
 ii) - Facilitates theft cases/ aids stealing
  - It is expensive to acquire the device and to maintain it
  - Health associated risks e.g. hearing impairment and cancer
  - Can easily be lost
  - Lack of network coverage in some areas
  - Noise pollution over ringing
 b) - Most rivers are seasonal
  - Many major rivers are unnavigable due to presence of water weeds, cataracts and water falls
  - Meanders on some rivers make the distance longer than land routes
  - Many rivers flow through empty or inhospitable lands with little economic value
  - Siltation especially near the river mouth makes the channels shallow
 c) - Construction of super high ways where by each country is responsible for construction of the stretch within her national boundaries to improve linkage of countries
  - Establishment of regional trade blocs that spearhead the development and management of transport network among member states ensures good transport network in Africa
  - Negotiations among leaders of various African nations to provide security to avoid high way robbery

## 22. TRADE

1. a) - Bilateral trade
  - b) - Low earnings due export of agricultural products and raw materials which have low value
  - Heavy expenditure due to importation of manufactured goods which are expensive
    - Unpredictable production since agriculture she relies on for export depends on climate which is unreliable
2. a) - Bilateral
  - Multilateral
  - b) - Similar products
    - Limited transport/ communication links
    - Colonial patterns of trade
    - Limited manufactured goods
    - Prohibitive tariffs to protect local industries
3. (a) - Scarcity of goods
  - Inadequate capital supply
  - High costs of getting trading permits/licences
  - Lowly developed roads/transport network
  - Trade barriers
  - High cases of poverty among the people
  - Inadequate market buildings

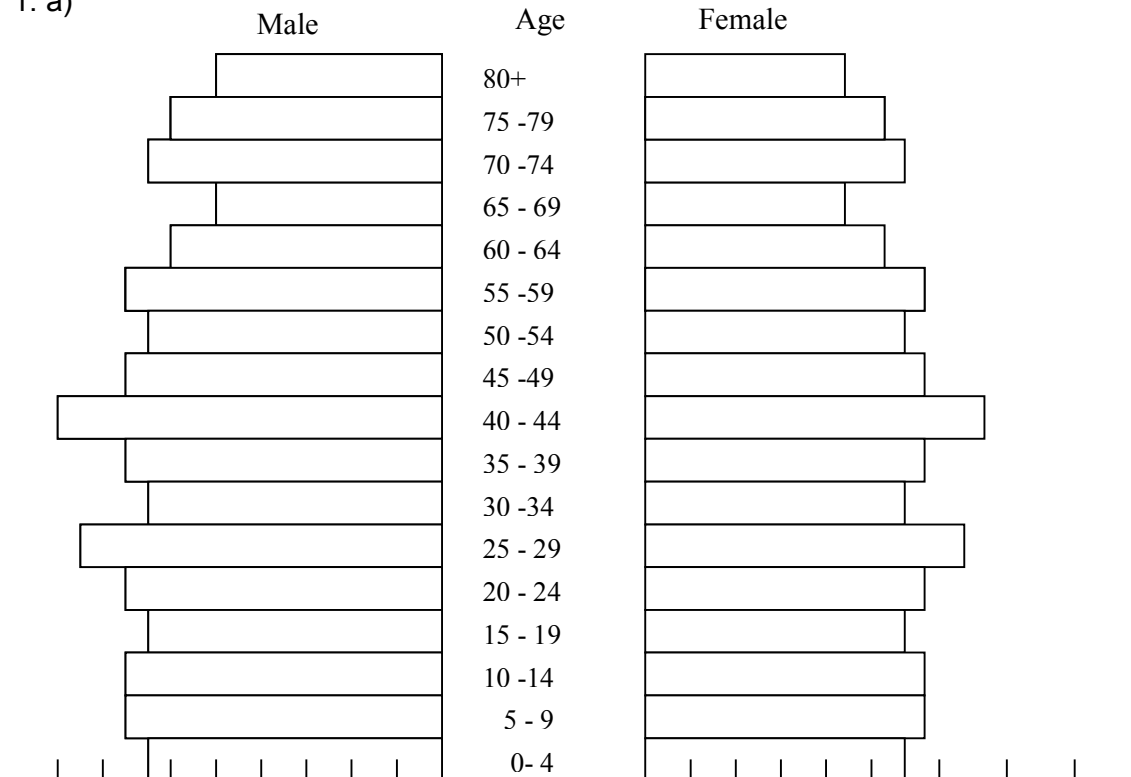
- Insecurity
  - Smuggling of essential goods
  - b) - They have helped create cooperation among member states
  - Member states have a longer market for their goods
  - The expanded market has promoted industrial development
  - Goods have been made cheaper for people in the region through reduction of tariffs
  - Employment opportunities have been created through industrial development
  - Member states are able to invest in joint development projects like railway construction.
  - Trade in the regions has boosted agricultural development
  - The common market has made people of the member state enjoy a variety of commodities
  - There is reduced reliance on goods and services from other parts of the world
