312/1
GEOGRAPHY
Paper 1
TERM 2 2019

Kenya Certificate of Secondary Education

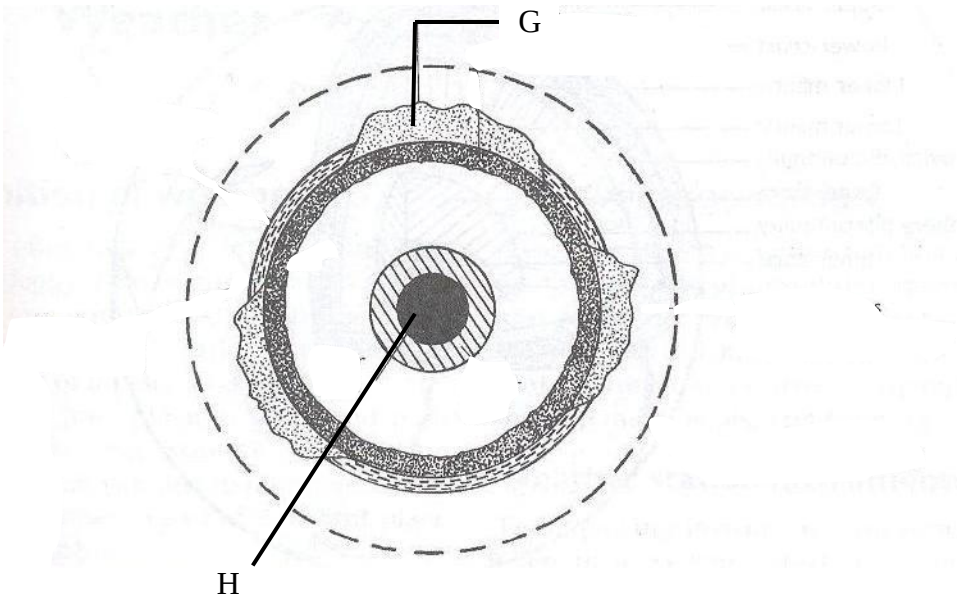
SECTION A

*Answer **all** the questions in this section.*

1. (a) What is the relationship between Geography and Chemistry? (2 marks)

- *Geography applies Chemistry concepts in studying the chemical composition of rocks and soils.*
- *Chemistry concepts are used in Geography to explain chemical changes that occur in rocks/soils.*

(b) The diagram below shows the internal structure of the earth.



(i) Name the parts marked **G** and **H**. (2 marks)

G - *Continental crust/sial*
H - *Inner core*

(ii) Name the dominant mineral in the mantle. (1 mark)

- *Olivine/ ferromagnesian silicate*

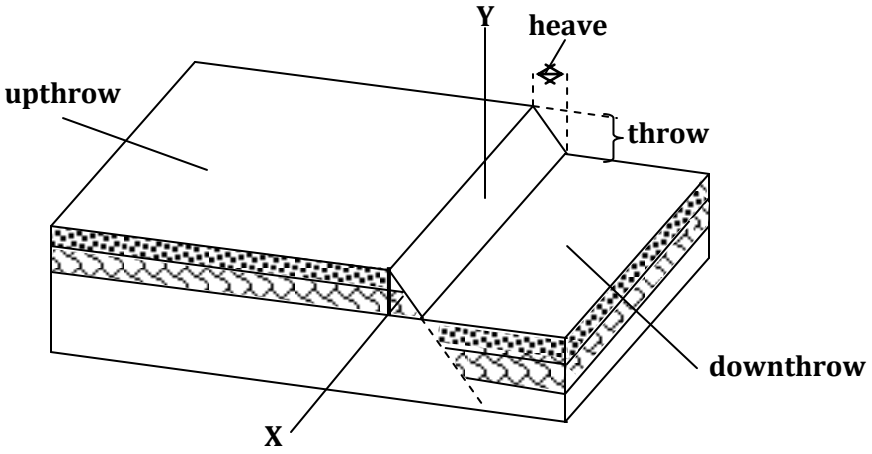
2. (a) Differentiate between absolute and relative humidity. (2 marks)

- *Absolute humidity is the actual amount of water vapour or moisture in a given mass of air at a particular temperature while relative humidity is the ratio of the absolute humidity of a given mass of air to the maximum amount of moisture that this mass of air could hold at the same temperature.*

(b) State the significance of humidity in the atmosphere. (3 marks)

