LANY ACHIEVERS
FORM 4 EXAMINATION JULY 2018
312/1 MARKING SCHEME
GEOGRAPHY PAPER 1

SECTION A

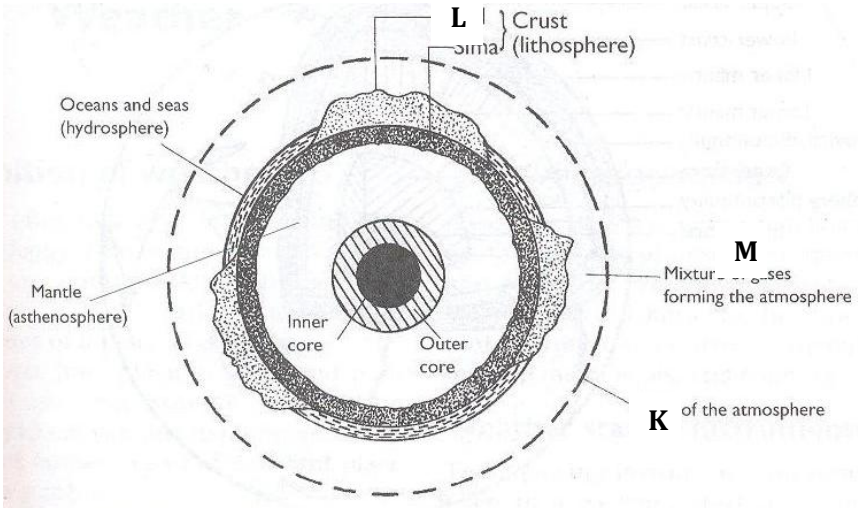
Answer all the questions in this section.

1. (a) Name any ***two*** constituents of the atmosphere. (2 marks)

- *Gases*
- *Smoke particles*
- *Water vapour/moisture*
- *Dust particles*

Any 2 x 1 = 2 marks

(b) The diagram below represent the structure of the earth. Use it to answer the questions that follow.



Name the parts marked **K, L** and **M.** (3 marks)

- *K – Gutenberg discontinuity*
- *L – continental crust*
- *M – Mantle*

2. (a) Give **two** characteristics of plutonic rocks? (2marks)

- *Formed deep below the earth surface mainly crystalline/resistant to slow cooling.*
- *Have coarse texture/have large crystals.*

Any 2 x 1 = 2mks

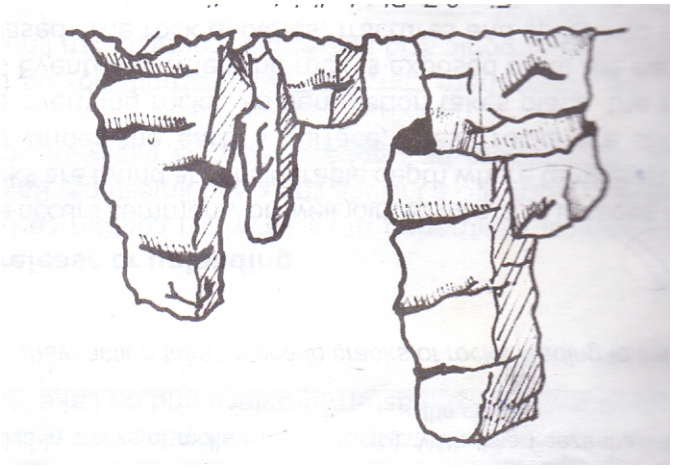
(b) State **three** ways in which rocks are significant to Kenya's economy.

