Marking Scheme KCSE 2016

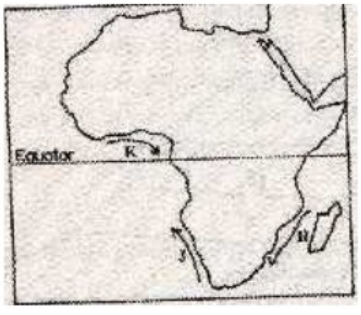
GEOGRAPHY 2016

PAPER 1

No. 1.a) How does a sea breeze occur? (2 marks)

- During the day, the land heats faster than the sea
- The air over the land rises
- Cooler air from the sea blows towards the land to replace the rising air
- The cool air from the sea is called the sea breeze

b) Use the map of Africa below to answer question (b) (i). (2 marks)



(i) Name the ocean currents marked H, J, and K.

- H - Mozambique/Agulhas
- J - Benguela
- K - Guinea

(ii) State two effects of a warm ocean current on the adjacent coastlands. (2 marks)

- It warms up the adjacent land
- It increases the humidity of the adjacent land
- It may lead to rainfall on the adjacent land

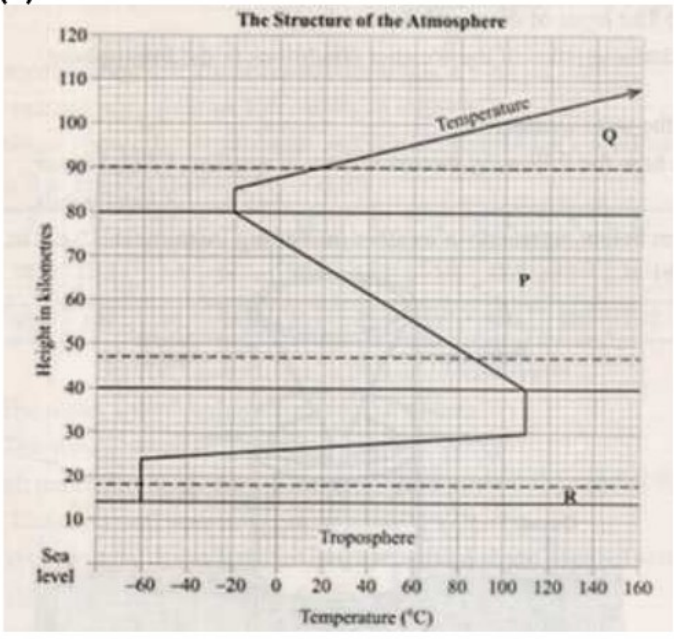
NO.2. (a) Name two types of boundaries according to the plate tectonic theory. (2 marks)

- Divergence/extension/constructive
- Convergence/compressional/destructive
- Transform /conservative.

(b) Give three effects of the movement of tectonic plates. (3 marks)

- They cause earthquakes.
- It can lead to formation of Fold Mountains.
- It can lead to formation of New oceanic crust.
- It may lead to formation of Submarine islands/volcanic islands.

No. 3.The diagram below represents the structure of the atmosphere. Use it to answer question (a)



Name: (i) the parts marked P and Q. (2 marks)

- P – Mesosphere
- Q- Thermosphere/ Ionosphere

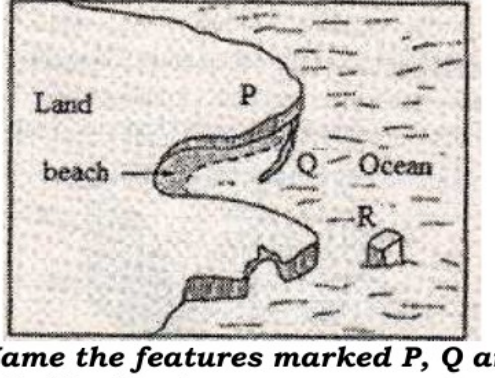
(ii) The layer of discontinuity marked R. (1 mark)

- R – Tropopause

(b) State two characteristics of the weather conditions in the troposphere. (2 marks)

- Temperatures decrease with an increase in height/normal lapse rate / the rate of decrease is 1 °C for 160 metres of height/0.65°C per 100 m/6.5 per 1000m
- Pressure falls with an increase in height.
- The speed of wind increases with an increase in height.
- It contains most of the atmospheric water vapour/clouds.