- *The amount of water vapour in a given volume of air indicates the atmospheres potential capacity to hold moisture: It determines the amount of precipitation that a given area is likely to receive.*
- *Water vapour is important in absorbing radiation hence regulates the heat loss from the earth.*
- *The amount of water vapour determines the amount of energy stored in the atmosphere for the development of storms.*

3. The diagram below shows some features formed by faulting. (2 marks)



(a) Name the parts marked **X** and **Y**. (2 marks)

X - *Hade*
Y - *Fault scarp/escarpment/scarp face.*

(b) State ***three*** effects of faulting on drainage of an area. (3 marks)

- *Down warping due to faulting may lead to formation of depressions which may be filled by water to form lakes.*
- *Fault lines due to fracturing of crustal rocks may change the course of river making the river to start flowing a long the fault line forming faulting - guided drainage pattern.*

- *Fault scarps forming across rivers course may lead to formation of waterfalls.*
- *Faulting may lead to formation of lines of weakness in earth's crust which becomes passages for hot water from the underground to the earth's surface to form hot springs and geysers.*

4. (a) Identify ***two*** scales used to measure the intensity of an earthquake.(2 marks)

- *Rossi forell scale*
- *Mercalli scale*

(b) Give ***three*** major earthquake zones of the world. (3 marks)

- *The mid-Atlantic*
- *The Great Rift Valley region*
- *The Mediterranean region/Tethyan*
- *The circum Pacific region*
- *West coast of South America/ the Andes region*
- *West coast of N. America/Rockies region*
- *Himalayas belt*

5. (a) State ***two*** ways in which plants cause weathering. (2 marks)

- *Plant roots grow into the joints and cracks of rocks widening the joints and cracks and with time they cause rock blocks to separate and break away.*
- *The widening of joints and cracks provide space and passage for moisture and air to penetrate deeper into the rocks facilitating hydrolysis and solution weathering process.*
- *Plants rot on rocks in the presence of moisture producing organic acids which react with some of minerals within the rock causing it to decay.*
- *Mosses and Lichens that grow on a rock cause the rock to be moist, facilitating chemical weathering process to take place.*

(b) Describe the process of weathering through oxidation. (3 marks)

- *Rocks with iron mineral combined with oxygen/ oxidized to form a new mineral. The new rock formed easily crumbles.*
- *Ferrous oxide is oxidized to ferric oxide which is reddish brown in colour which easily crumbles.*

SECTION B

*Answer question **6** and any other **TWO** questions from this section.*

6. Study the map of Migwani 1:50,000 (sheet 151/1) provided and answer the following questions.

(a) (i) What is the altitude of the lowest contour shown on the map? (1 mark)

- *660m*

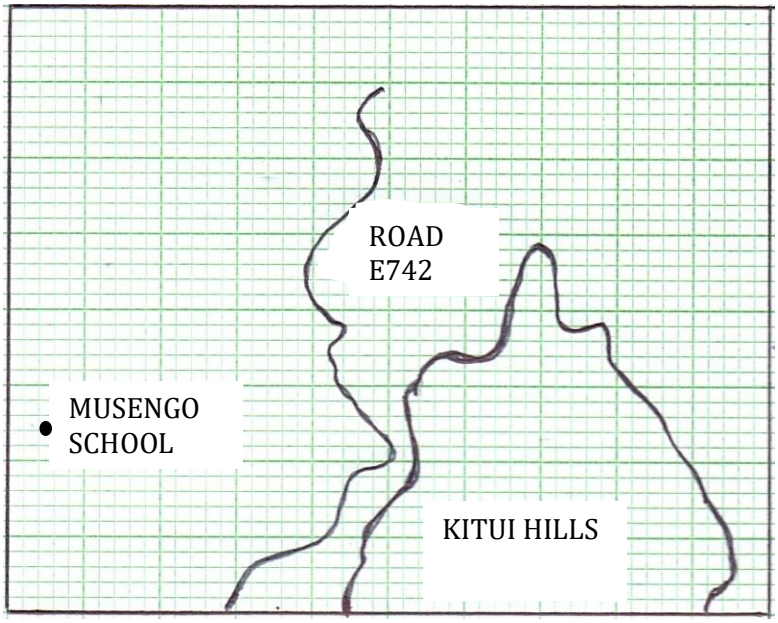
(ii) Give the six-figure grid reference of Mboni dam. (2 marks)

