

## 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>- Planted 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 set 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
  - Steep 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 natural 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 have mixed species of tree while planted forest have pure stand in a given area.
  - b) - Temperature ( $10^{\circ}\text{C} - 35^{\circ}\text{C}$ )
    - Tropical rain forest domestic high temperature areas ( $21^{\circ} - 35^{\circ}\text{C}$ )
    - 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 area. 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 wild 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 throughout 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 forest guards 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)

i)species Kenya There are both exotic and indigenous softwoods	Canada The main species are of coniferous type
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<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 Europe</p>	<p>(2mks) Large tracts of forests are destroyed by fires and diseases(2mks) Most of the wood products have ready markets in Canada, USA, Britain and Europe</p>
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- 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 ✓