No. 4.The diagram below shows some coastal features.



(a) Name the features marked P, Q and R. (3 marks)

- P - Headland
- Q - Spit
- R – Stack

(b) State two conditions necessary for the formation of a beach. (2 marks)

- Presence of abundant supply of materials to be deposited.
- Presence of a shallow shore or continental shelf.
- A relatively weak longshore current.
- A weak backwash or strong swash or constructive waves.
- Gently sloping land at the sea shore.

No. 5. Name three major deserts in Africa. (3 marks)

- Sahara
- Kalahari
- Namib

6. Study the map of Kitale 1:50,000 (sheet 75/3) provided and answer the following questions.

(a) (i) Identify two human made features found at the grid square 2320. (2 marks)

(ii)What is the altitude of the highest point in the area covered by the map?(2 marks)

(iii) Give three types of natural vegetation found in the area covered by the map.(3 marks)

(b) (i) What is the bearing of the air photo principal point at grid square 3426 from the air photo principal point at grid square 2931 ? (2 marks)

(ii) Measure the distance of the dry weather road (C640) from the junction at point M (345142) from the junction at point N (416201) Give your answer in kilometers.(2 marks)

(c) (i) Using a scale of 1 cm to represent 40 metres, draw a cross-section from grid reference 410180 to grid reference 500180. (4 marks)

(ii) On the cross-section mark and name the following:

- a dry weather road; (1 mark)
- River Kaptarit (1 mark)
- a ridge. (1 mark)

(iii) Calculate the (VE) vertical exaggeration of the section. (2 marks)

(d) Citing evidence from the map, identify five social services offered in Kitale. (5 marks)

No. 7. (a) (i) Name two types of submerged highland coasts. (2 marks)
Longitudinal / Dalmatian

- Ria
- Fiord / / Fjord

(ii) Identify two resultant features of the emerged highland coasts. (2 marks)

- Raised geos / blow holes
- Raised cliffs
- Raised wave cut-platforms
- Raised beaches
- Raised caves
- Raised notches
- Raised archs / stumps / stack

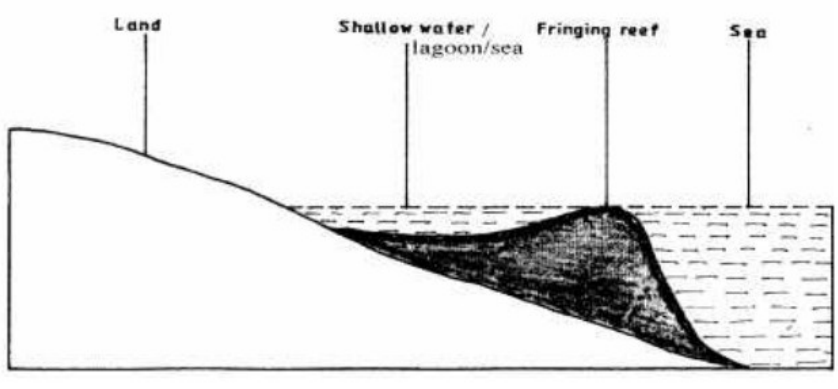
(b) State three factors influencing deposition by ocean waves.(3 marks)

- The existence of gentle sloping shore.
- Presence of shallow water along the coastline.
- The occurrence of a strong swash and weak backwash / constructive waves.
- The existence of indented coastline.
- Ample longshore drift materials to be deposited.

(c) With the aid of labelled diagrams describe the formation of the following coastal features:

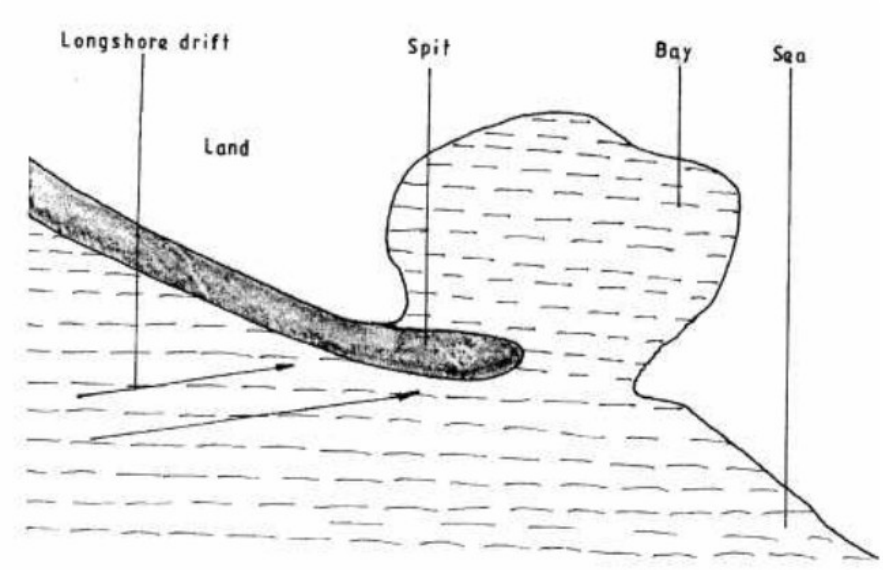
(i) Fringing reef (5 marks)

- It is formed when coral polyps start building a reef near the shore extending seawards.
- The rate of accumulation is faster seawards than towards the shore.
- The reef therefore becomes steeper seaward than towards the shore, enclosing a narrow and shallow lagoon.
- The accumulated coral materials form a fringing reef.



(ii) Spit (5 marks)

- It forms on a shallow shore at a point where the coastline bends landward
- Deposition occurs as the longshore drift is halted.
- More materials / deposits are piled up forming an elongated low lying ridge growing towards the sea.
- The elongated low lying ridge with one end attached to the coast and the other projecting into the sea is the spit.



(d) Explain the significance of oceans to human activities. (8 marks)

- Oceans provides building materials.
- Oceans modify the climate of the adjacent lands thus enhancing agricultural activities.
- Oceans are used by water vessels thereby enhancing transport/ communication.
- Oceans provide sites for recreational activities thus promoting tourism.
- Oceans are habitats for aquatic life hence providing food/ income to humans.
- Oceans habour minerals which are extracted for economic development.
- Ocean waves/ tides are harnessed which generate electric power for industrial/ domestic use.
- Oceans provide water for cooling industrial plants.
- Oceans encourage education and research.
- Ocean provides ideal grounds for testing military weapons.

No. 8.(a) (i) What is a lake? (2 marks)

- A lake is an accumulation of water in a wide hollow or depression/it is an extensive hollow in the earth's surface which contains water

(ii) Name two crater lakes in Kenya. (2 marks)

- Challa
- Paradise
- Simbi
- Sonanchi

(b) Describe how the following lakes are formed. (page 102 q3b)

(i) Corrie lake (4 marks)

- Snow accumulates in a depression on the mountain side
- Snow gets compacted into ice forming a cirque glaciers
- Frost action /alternate freeze –thaw action enlarges the hollow
- Plucking process steepens the back wall
- Eventually a deep arm – chair shaped depression is formed
- When the corrie fills up with melt water it forms a corrie lake

(ii) Oasis (4 marks)

- A pre existing depression formed through faulting or otherwise is exposed to wind erosion
- Wind eddies remove unconsolidated materials through deflation
- Futher deflation leads to depression reaching the water table
- Water oozes out of the ground and collects into the depression to form a lake known as an oasis

(iii) Lagoon (4 marks)

- Sand / silt are deposited along indented / irregular coast
- The deposits accumulate forming a spit
- The continued deposition elongates the spit eventually blocking the mouth of the bay forming a bay bar
- The bay bar separates part of the sea water from the open sea
- The enclosed sea water is the lagoon

(c) (i) Give three reasons why some lakes in Kenya have saline water. (3 marks)

- They lack outlets to the sea
- Some have salt bearing rocks on the lake bed
- High temperature in the surrounding area leads to high evaporation
- Heavy deposition of mineral salts into the lakes by the surface runs off
- Underground seepage of water that is rich in mineral salts

(ii) Explain how each of the following has affected lakes in Kenya.

deforestation (2 marks)

- It exposes soil which is eroded and carried into the lake causing siltation
- It destroys catchment areas which reduces water fed into the lakes

• industrialization (2 marks)