- *073784*

(iii) What is the length in Kilometres of the All Weather Road Bound Surface C94 from the junction with the Dry Weather Road D502 to Northing 84? (2 marks)

- *5.6 km*

(b) Draw a rectangle measuring 10 cm by 8 cm to represent the area enclosed by Eastings 90 and 00 and Northings 62 and 70. (1 mark)



On the rectangle, mark and name the following features:

(i) Musengo school
(ii) Road E742
(iii) Kitui Hills

(3 marks)

(c) (i) Citing evidence from the map, identify ***four*** social services offered in Mutitu (Ndooa) township. (4 marks)

Services	**Evidence**
- *Health/medical services*	- *Health centre*
- *Administration services*	- *Court house/Chief's office*
- *Water supply services*	- *Pipeline/water tank*

- *Education services* - *Housing services*	- *School* - *Built up area/huts*

(ii) Describe the relief of the area covered by the map. (6 marks)

- *The lowest altitude is 660m/ the highest altitude is 1515m above sea level.*
- *The land rises from the East to the West.*
- *To the east of Easting 08, the landscape is generally hilly/has many hills.*
- *There are many interlocking spurs along river valleys*
- *There are some abroad valleys in the South East.*
- *The landscape is dissected by river valleys.*
- *There are many narrow river valleys in the highlands.*
- *The land is gently sloping in the east.*
- *There are steep slopes in the hilly areas/ to the West.*
- *Some areas in the east are flat.*
- *There are ridges in the central and South Western part.*

(d) Describe the characteristics of the long profile of river Ikoo. (6 marks)

- *River Ikoo flows to the South East.*
- *The river has many meanders*
- *The river becomes wider from grid square 0769.*
- *There are interlocking spurs along the course of the river.*
- *The river has many small tributaries that form a dendritic pattern along the course.*
- *Some parts of the long profile have a steep gradient.*
- *There are sand/mud deposits downstream*
- *The river is permanent.*

7. (a) (i) Describe the following characteristics of minerals:

- Texture (1 mark)
  - *The sizes and shapes of individual mineral particles vary/differs.*
- Tenacity (1 mark)
  - *The ability of a mineral to resist/to withstand tearing, crushing or breaking differs/vary.*

(ii) Describe how extrusive igneous rocks are formed. (4 marks)

- *During volacanic eruptions, lava and other volcanic materials thrown on to the earth's surface. The lava cools and solidify to form extrusive/volcanic igneous rocks. The rate of cooling and solidification is very rapid due to presence of low temperature such*

that the rocks formed will have minerals with fine textured and small crystals.

(b) (b) For each of the following rocks, name the resultant rock that forms after metamorphism.

(i) Sandstone - *Quartzite* (1 mark)

(ii) Limestone - *Marble* (1 mark)

(iii) Granite - *Gneiss* (1 mark)

(c) Explain ***three*** economic significance of rocks in Kenya. (3 marks)

- *Some rocks such as granite, volcanic peaks may form unique sceneries which attract tourists promoting tourism industry.*
- *Rocks provide the parent materials through weathered rocks especially volcanic rocks forming fertile volcanic soils for agricultural production.*
- *Rocks such as sandstone, marble and limestone are strong and resistant to weathering are used in the building and construction industry.*
- *Minerals and other valuables substances are extracted/mined. Some rocks are used as raw materials for the manufacturing industry.*
- *Impermiable rocks may act as storage of underground water which can be tapped to supply water for domestic and industrial use.*

(d) Students carried out a field study on rocks around their school.

(i) State ***two*** importance of stating the objectives for the study. (2 marks)

- *They direct the actual activities to be carried out during the study.*
- *They guide the possible areas of data collection to obtain required information.*
- *They give the aims/purposes for carrying out the field study.*
- *They guide on the appropriate methods/tools for data collection.*

(ii) Give ***three*** reasons why they prepared a route map of the study area. (3 marks)

- *To identify direction they would take*
- *To show the features/rocks they are likely to see.*
- *To help estimate the distance to be carried*
- *To help estimate the time to be taken.*
- *To help make/prepare time schedule.*

(iii) Give ***three*** activities that the students where involved in during the field study. (3 marks)

- *Data collection/taking photographs/filming/videoing*
- *Data recording/ taking notes/tallying/sketching*
- *Collecting different types of rock samples.*

