

CLIMATE

1. a) Climate is the average weather conditions of atmosphere of a place for a long time usually 30 to 35 years.
b)
 - Disruption of natural ecosystems due to ecological changes that affect existence of some organisms and resources.
 - Abnormal fast growth of plants due to increased carbon dioxide
 - Flooding from rising sea due to melting or antarctic ice.
 - Increased rainfall to between 7% and 11% annually due to increased rate of evaporation.
 - Severe draughts due to reduced rainfall.
2. a) $28^{\circ}\text{C} - 24^{\circ}\text{C} = 4^{\circ}$
b) -1803 mm
c)
 - The town experiences high temperatures throughout the year.
 - The annual range of temperature is small about 4°C .
 - The rainfall pattern has double maxima.
 - The wettest month is June/the driest months are December and January.
 - The total annual rainfall is high 1803mm.
3. a) (i) Polar climate
(ii) R - Canary current
S - Gulf stream current
b)

- High temperatures all year about 27°C
- Low diurnal range of temperature of approximately 6°C
- High rainfall of between 1500mm and 2000mm throughout the year.
- High humidity due to high rainfall and high evaporation
- Major winds are S. east and North East trade winds
- Thick cloud covers throughout the year.
- Rainfall is mainly convectional accompanied by thunderstorms
- Long hours of sunshine.
- Low atmospheric pressure.

c)

(i) How altitude influences climate.

- Temperature decreases with increase in height above sea level. This is because atmospheric air is denser at low altitude than high altitude.
- There is greater heat loss at high altitude due to few obstacles to interfere with outgoing terrestrial radiation hence low temperatures.
- Air pressure is higher in the lowlands due to greater weight of air above.

ii) Distance from the sea

- During summer cooler winds from the sea are onshore and modify temperature of the coastal land.
- During winter the sea water which is relatively warmer than land brings warming effect to the coastal land therefore modifying temperature.
- Onshore winds carry a lot of moisture from the sea bringing rainfall to coastal lands.

- Characteristics of natural vegetation associated with equatorial climate.
- The natural vegetation is equatorial rain forest vegetation.
- Growth of this vegetation is due to high rainfall well distributed throughout the year.
- Forests consist of tall trees with straight and smooth stems. The trees reach great height of 40 metres because of competition for sunlight.
- The trees form canopy.
- Forest is characterized by close growth of trees of different species.
- Trees have broad leaves drip-tip in shape.
- Many trees have buttress root system mainly for support.
- Forest is evergreen

5.

- Five characteristics of hot desert climate
- Low annual rainfall less than 250mm/dry climate.
- Occasional flash floods/sporadic rains
- Clear sky/clear sunny days/high terrestrial radiations.
- High temperature during the day.
- Relatively low temperatures during the night/high diurnal range.
- Strong winds
- Low humidity
- High evaporation
- Unreliable rainfall

6. How following factors influence climate:

- i) Wind/air masses

- Warm winds bring warming influence in the cool lands leading to warming effects
- Areas under influence of dry winds have little or no rainfall while areas under moist winds are usually wet.

ii) Latitude

- Areas near equator are hotter than areas far away from equator. This is due to concentration of sun rays per unit area at the equator.
- Amount of solar radiation and temperatures decreases polewards

7. Climatic conditions experienced in the Kenyan highlands.

- Region receives rainfall throughout the year
- Total rainfall ranges from 1000mm to 1500mm
- The region has double maxima in east and single maximum in west
- Rainfall is higher on the windward slopes than on leeward slopes
- Rainfall is higher on the windward slopes.
- Rainfall is caused mainly by S.E trade winds.
- Average temperature ranges between 17°C to 24°C.
- Area receives mainly relief rainfall.

8.

- Because of aspect slopes facing the sun are warm than slopes facing the opposite direction.
- The mountains cause anabatic winds which have a cooling effect on hill side during the day. Valley bottoms katabatic winds bring effect during the night
- Reduction of air pressure with increase in altitude

- Occurrence of relief rainfall on windward side as an influence of relief.
9. Green house effect is a condition where incoming solar radiation passes through the atmosphere while outgoing terrestrial radiation is blocked by gases and clouds in the atmosphere. This makes earth to retain much of terrestrial radiation therefore becoming warmer.
 10. Climate change due to human activities
 - Burning of fossil fuels
 - Forest and grassland fires
 - Industrial and agricultural development.
 11. Clearance of vegetation reduces disposal of carbon dioxide from the atmosphere by photosynthesis. Due to inadequate vegetation that would otherwise utilize CO₂ in photosynthesis, there is build up of excess carbon dioxide gases in the atmosphere leading to global warming.
 12. Climate- is the average weather conditions of a place or region which have been observed for long period of time usually 30-35 years.
 13. Isothermal layer – is a layer within atmosphere within which temperature remains constant despite increasing height.