- Establishment of industries has led to disposal of waste /pollution / contamination of lakes
- Establishment of industries has led to increased water use which has lowered water levels

• Water needs. (2 marks)

- When water is diverted to farms for irrigation, water levels in the lakes are lowered

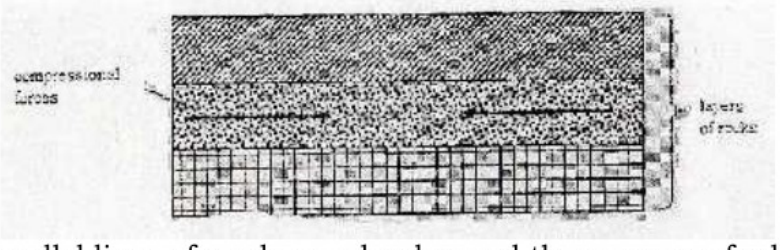
No. 9. (a) (i) Name three types of faults. (3 marks)

- Normal fault,
- Reverse fault,
- Tear or shear or slip or transform or wrench or strike slip fault,
- Thrust fault,
- Anticlinal fault

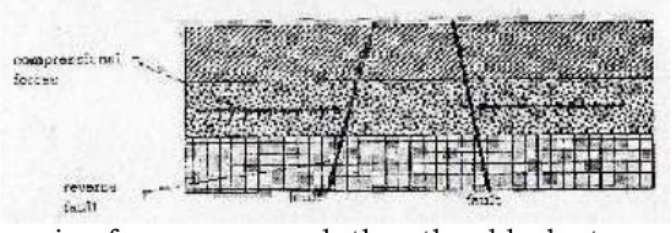
(ii) Apart from compressional forces, explain two other processes that may cause faulting. (4 marks)

- Faulting may be caused by force acting horizontally away from each other which causes tension in the crystal rocks. Due to tensional forces the rocks stretch and fracture causing faults.
- Faulting may occur where horizontal forces act parallel to each other in the opposite or same direction resulting in shearing.
- Faulting may also occur due to vertical movements which may exert a strain in the rocks making them to fracture

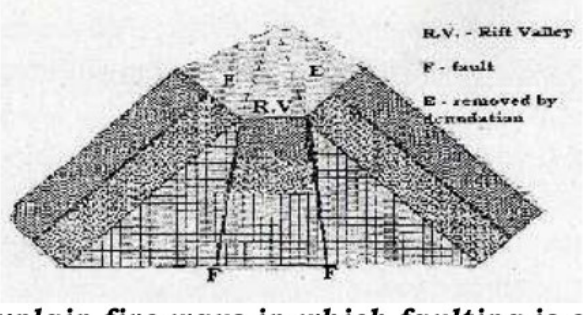
(b)With the aid of diagrams, describe how compressional forces may have led to the formation of the Great Rift Valley. (8 marks)



Two parallel lines of weakness develop and these reverse faults



Compression forces may push the other blocks towards each other.The outer blocks ride over the middle block and the middle block sinks or subsides or may remain stable.The sunken middle part forms a depression called a rift valley



(c) Explain five ways in which faulting is of significance to human activities. (10 marks)

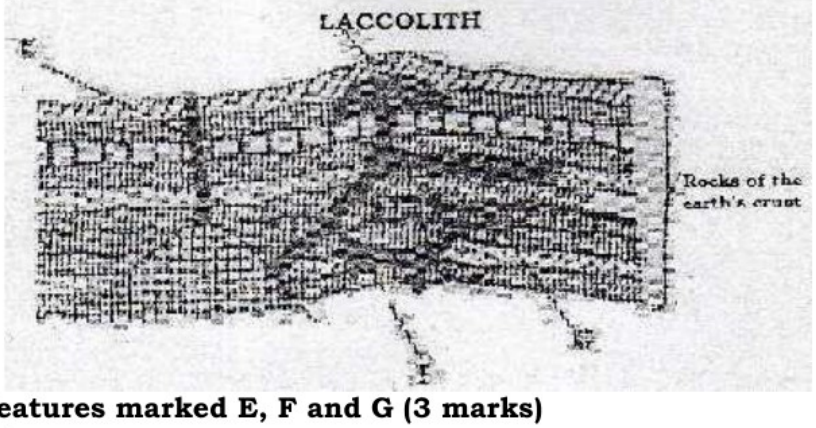
- Faulting leads to formation of features that form beautiful scenery which attract tourists.
- Faulting leads to formation of lakes that are important fishing grounds or tourists' sites or mining sites.
- The lakes provide water for irrigation or for domestic or industrial use.
- Faulting causes displacement of rocks which exposes minerals that are mined.
- Faulting may lead to the formation of mountains or horsts which experience rainfall on the windward side that give rise to rivers which provide water for industrial or domestic or agricultural or industrial use for production of hydroelectric power.