(3marks)

- *Some like granite provide building materials.*
- *Some rocks form unique sceneries thus attracting tourist earning the country foreign exchange/revenue.*
- *Some upon weathering form deep fertile soil suitable for agriculture.*
- *Some are permeable/pervious rocks store underground water thus sources of rivers/water.*
- *Some contain valuable minerals ores thus supporting mining industry.*

Any 3 x 1 = 3mks

3. Use the diagram below to answer the questions that follows.



(a) Identify the weathering process shown above. (1 mark)

- *Block disintegration*

(b) Describe how rocks are weathered through the above process. (4 marks)

- *Occurs on rocks with joints and bedding planes found in areas with large diurnal range of temperatures*
- *During the day, the rocks are heated by the sun and expand*
- *During the night, the temperature fall and the rocks are cooled as they contract*
- *Expansion and contraction causes stress mainly along the bedding/joints leading to formation of the cracks*
- *Continued process causes the enlargement of the cracks*
- *The rock eventually breaks down into smaller blocks*

4. (a) Differentiate between till deposits and fluvio-glacial deposits. (2 marks)

- *Till deposits is composed of moraine deposited by ice and the materials are unsortedwhile the fluvio-glacio deposits are is composed of rock particles, sand, clay deposits by melt water and the materials are sorted.*

(b) Describe how roche mountonee is formed. (4 marks)

- *Ice moves down slope in alow land and encounters a resistant rock outcrop*
- *The ice/glacier erodes the upstream side of the rock outcrop by abrasion*
- *Further abrasion polishes and smoothens the upstream side to form a gentle slope*
- *The down stream is eroded by plucking and eventually results in the formation of a rugged steep slope*
- *This results in the formation of a resistant rock with a smooth gentle upstream and rugged down stream called roche mountonee*

5. (a) State ***two*** conditions which influence wind erosion. (2 marks)

- *Presence of scarce vegetation*
- *Presence of strong winds/prevailing winds*
- *Presence of loose soils/unconsolidated materials*
- *Low moisture content in the soil*

Any 2 x 1 = 2 marks

(b) Name ***two*** features from water deposition in arid areas. (2 marks)

- *Salina*
- *Bajada*
- *Alluvial fans*

SECTION B

Answer question 6 and any other two questions

6. (a) (i) Give longitudinal extent of area covered by the map. (2marks)

- *35º 00' E - 35º 15' E*

(ii) Identify the settlement patterns found on the Northern area covered by the map

- *Nucleated.*
- *Linear.*
- *Scattered.*

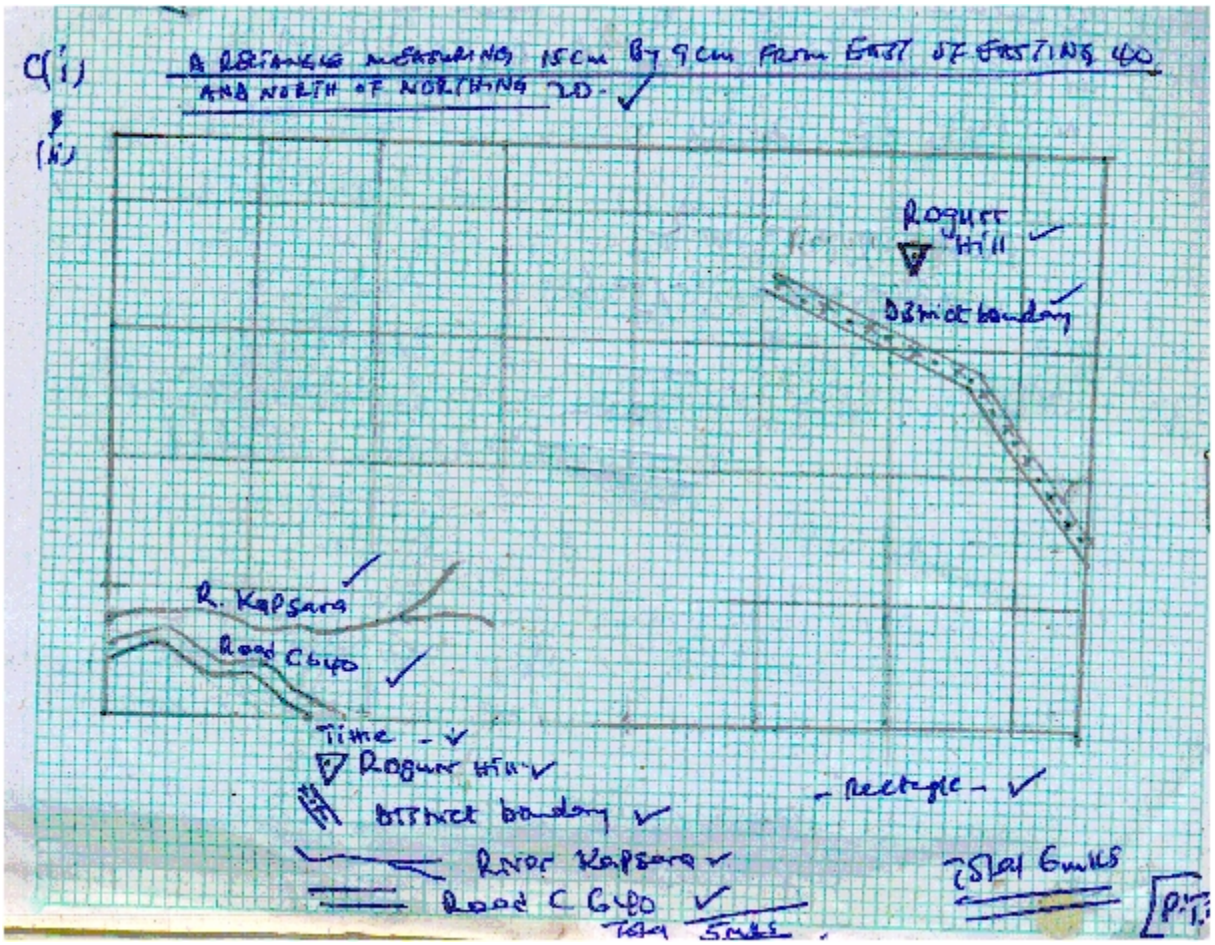
(b) (i) Measure the distance of the Kitale municipality boundary.

