8. MINING

1. (a) i) Mining has led to exhaustion of most mineral mines in Kenya e.g. Gold in macalder
ii) Flourspar is mixed 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 send to dessicators 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 live.
- 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) $1000 - 800 = 200\surd$

$^{200}/_{1000} \times 100 = 20\%$

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 wile 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 though 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 √