- Block mountains formed through faulting lead to formation of relief rainfall on the windward side which favours agriculture, settlements and forestry.
- Subsidence of land as a result of faulting may lead to loss of life and property.
- Springs occurring of the foot of fault scarps attract settlements.
- Faulting creates deep faults which are passages of stream jets which may be utilized for geothermal power production. Rivers flowing over fault scarps may form waterfalls which can be harnessed to produce Hydro Electric Power for industries.
- When faulting occurs across a ridge it may provide a dip which could form a mountain pass where transport and communication lines can be constructed or may hinder development of transport.

No. 10.(a) Differentiate between magma and lava. (2 marks)

- *Magma is the molten rock material which originates from the interior of earth, cools while below the earth's surface (and has large crystals) while lava is the molten rock materials that has reached the surface. (Has solidified and has small crystals.*

(b) The diagram below shows some intrusive volcanic features.



Name the features marked E, F and G (3 marks)

- E - Dyke
- F - Lapolith
- G – Sill

(c) Describe how the following features are formed and for each give an example from Kenya:

(i) A crater (3 marks)

- Eruption of lava through a central vent causes building up of a cone. The lava in the vent cools and contracts. The cool lava withdraws into the vent leaving a shallow depression of the cone. Gas explosions may blow away surface rocks causing a crater. Examples include Mt Longonot, Mt Menengai, Mt Suswa or Mt Marsabit

(ii) A geyser (5 marks)

- Rainwater percolates down through cracks in the rocks. The water gets into contact with hot igneous rocks. The water is super heated and gases/steam form. Pressure builds up in the cracks. The pressure causes steam and water to be ejected explosively as jet to the surface intermittently. The water and steam are emitted intermittently as pressure level changes. Example – Lake Bogoria

(iii) A lava plateau (4 marks)

- It is formed when magma reaches the surface of the earth through a series of vents/fissures. The lava is extremely fluid/ultra-basic. The lava spreads evenly over a large area .The lava cools slowly and solidifies. Examples - Yatta plateau, Uasin Gishu plateau and Laikipia plateau

(d) Explain four ways in which volcanic features influence human activities. (8 marks)

- Volcanic highlands or mountains are sources of rivers which provide water for domestic or agricultural or industrial use.
- Volcanic rocks weather down to form fertile volcanic soils which support agriculture.
- Volcanic rocks are important building materials in the construction industry.
- Volcanic features are tourist attractions which promote tourism.
- Volcanic mountains or highlands influence formation of relief rainfall which encourage agricultural activities.
- Volcanic highlands influence formation of relief rainfall which encourage agricultural activities.
- Volcanic highlands or mountains modify temperatures making them attractive to human settlements.
- Volcanic features such as steam jets and geysers provide suitable sites for geothermal power generation.

GEOGRAPHY PAPER 2

No.1.(a) Name two exotic breads of dairy cattle reared in Kenya. (2 marks

- *Fresian / Holstein*
- *Ayshire*
- *Guernsey*
- *Jersey*
- *Alderney*
- *Brown Swiss / Swiss Brown*

(b) State three physical conditions that favour dairy farming in Denmark. (3 marks (Page 143 2007 Q.5)

- *The landscape is gently sloping which is suitable for grazing*
- *The climate has warm / sunny summers / moderate temperatures (10^o – 17^oC) that allow outdoor grazing.*
- *There is cool climate suitable for pasture growing*
- *The moderate rainfall (500–1000mm) that supports growth of grass / fodder crops*
- *Boulder clay soils are fertile support high pasture*

No2.(a) Name the method of irrigation used in the Perkerra irrigation scheme (1 mark)