Give your answer in kilometres. (2marks)

- *8.2 km $\pm$ 0.1 km*

(ii) What is the bearing of the air photo principal point on the grid square 2912 from the air photo principal point on grid square 3516. (2mks)

- *223º $\pm$ 1º.*



(iii)Calculate the area to the east of the district boundary and to the South of Northing 23.
(2marks)

Full squares - *4*

Half squares - $\frac{12/2 - 6}{}$

6 + 4 = *10km²*

(d)(i) Identify two types of vegetation found in the area covered by the map.

(2marks)

- *Forest.*
- *Woodland*
- *Scrub*
- *Papyrus swamp.*
- *Tree swamp*
- *Riverine trees.*

Any 2 x 1 = 2 marks

(ii) Explain how drainage has influenced the distribution of settlements in the area covered by the map. (3marks)

- *No settlements around the swamp due to the difficulty of house construction.*
- *There are no settlements in areas covered with swamps since they are wet / prone to water borne pests and disease vectors.*
- *There are dense settlements near rivers e.g. Noigameget for provision of water for domestic use.*
- *There are more settlements in build up areas in regions with water tanks / water tower for provision of water for domestic use*
- *No settlements around the swamps due to the difficulty if practicing agriculture. etc.*

any 3 x 1= 3 marks

(e) Describe the Relief of the area covered by the map (3marks)

- *The highest point is 2362m in Kiptaberr forest / the lowest point is 1820 m in the West near Keelah farm.*
- *The land slopes from North East towards South West.*
- *The land to the West of Easting 40 is undulating as evidenced by widely spaced contours*
- *The and to the North East is steep as evidenced by the close contour lines.*
- *The land in the North East is rugged as evidenced by the crooked contours.*

Any 3 x 1 = 3 marks

7. (a) (i) What is a weather station? (2 marks)
   - *Weather station is a place where all the weather elements are observed, measured and recorded*

   (ii) Explain ***two*** characteristics of Stevenson screen. (4 marks)

   - *It is made of wood to avoid absorption of heat*
   - *It is painted white so as to reflect sunshine and heat*
   - *It has double roof to prevent the suns heat from reaching the inside of the screen*
   - *The sides of a Stevenson screen is louvered to allow free circulation of air*
   - *Its four legs is usually metallic to prevent termites from destroying the wooden box*
   - *Raised to 121 cm above the ground to prevent direct terrestrial radiation from the ground*