4. a) - To eliminate taxes on goods produced within the member countries.
- To enable the member states to increase use of their raw materials.
  - To enable people in the region to interact and exchange ideas freely.
  - To reduce unnecessary competition among member states.
  - To promote transport & communication between the countries.
  - To create a common market for the goods produced in the member countries.
  - To establish a common bank COMESA bank to aid transaction.
- b) - Improving infrastructures.
- Joining trading blocs such as COMESA, EAC.
  - Creating Export Processing Zones. (EPZ) to promote the volume of exports.
5. a i) Visible exports are tangible goods sent to other countries for sale while invisible exports are transactions between countries which lead to monetary returns
- ii) -Tourism
- Financial services
  - Transport services
  - Loans/ grants/ Aids
- b i) - COMESA
- Southern African Development Community (SADC)
- ii)
- |              |      |               |        |       |         |        |         |         |      |              |       |           |          |
|--------------|------|---------------|--------|-------|---------|--------|---------|---------|------|--------------|-------|-----------|----------|
| Burkina faso | Mali | Cote de voire | Gambia | Niger | Liberia | Guinea | Senegal | Nigeria | Togo | Guinea Bisau | Ghana | Cape town | Cameroon |
|--------------|------|---------------|--------|-------|---------|--------|---------|---------|------|--------------|-------|-----------|----------|
- iii)- Encouraged the development of industries
- Phased out all customs and tariffs on goods originating within West Africa
  - Improvement of tele- communication
  - Exchange of technology
  - Campaigns for the sale of petroleum from Nigeria to member states at reduced prices
6. a) Balance of payment is the difference between visible exports and imports and also invisible exports and imports in the value of trade taking place between two countries.
- b) - They are perishable.
- Some are bulky making transportation difficult.
  - Are of low value
  - They are exhaustible/supply may fluctuate negatively depending on season.
  - Inadequate capital/ for expansion since a large capital outlay is needed.
7. a) Visible exports are tangible goods sent to other countries for sale while invisible exports are transactions between countries which lead to monetary returns like interest and dividends on the foreign investments
- b) - Hinder growth of home infant industries due to stiff competition/ slows