- *Furrow / canal irrigation.*

(b) State three factors that influenced the location of the Perkerra irrigation scheme. (3 marks (Page 150 2013 Q.7b)

- *Availability of extensive land for irrigation.*
- *Availability of water from River Perkerra.*
- *The gently sloping land that allows mechanization/ easy flow of water for*
- *irrigation by gravity.*
- *Presence of fertile loamy/ alluvial soils good for the growth of a variety of crops.*
- *Dry conditions/ semi arid/ unreliable/ low rainfall making it necessary to irrigate the area.*
- *The area is sparsely populated.*

PP2 No. 3.(a) Differentiate between transport and communication. (2 marks)

- *Transport is the movement of goods and people from one place to another while communication is the transmission of ideas of information from one person to another.*

(b) State three causes of the decline in the use of letter writing as a means of communication in Kenya. (3 marks) (page 190 q6)

- *The high rate cost of postage*
- *Competition from cheaper and faster means of communication*
- *The delay in the delivery of letters*
- *Loss of letters*
- *Tampering with letters*

PP2 No. 4(a).Why is Kenya's petroleum refinery located at Mombasa? (2 marks

- *It is easier to transport refined petroleum products than crude hence the need to process crude oil at the port of entry/ crude oil the raw material for the refinery comes by sea/it is cheaper to transport to the port of Mombasa/closeness to the source of raw material/Mombasa is the only port of entry.*

(b)State three ways in which the clearing of forests has affected the natural environment in Kenya. (3 marks)

- *It has led to reduced volume of water in the rivers / caused drying up of rivers.*
- *It has led to the destruction of the natural habitat of wildlife. It has endangered some of the wildlife species.*
- *It has led to changes in the rainfall pattern/ Desertification.*
- *It has interfered with the beauty of the environment / lowered the aesthetic value of the environment.*
- *It has disrupted the ecosystem*
- *It has accelerated soil erosion.*

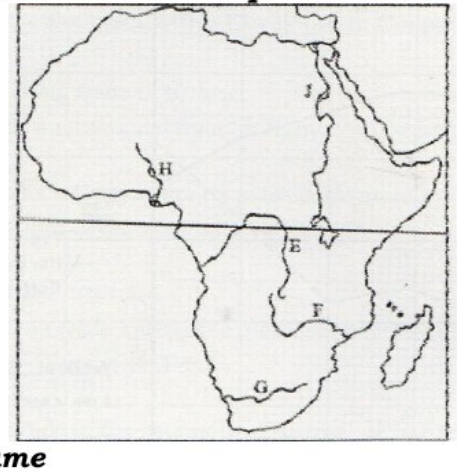
PP2 No. 5.(a) State three measures which the government of Kenya has taken to reduce infant mortality. (3 marks)

- *Good nutrition*
- *Education*
- *Better health*
- *Advanced technology*

(b) Give three negative effects of low population growth in a country. (3 marks)

- *It leads to under utilization of resources,*
- *It leads to reduced market or goods*
- *It leads to reduced labour force / it is expensive to provide medical care / transport*

PP2 No. 6.Use the map below to answer questions a (i) and (ii)



a) Name

(i) The rivers marked E, F and G (3 marks)

- ***E*** *- R. Congo.*
- ***F*** *- R. Zambezi.*
- ***G*** *- R. Orange*

(ii) The human-made lakes marked H and J. (2 marks)

- ***H*** *- Kainji*
- ***J*** *– Nasser*

(iii) Explain four measures which should be taken to improve inland water transport in Africa. (8 marks)

- *The waterways should be dredged regularly to control siltation/ maintain constant depth of the rivers and lakes for easier navigation.*
- *Dams/ barrages should be constructed to control flooding hence allowing navigation.*
- *Constructing canals/ canalizing the rivers where waterfalls, rapids or rock outcrops exist to bypass obstacles that hinder navigation.*
- *Constant clearing/ controlling the growth of vegetation to allow free movement of vessels.*
- *Using modern vessels and equipment to improve the efficiency of handling cargo/ passenger service.*
- *Removal of rock obstacles from river beds to allow free navigation.*

b) State four ways in which communication contributes to economic development in Kenya. (4 marks)