- *Classifying collected rock samples*
- *Labeling of collected rock samples.*

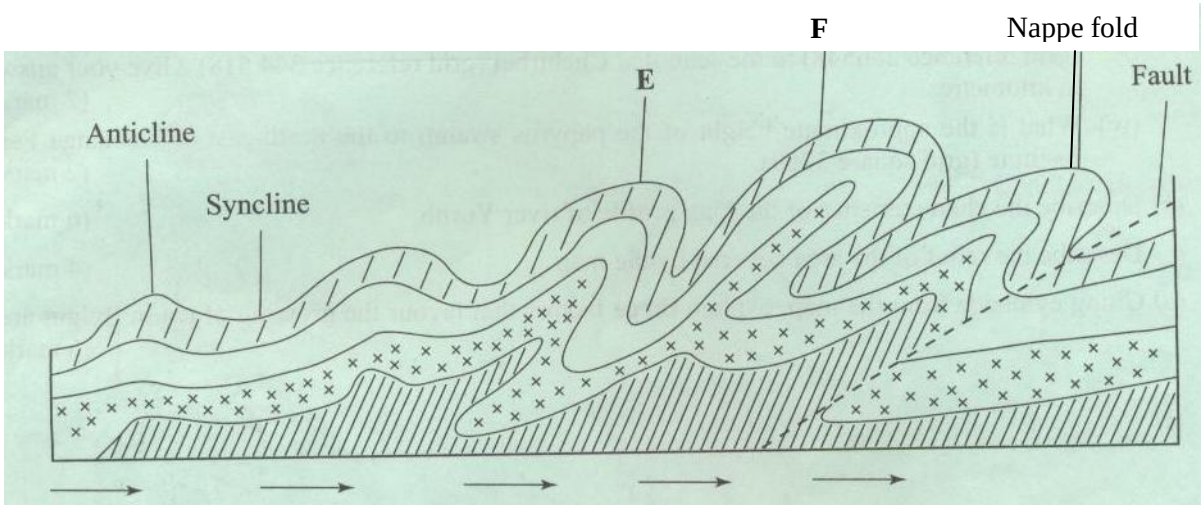
8. (a) (i) What is an orogeny? (2 marks)

- *A fold mountain building period.*

(ii) Give ***two*** factors that influence the folding process of rocks. (2 marks)

- *The strength/intensity/magnitude of the compressional forces.*
- *The nature of the sedimentary rocks/The age of the rocks*

(b) The diagram below shows some types of folds. Use it to answer the question (i) and (ii).



(i) Name the types of folds marked **E** and **F**. (2 marks)

E - *Overfold*
F - *Recumbent fold*

(ii) Describe how an overthrust fold is formed. (4 marks)

- *Layers of rocks of the earths crust are subjected to compressional forces.*
- *Intense folding result in the formation of an overfold.*
- *With increased pressure, the overfold results in the formation of recumbent fold producing a thrust plane.*
- *The upper part of the recumbent fold slides forward over the lower part along the fault plane resulting to the formation of an overthrust fold.*

(c) Name the countries in which the following fold mountains are found.

(i) Atlas (1 mark)

- *Western Sahara/ Morocco/ Algeria*

(ii) Alps (1 mark)

- *Austria/ Switzerland/ Italy/ France/ Leichstein.*

(iii) Himalayas (1 mark)

- *India/Pakistan/Afghanistan/ Bhutan/ Nepal/ China.*

(iv) Andes (1 mark)

- *Chile/ Peru/ Bolivia/ Argentina/ Venezuela/ Ecuador/ Colombia*

(d) (i) Apart from fold mountains, name ***three*** other features resulting from folding. (3 marks)

- *Synclinal valleys/depressions*
- *Rolling plains*
- *Ridges*
- *Intermontane basins*
- *Intermontane plateaus*

(ii) Explain ***four*** ways in which fold mountains influence climate. (8 marks)

- *The slopes of mountains which face the sun receive direct sunshine /and are warmer.*
- *Mountain slopes cause the development of local winds due to variation in pressure between the mountain top and the valley bottom.*
- *The windward slopes of mountains receive high rainfall due to orographic effect.*
- *Atmospheric pressure reduces with increasing attitude along a mountain slope.*
- *Temperature decreases with increasing /altitude along a mountain slope.*

9. (a) (i) Differentiate between a marine delta and a Lacustrine delta. (2 marks)

- *Marine delta is formed when a river deposits its load as it enters the sea while lucustrine is formed as a river enters a lake.*