industrialization

- Creates a state of dependency on developed countries/ slows exploitation of national resources
- Hinder diversification of the economy
- The country experiences unfavorable balance of trade/ retards economic development
- Whenever there is poor relationship with the trading partner the country experiences shortage of the import goods
- The country spends her foreign exchange reserve on imports/ faces devaluation of her local currency

## 23. POPULATION

1. a)



b) - Has a high life expectancy.

- Has a large working population.
- Has a low dependency ration.
- Has a low fertility rate.
- Has low death rate

c) - Inadequate manpower making labour expensive.

- Rural depopulation due to increased urbanization/leading to labour shortage.
- High old age dependency ratio due to high life expectancy.
- Under utilization of social amenities due to low birth rates.

d i) – mortality rate is the number of deaths in a population of 100 people per year.

d ii) - Improving medical facilities and immunizing children to control disease.

- Educating parent on child care during pre natal period.
- Educating parents to have planned families.
- Encouraging parents the benefits of breast feeding and balanced diet.

2. a) - Population census

- Sample surveys
  - b)
    - Improved nutrition and medical care which lowered mortality and increased fertility hence leading births and longevity
    - Increase in early marriages which increased reproductive life span hence increase in birth rate
    - Low level of family planning due to low awareness leading to large families hence rapid population growth
    - Many people were still entrenched in cultural beliefs which favour having large families for security investment hence rapid population growth
  - c)
    - High literacy level and awareness on need to have small families
    - Most of the women go to school and spent more time in schools or colleges thus has reduced indulgence into sex or early marriages by most women
    - High abortion rate which damages the reproductive system
    - Misuse of family planning gadgets and drugs which damage the reproductive system
  - d)
    - Early vaccination against polio, measles e.t.c.
    - Provision of free mosquito nets to expectant mothers
    - Free health care to all infants in government hospitals
    - Training of traditional aids to birth delivery on modern methods of birth delivery
    - Expansion of health facilities to all rural areas to increase access to health care
    - Employing nutritionists to educate mothers on better nutritional practices to evade child mortality
3. a) - Population distribution is the way people are spread out on the land whereas population density is the number of people unit area of land.
- b) - A high rate of unemployment.
- High crime rate as people seek ways of supporting themselves.
  - High demand for social amenities.
  - The dependency ratio decreases.
  - High demand for food sometimes leading to food shortages.
  - Strain on natural resources and scarcity of land.
4. a i) Life expectancy is the average age to which the people of a country expect to live/the average age at which people die
- ii) - The composition by sex
- The size of population
  - Proportion of dependency ratio
  - Different age groups
  - The proportional males to females
- b i) - Population growth rate is high in Kenya and low in Sweden
- Kenya's population has a large number of young people below 20years of age while Sweden has a high medium age population
  - Death rate is high in Kenya and low in Sweden
  - The fertility rate is high in Kenya and low in Sweden
- ii) - Natural hazards e.g. floods force people to migrate to other areas for safety
- Pastoralists migrate from one rural areas to another in search of water and food for their livestock
  - Land disputes make people move and settle elsewhere
  - Pressure on land makes people to move and buy land elsewhere for settlement
  - Insecurity in some areas forces people to move
  - Settlement schemes attract people to settle in them
- c) - Causes high dependency for social basic needs
- Leads to high rates or unemployment
  - Leads to food shortages
  - Leads to land fragmentation and this decreases agricultural production



- Leads to high rates of crime
5. a) It is the fertility achieved after the abstinence that is continued, when the initial fertility was broken.
- b i) - Natural calamities
- Low nutritional standards/famine /lack of food
  - Conflicts
  - Other epidemics/diseases.
  - Inadequate/poor medical facilities
  - Road carriage.
- ii) - The sickness leads to absenteeism from work/reduced productivity.
- Money spent in treating the sick could be used for other economic activities.
  - Deaths resulting from the disease lead to loss of economically productive population.
  - Care-takers at family level use moral time caring for the sick/orphans instead of engaging in economic activities/high dependency ratio.
- c ) - Production of similar goods
- Failure to remit annual subscriptions by members
  - Different levels of industrialization
  - Poverty among the population in the regions
  - Poor transport and communication linkages
  - Desire to [protect local industries by member countries
  - Lack of common currency
6. a i) Is the number of unresourceful people between zero to fourteen years and above sixty five years per every 1000 resourceful people
- ii) - High birth rate
- Low death rate
  - Scarcity of employment opportunities
- (b) i) -Presence of large towns e.g. Kisumu
- High rainfall
  - Fertile land
  - High fertility rate
- ii) - High employment rate
- Pressure on social amenities e.g. schools
  - Rural- urban migration hence overcrowdings
  - Too many dependants
  - Pressure on land
  - Food shortages
- c)- Acceptance of family planning methods
- Career advancement among Swedish women
  - Decrease in infant mortality
  - Advanced living standards that ensure only a small family can be catered for
7. a) Is the enumeration of the people in a given area and the compilation of demographic, social and economic information of the population being enumerated at a given time
- b) - To determine the composition of the population
- To know the trends and levels of mortality and fertility
  - To plan for provision of basic facilities
  - To aid in creating new administrative units
  - To estimate the dependency ratio
  - To know the literacy level
  - To know labour supply and predict any unemployment problems
8. a) - Emigration is the movement of people out of their country and settling in another

- while Immigration is the movement of people from another country into a country.
- b)
    - Higher dependency ration leading to low investment.
    - Causes land fragmentation leading to food shortage.
  - Shortage of water in urban centres.
  - Leads to excessive tree felling for energy requirements and to pave way for settlement and agriculture.
  - Congestion of social facilities such as schools and hospitals.
  - Leads to increased unemployment.
- 9.
- a) Population explosion is the abnormal increase in people in a region, thereby overstretching the available resources
  - b)
    - To determine the composition of the population
    - To know the trends and levels of mortality and fertility
    - To plan for provision of basic facilities
    - To aid in making decisions regarding regarding the creation of new administrative
    - To estimate dependency ratio
    - To know the literacy level
    - To know labour supply and predict any unemployment problems
  - c) - Introduction of the national family planning programme through creation of national and development (NCPD)
    - Introduction of adult education programme to check illiteracy and teach on importance of family planning
    - Creation of public awareness through mass media i.e. radios, TVs
    - Encouraging men and women to opt for voluntary sterilization and discouraging early marriages through legal action and education
    - Organizing family life seminars and public baraza's