- *Technological efficiency in communication makes business transactions easier/ faster.*
- *Modern communication networks allow for the spread of ideas/ information for decision making which enhances economic development.*
- *Communication promotes development of related industries/ business opportunities.*
- *Communication services provide employment opportunities.*
- *Communication connectivity promotes mobility of labour.*
- *Individuals/ Companies/ Government earns income / derives revenue from communication services.*
- *Communication facilitates marketing of products thus a wider market*

c) Explain four problems facing railway transport in Africa. (8 marks)

- *African countries use a different railway gauges which makes it difficult to have an integrated railway transport system/ transhipment of goods.*
- *Construction of railways requires large amounts of capital that most countries lack, either to extend or maintain the existing lines.*
- *Accidents/ vandalism/ uprooting of the railway line causes great losses/ delays in transportation.*
- *Tropical storm waters at times wash away vital sections of the railway lines thereby disrupting transport/ causes accidents.*
- *Railway transport faces stiff competition from the faster/ flexible means of transport such as road and air transport hence under-utilization of railway facilities.*
- *Fuelling/ maintenance of railway stations and other related overhead costs are high thus reducing profit margins.*

PP2 No. 7. Study the photograph below and answer questions (a) and (b).

(a) i Name: (i) the mining methods shown in the photograph; (1 mark)

- *Panning/ alluvial mining/ placer mining*

(ii) two minerals that may be mined using the method shown in the photograph. (2 marks) –

- *Gold,*
- *Diamond,*
- *Platinum,*
- *Tin*

(b) (i) Using evidence from the photograph, give four indicators that show that the weather was hot when the photograph was taken. (4 marks)

- *Almost all the miners have removed their shirts/ bare chested.*
- *Some miners are wearing hats/ head scarfs*
- *The sky is clear.*
- *The shadows indicate that the sun is almost overhead.*
- *Use of an umbrella by a person at the middle ground.*
- *Bodies are glistering with sweat/ sweaty bodies.*
- *There is a reflection of the sun rays on the water surface .*

(ii) Describe how minerals are obtained using the mining method shown in the photograph.(5 marks)

- *A mixture of water, solid/ mud and mineral particles is scooped from the water bed using a pan. Water is added if the mixture is thick/ if the water is excess it is decanted. The material scooped is swirled in the pan. This separates the lighter material from the heavier particles which contain the mineral particles. The lighter material is removed/ poured out. The heavier materials are sorted to display mineral particles. The mineral particles are collected from the pan.*

(iii) Citing evidence from the photograph, explain two ways in which the mining method shown has affected the environment. (4 marks)

- *The scooping of materials has led to water pollution as indicated by the brown colour stagnant water which may make it unfit for people to use.*
- *The continuous scooping and dumping of the waste has led to land dereliction as indicated by the depression and heaps of waste material.*
- *The method has led to destruction of vegetation as miners cleared the land to acces the area with the mineral as indicated by absence of vegetation/ bare ground/ in the foreground/ middle ground.*
- *The method has led to loss of biodiversity/ destroyed the ecosystem as indicated by the absence of plant life where mining is taking place*

(iv) Apart from the method shown in the photograph, name three other mining methods.(3 marks) :

- *Opencast/ stripping method,*
- *Deep shaft/ underground method/ solution.*
- *Adit/ drift/ horizon/ tunnel method/ slope mining,*
- *Drilling method.*

(c) Explain how the following factors influence the occurrence of minerals:

(i) evaporation; (2 marks)

- *High temperatures in arid and semi-arid areas cause evaporation of water in lakes/ seas. This leads to high concentration of mineral salts in the water. Continued evaporation causes further recrystallization of the salts which may thereafter be attracted as minerals such as soda ash and common salt/ deposition of salts near the surface*

(ii) vulcanicity; (2 marks)

- *When molten magma intrudes into rock joints minerals contained in the magma embedded in the joints called veins. Such minerals as tin and copper occur in this form/ Hot springs/ geysers. Fumaroles bring minerals to the earth's surface*

(iii) metamorphism (2 marks)

- *High pressure and heat cause recrystallization and hardening of certain rocks causing them to change their nature to and become minerals such as diamond.*

PP2 No. 8.a) (i) Name two settlement patterns. (2 marks)