   Any 2 x 2 = 4 marks

   (b) (i) Describe how a hygrometer is used to measure relative humidity.(3 marks)

- *The readings of the dry bulbs thermometer is taken*
- *Then take the reading on the wet bulb thermometer*
- *The difference between the two readings is worked out*
- *Finally the reading is interpreted by use of a table*

(ii) State ***two*** reasons why the recording of data at the school weather station may be inaccurate. (2 marks)

- *Use of defective instruments*
- *Human error*
- *Extreme weather conditions*
- *Interference with the instruments*
- *Poor siting of the weather station*

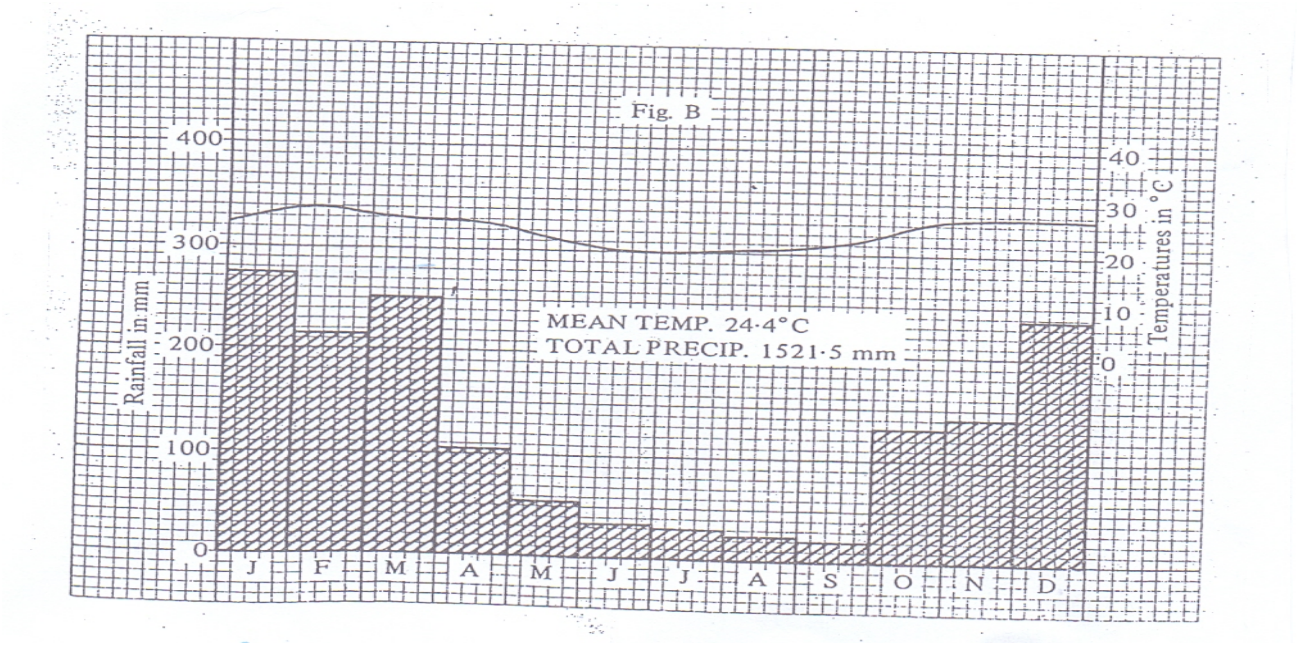
Any 2 x 1 = 2 marks

(iii) Give the reason why air cools as it rises. (2 marks)

- *As air rises, it expands thereby spreading out its molecules over a wider area thus becoming cool*