(ii) Explain ***three*** conditions necessary for the formation of a delta. (6 marks)

- *The river must have a large load of sediments as it drains into the sea/lake*
- *The river course must be free from obstacles which may interfere with rivers load/which may reduce the amount of load/filtering the amount of load.*
- *The gradient of the river at its mouth be low to allow slow flow of the river.*
- *The sediments must be deposited at a faster rate then they are removed by ocean currents at the river mouths.*

(iii) State ***three*** significance of deltas to man. (3 marks)

- *Alluvial deposits in deltas may have valuable minerals which are then exploited.*
- *Deltas have forms extensive natural vegetation which support variety of wildlife/ ecosystem*
- *Alluvial deposits forms extensive land settlement/agriculture.*

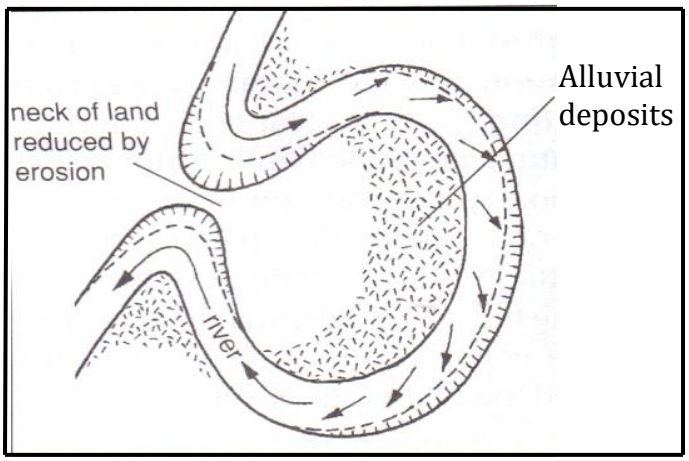
(b) (i) What is a braided channel? (2 marks)

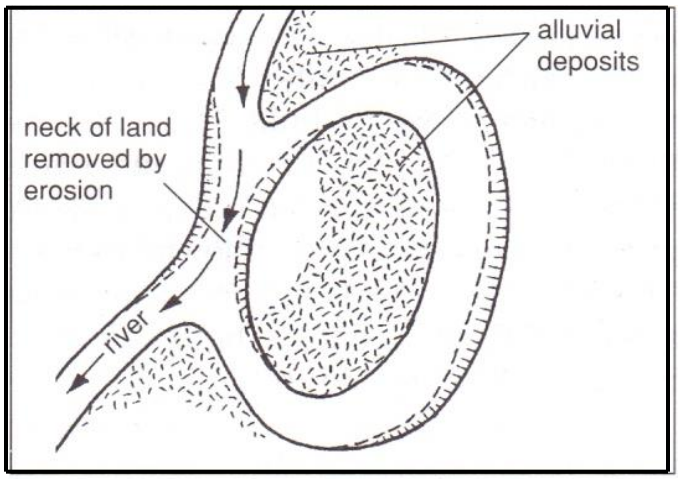
- *It's a wide and shallow channel of a river made up of network of diverging minor channels separated from each other by sand banks.*

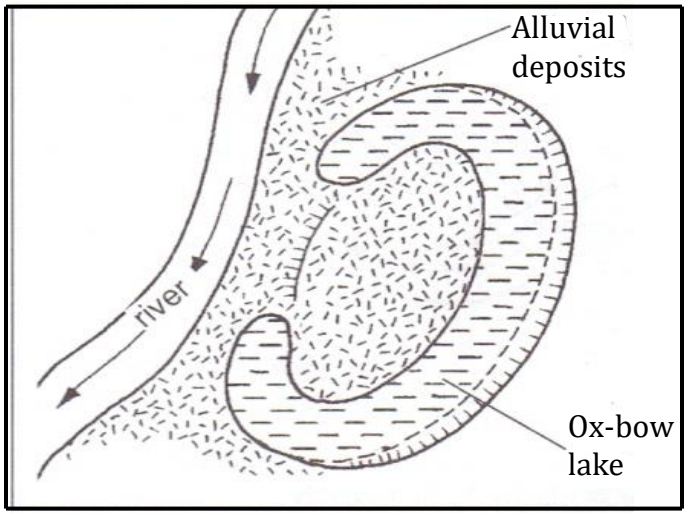
(ii) State ***four*** conditions necessary for the formation of a braided channel. (4 marks)