- *Nucleated settlement/ clustered*
- *Dispersed settlement / scattered*
- *Linear settlement*
- *Radial settlement*

(ii) Explain four physical factors that influence settlement. (8 Marks)

- *Areas that receive high reliable rainfall attract more people since they can engage in arable farming/ares that receive low rainfall have fewer people as they are unsuitable for arable farming.*
- *Areas near water bodies attract dense settlements as the water is available for domestic/ industrial use /areas of scarcity water discourages settlement since it is difficult to get water hence low productivity.*
- *Areas with cool moderate temperature are densely settled as they can support agriculture / human life. Areas with extreme temperatures are sparsely settled as they are uncomfortable for human beings.*
- *Areas with fertile soils attract settlement as a wide range of crops can be grown / poor soils/ poorly drained soils are unsuitable for arable farming / are prone to water diseases.*

(b) (i) Explain how the following factors have led to the growth of Thika town.

- Location; (2 marks)

- *Its proximity to Nairobi has led to industrial expansion as Nairobi acts as market to its products/supplies*

- Transport; (2 marks)

- *It has a railway / road connection which provides easy movement of food/people/raw materials/finished products*

- Land. (2 marks

- *There is ample/flat land for development of industries/settlement*
- *The cost of land is relatively cheap hence attracts investors*

(ii) Apart from being a transport and communication centre, give three other functions of Thika town. (3 marks)

- *It has a railway/ road connection which provides easy movement of food/people*
- *It is an industrial center*
- *It is an educational center*
- *It is a commercial center*
- *It is an administrative center*
- *It is recreational center*
- *It is a religious center.*

(c) Explain three positive effects of urbanization to a country. (6 marks

- *It encourages national unity as people of different nationalities come together and interact*
- *It promotes links between countries as communication networks tend to focus on and are more developed in urban centres*
- *It provides employment opportunities through the establishment of commercial and industrial activities which attract population that provide labour.*

No. 9.(a) Identify three sources of renewable energy. (3 marks)

- *Wind*
- *Sun*
- *Water*
- *Tides / waves*
- *Geothermal steam*
- *Biomass*
- *Wood/trees*
- *Drought animals*

(b) (i) Name three main Hydro Electric Power Stations along the River Tana. (3 marks)

- *Masinga*
- *Kamburu*
- *Gitaru*
- *Kindaruma*
- *Kiambere*

(ii) Apart from providing electric power, state four other benefits of the dams along the River Tana. (4 marks)

- *The reservoirs provide water for domestic use / industrial use/ irrigation.*
- *The dams / reservoirs are tourist attractions.*
- *The reservoirs are fresh water fisheries.*
- *The reservoirs modify local climate.*
- *The dams act as bridges across the river.*
- *The dams and reservoirs control floods downsteam.*

(iii) Identify two problems that affect the production of power from the stations along River Tana. (2 marks)

- *Fluctuations of water levels in the reservoirs.*
- *Inadequate capital for maintenance / high cost of dredging/ expansion.*
- *Silting of the reservoirs*

(c) Explain four measures the Government of Kenya has taken to conserve energy. (8 marks)

- *Encouraging people to use renewable sources in order to reduce the overreliance on fossil fuels,*
- *Developing energy saving technologies in order to reduce the high consumption of energy,*
- *Enforcing the legislation against indiscriminate cutting down of trees for fuel thus conserving existing resources.*
- *Educating the public on the careful use of energy in order to save it.*
- *Progress taxation on energy consumption in order to discourage the misuse of energy,*
- *Proper planning of road networks in urban areas to reduce traffic jams hence saving on fuel consumption,*
- *Encouraging the use of public transport/ walking/ cycling/ railway in order to reduce the number of vehicles on the roads thus reducing energy consumption,*
- *Discouraging importation of high fuel consumption vehicles to reduce amount of fuel used.*
- *Encouraging afforestation/ reafforestation for continuous supply of wood fuel.*

(d) Some students carried out a field study on sources of energy by sampling the households around their school.

(i) Identify two sampling techniques the students may have used during the study.(2 marks)

- *Stratified*
- *Random*
- *Systematic*

(ii) Give three advantages of sampling the households for the study. (3 marks)

- *To save on time.*
- *To reduce bias.*
- *To allow for detailed study.*
- *To reduce cost.*