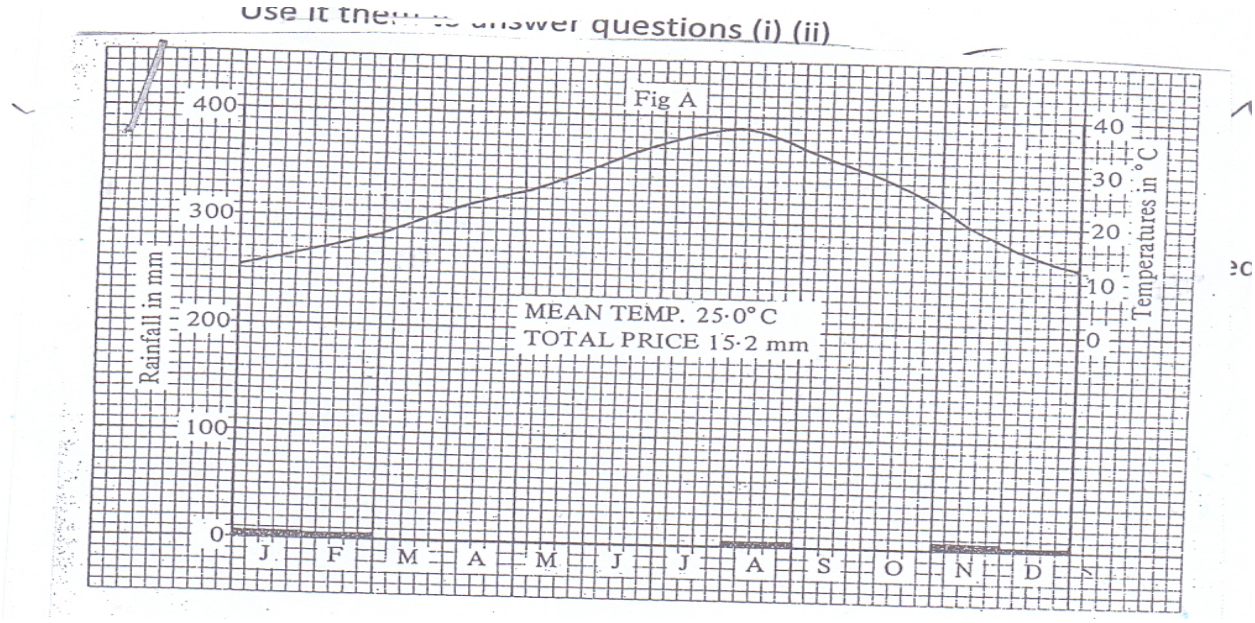
(c) The graphs below shows climate characteristics of two stations in Africa. Use them to answer questions (i) and (ii).

GRAPH 1



GRAPH 2

Use it the... answer questions (i) (ii)



(i) Name the type of climate represented by each graph. (2 marks)

- *Graph 1 - tropical marine climate*
- *Graph 2 – hot desert climate*

(ii) Describe the characteristics of the climate represented by each graph. (8 marks)

Graph 1

- *Annual temperature range is low (8^{o}C)*
- *Maximum temperature is from November to February*
- *Low rainfall is between June to September*
- *Maximum temperature is from November to February*
- *Minimum temperature is from June to August*
- *High rainfall during hot season*
- *The rainfall is all the year round with single maximum in October to May*
- *High annual mean temperature*

Any 4 x 1 = 4 marks

Graph 2

- *High annual mean temperature*
- *High annual range of temperature*
- *Maximum temperature in mid year July*
- *Low temperatures at the beginning of the year January*
- *Extremely low rainfall or dry climate which falls mainly when the temperatures are low*

Any 4 x 1 = 4 marks

(iii) State ***two*** negative effects of desertification. (2 marks)

- *It leads to shortage of water/destruction of water catchment area*
- *It leads to drying up of vegetation*
- *It leads to drying up of soil/development of infertile soil*
- *It causes migration*

Any 2 x 1 = 2 marks

8. (a) (i) What is folding?
   - *Folding is the process of crustal distortion which causes the bending of the rocks of the earths crust.* **(2 marks)**

   (ii) Apart from recumbent fold, name ***three*** other types of folds.
   - *Assymetrical fold*
   - *Simple symmetrical fold.*
   - *Overfold*
   - *Isoclinical fold*
   - *Recumbent fold*
   - *Anticlinorium and synclinorium complex*

   Any 3 x 1 = 3 marks

   (iii) With the aid of labelled diagrams, describe how a recumbent fold is formed.
   Layers of rocks of the earths crust are subjected to compressional forces.