- *A river must carry a large load*
- *The section where braids form should have a reduced gradient*
- *A dry season when the volume of water coming from catchment area is reduced.*
- *Arid conditions which encourage evaporation reducing volume of water.*
- *Presence of an obstacle/sand banks may cause the river to subdivide into many channels*

(c) With the aid of well labelled diagrams, describe how an ox-bow lake is formed. (8 marks)







- *An ox-bow lake forms when a river starts to meander on a flood plain.*
- *Lateral erosion dominates on the outer side of the bend while deposition takes place on the inner bank.*
- *Lateral erosion results in the reduction of the neck of the land between adjacent bends.*
- *The neck of land is eventually worn away.*

- *Deposition on the meander sides especially during flood blocks off the meander.*
- *The river abandons the meander and follows the new…… cut that was the neck of the land.*

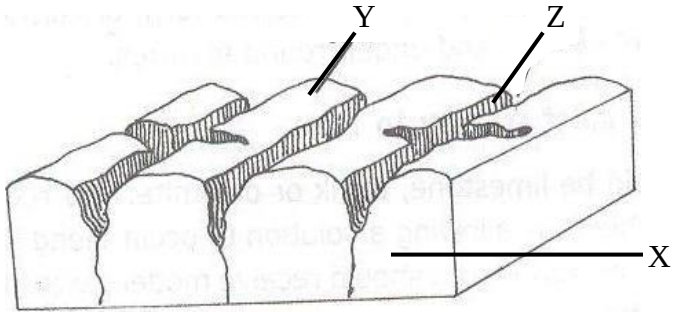
10. (a) What is Karst scenery? (2 marks)

- *A landscape dominated by limestone, chalk or dolomite rocks which are soluble in rain water through carbonation to form unique features.*

(b) State ***four*** factors which influence the development of a karst landsforms. (4 marks)

- *Presence of hard and well-jointed limestone, chalk or dolomite rocks for maximum water permeability.*
- *Hot and humid climate /abundant rainfall to increase rate of solution.*
- *Water table should be below/deep the earth's surface to allow more water percolating down the rocks cracks enhancing formation of features.*
- *Long period of time the area has been subjected to weathering and erosion processes.*

(c) The diagram below shows a feature in a Karst landscape. Use it to answer question (i) and (ii).



(i) Name the parts marked **X, Y** and **Z**. (3 marks)

X - *Limestone rock/chalk/dolomite*
Y - *Clint*
Z - *Grike*

(ii) Describe how the features marked **Y** and **Z** are formed. (5 marks)

- *Weathering opens up rock joints in limestone areas. Rain water through carbonation further widens the limestone joints and dissolves the soluble part of the limestone to form narrow and deep depressions called grikes. The more resistant parts will remain raised blocks above the grikes and called clints.*

(d) (i) Define a lake. (2 marks)

- *It is a large/body mass of water occupying a basin/ depression/ hollow on the earth's surface.*

(ii) Name ***two*** types of lakes which are formed by volcanic activity. (2 marks)

- *Crater lakes*
- *Lava-dammed lakes*

(iii) State ***three*** reasons why some lakes are salty. (3 marks)

- *Some lakes lack fresh water inlets emptying into such lakes making them saline.*
- *Some lakes have underground inlets having high concentration of salts making them saline.*
- *Some rivers flowing into these lakes flows over rocks containing high salt contents which are dissolved by river water and draining into such lakes making them saline.*
- *Many lakes do not have outlets to drain away excess salts leading to accumulation of salts in these lakes making them saline.*
- *Some lakes are formed in arid and semi-arid areas having high temperatures causing high evaporation from these lakes increasing the accumulation and concentration of dissolved minerals salts making them saline.*
- *Most lakes have their underlying rock basement containing lots of minerals salts which may be dissolved directly by the lake waters making them saline.*

(iv) Explain ***four*** ways in which lakes are of significance to human activities. (4 marks)

- *Some lakes forms major inland fishing grounds providing fish as source of animal protein.*
- *Fresh water lakes are source of fresh water for domestic/industrial use.*
- *Some lakes may contain minerals such as trona which is exploited/some lakes may contain minerals used as raw materials in industries.*
- *Man-made lakes are used as reservoirs for production of hydroelectric power providing energy for domestic/industrial uses.*
- *Sand deposit along the shores of some lakes are harvested and used as building and construction materials.*
- *Some lakes provide cheap means of water transport for people/ goods promoting trade.*