## 24. SETTLEMENT

1.
  - a)
    - A – Central Business District
    - B – Transitional zone.
    - C - Zone of industry and working class.
  - b) - Has full buildings/sky scrappers.
    - Population density very high at low at night.
    - Has high land value.
    - Mainly have officers and shops.
    - Is the jocal point of a town
2.
  - a) - nucleated
    - dispersed/ scattered
  - b)
    - 1- Central Business District
    - 2- Industrial Zone
    - 3- Low class residential zone

## 25. MANAGEMENT AND CONSERVATION OF THE ENVIRONMENT

- 1
  - i) Land pollution Is the contamination of the land through improper disposal of waste
  - ii) - Spraying of crops with chemicals contaminates the land by affecting soil composition
    - Careless dumping of domestic waste and industrial waste contaminates land
    - Burning of vegetation during land
    - Preparation leads to death of micro- organisms making the land unsuitable for plants to survive
    - Poor disposal of non- biodegradable material like plastic and polythene papers contaminates the land

- iii) - Bad Odour leading to air pollution
    - Accumulation of domestic and industrial wastes on the road side blocks the drainage system
    - Mounds of wastes are a breeding ground for flies, mosquitoes and rodents which can cause outbreak of diseases
    - Injuries can result from broken bottles, rusted metals and iron
- 2.
- a) ii) - Its best economic use of land because Agriculture does not do well in those areas.
    - Population is low and this reduces conflicts between man and animals.
    - It requires extensive land that is only available in those areas.
    - It reduces the conflict of resettling people.
  - b) - Polluted water cause death of aquatic animals.
    - High concentration of organic and inorganic nutrients in water causes electrification in lakes.
    - Water pollution causes diseases to animals
  - c i) - When a river contains excess waters which it cannot hold within its channel.
    - When the level of the sea or lake rises due to increased rainfall.
    - Exceptional heavy rainfall like El nino results in excess water on land.
    - When a dam built across a valley breaks, the water in the reservoir floods lower land down stream.
    - When massive earthquake occurs on the seabed – causes tsunami which causes flooding in coastal areas.
  - c ii) - Construction of dykes, dams and levees. These can be constructed across rivers to control the speed of water/amount of water flowing downstream.
    - Reforestation on slopes and river banks reduces surface run off and erosion / increases the rate of water infiltration in the ground.
    - Improving and diverting river channels.
    - Shallow rivers can be dredged to increase their depth. /Rivers with meanders ca be straightened to enable water flow swiftly./ Tributaries can be drenched to reduce the volume of water getting into the main river.
  - d) - To sustain human life.
    - To protect endangered species.
    - For sustainable utilization of resources.
    - For aesthetic value.
    - For future generations/posterity.
    - To curb global warming.
- 3.
- a) - Hooting and roaring off engines by motor vehicles
    - Reverting of machines in rolling mills and welding
    - Banging of metal containers by Jua kali artisans
    - High pitched music played in vehicles, dance and disco halls, homes and religious gathering
    - Aircrafts as they take off or land in airports
    - Blasts from mines and celebrations e.g. Dawali
  - b) - Rise in blood pressure and tension of muscles/physical stress
    - Affects the nervous system causing neurosis and irritation
    - Damage of eardrums causing deafness
  - a) – Desertification
    - Lightning
    - Windstorms
    - Pest and diseases
    - Pollution
4. (a) - Earth quakes

- b i) - Nyando
  - Nzoia
  - Yala
  - Kuja/Gucha
- ii) - the stagnant water becomes breeding ground for vectors that cause water related diseases.
  - Floods cause loss of property/lives
  - Floods cause soil water logging which lower crop production
  - Floods wash away crops leading to food shortages/famine
  - Floods wash away bridges/roads/telephone lines/air field disrupting transport and communication
  - People are dispatched by floods are made homeless
- c)- the garbage man result to foul smell/air pollution which is hazardous to human health
  - when it rains the dumped waste garbage is washed to rivers causing water pollution
  - garbage can be a breeding ground for rodents /flies/cockroaches which can cause diseases outbreak e.g. plague
  - accumulation of garbage leads to blockage of roads/drainage systems
  - garbage heaps are eye sore as they made the environment ugly
- d i) - burning waste materials
  - digging pits throwing rubbish
  - minimizing use of harmful chemicals/use of organic manure
  - creating public awareness on the dangers of land pollution and how to control it
  - recycling of waste materials
  - government legislation against dumping
  - setting up proper garbage collections programmes
- ii) - strong winds destroy trees
  - wind blow off roofs of houses
  - winds cause strong sea storms and lead to boats capsizing/communication lines are destroyed/destruction of transport lines
  - winds cause soil erosion
  - winds spread air-borne disease
  - winds spread bush fires
- 5. a i) S – Mt. Kenya National Park  
T- Amboseli National Park  
U – Tsavo National Park
- ii) Malindi Marine park
- bi) - Pie-historic sites e.g. Gedi ruins
  - Sandy beaches
  - Caves, cliffs/coral reefs (coastal landforms)
  - Warm, sunny weather
  - People's culture
- ii) - Ensures maximum use of less productive land e.g. arid and semi-arid regions
  - Source of foreign exchange through payment of fees at entry points/gates to parks/reserves
  - Creation of employment opportunities as guides in parks, lodges e.t.c.
  - Protection and conservation of endangered species e.g. rhinos, elephants e.t.c. for future generation/prosperity
  - Enhances research/promotes education in plants and animal species
  - For aesthetic purpose/recreation
  - Has stimulated the need to build roads and airstrips connecting parks with urban areas/opening up remote areas.

- Promoted diversification of the economy from over-relying on agriculture to tourism
- iii) - Illegal hunting/poaching of wildlife/game leads to extinction of some animal species
  - Overstocking of wild animals leading to destruction of the natural environment/overgrazing
  - Frequent drought leading to loss of animals through starvation and death
  - Human wildlife conflict leading to destruction of crops and death of people, through high costs of compensation
  - Inadequate capital limits government conservation effort especially to construct game parks
  - Pollution of the environment leading to loss of wildlife
  - Fire outbreaks which destroy vegetations/animals
  - Pests and diseases e.g feline immune deficiency virus that threatens lion population
- 6. (a) - To get in contact with the park management and seek permission for the visit
  - To identify and engage the services of a tour guide
  - To identify the methods to be used in data collection
  - To formulate the relevant objectives and hypotheses
  - To assemble the appropriate equipment for the study
  - To help in estimating the cost of the study
  - To prepare an appropriate work schedule
  - To determine the appropriate routes to be followed
  - To identify possible problems that may be experienced and ways of avoiding them
- (b) - Offering incentives like reduced tariff rates by hotels during the low season for local people
  - Lowering the entrance fees for local people into national parks and game reserves
  - Encouraging employers to offer incentive holidays to their employees
  - Promote domestic tourism through the media
  - Encourage young people to tour their country by establishing wildlife clubs in schools
- 7. a) - Desertification.
  - Lightning
  - Wind storm
  - Pests and diseases
  - Pollution
- b) - Deforestation
  - Poor agricultural activities e.g overgrazing, monoculture, overcropping etc
  - Increase in population.
  - Bush fire
  - Global warming
- c) - To ensure proper utilization of resources without damage.
  - To sustain human life since it wholly dependent on the resources for survival.
  - To preserve the aesthetic value such as landscape and vegetation of her environment.
  - To protect the endangered species of plants and animals.
- 8. a) - Management of environment refer to the effective planning and control of the processes that could harm the environment while.
  - Conservation of environment refers to the protection and presentation of natural resources from destruction wastage or loss.
- b) - For sustenance of human life.
  - To protect endangered species.
  - For aesthetic value.
  - To interlize natural resources
  - For future generations.
  - To preserve cultural heritage.

- c) - Gases from factories corrode roofs of houses.
  - Some poisonous gases lead to earth to form acid rain which is harmful to life.
  - Smog and smoke reduce visibility which way lead to road/air accidents.
  
- d) (i) - Control soil erosion
  - Regular inspection of factories
  - Setting up recycling plants.
  - Treatment of sewage.
  - Managing garbage collect and disposal well.
  - Use of unleaded fuel
  - Proper legislation.
- (ii) - Age of the population
  - Social – economic status of the population.
  - Culture of the people.
  
- 9. a)- Pollut ion is the contamination of the environment with substances which are harmful or - poisonous to human, plants and animal life.
  
- b) - Land /Soil/Ground pollution.
  - Water pollution
  - Noise pollution.
  
- 10. a) - Flooding
  - Lightening
  - Pests/diseases
  - Hailstorms
  - Dusts storms
  - Landslides
  - Pollution
  - Soil erosion
  - fire