Compressional forces

Layers of rocks of the earth's crust

Intense folding result in the formation of an overfold.

Folded layers of rocks/overfold

Compressional force

Compressional force

More increased compressional forces push the overfold over into near horizontal position forming an recumbent fold.

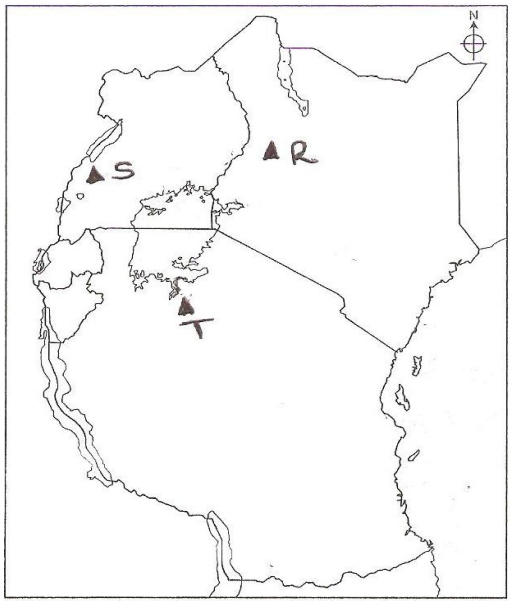
Compressional force

Recumbent fold

Compressional force

Diagram - 3
Text – 3 **6 marks**

(b) The map provided below shows some fault blocks in East Africa. Use it to answer question (i).



Name;

(i) The mountains marked **Q** and **R.** **(2 marks)**

Q - Pare

R - Ruwenzori

(ii) The lake marked **S**.

S - Malawi

(c) (i) Give ***two*** differences between a normal and a reverse fault.

- *A normal fault is caused by tensional forces while a reverse fault occurs due to compressional forces.*
- *In a normal fault part of the fault plane is exposed to form an escarpment while in the reverse fault the fault plane is not exposed.*
- *In a normal fault the upthrow moves away from the downthrow while in a reverse fault the upthrow rides over the downthrow.*

Any 2 x 1 = 2 marks

(ii) Describe how fault block is formed.

- *Layers of rocks of the earth's crust are subjected to compressional forces.*
- *Parallel reversed faults develop*
- *The middle block is uplifted due compressional forces/are uplifted to the higher level by vertical forces forming a raised upland (boardered by fault scarps) known as fault block.*

Any 3 x 1 = 3 marks

(c) Explain ***three*** negative effect of faulting on human activities.

- *Faulting destroys and disrupts all forms of transport like roads, railways and pipeline particularly in areas that are densely settled.*
- *Faulting leads to subsidence of land which causes damage to property and loss of life if occurs in densly settled areas like in towns.*
- *Faulting may change the course of river as it disrupts their flow. This disturbs human activities down stream.*
- *Faulting are points of weakness whereby they are centres of earthquakes that causes loss to human life and destruction of property.*
- *Steep slopes of faultscarps discourage settlement.*

Any 6 x 1 = 6 marks

9. a) i) A river divide

- *Is a ridge/high ground that separates two or more river basins or the highest line of an interfluve*

ii) Ways in which a river transports its load

- *Traction process – large and heavy particles of the river load are rolled/ dragged along the river bed*
- *Saltation process- particles that are not too heavy but cannot remain suspended in water are momentarily lifted by the water turbulence and at times dropped onto the river bed.*

- *Solution – soluble minerals are dissolved in the river water and carried away in solution*
- *Suspension – light particles of the loadare carried and maintained within the turbulence of flowing water*

Any 3 x 2=6 marks

b) Characteristics of a river in its old stage

- *Widening of the valley through lateral erosion*
- *The speed of flow is low due to low gradient of the plain*
- *River forms pronounced meanders due to slow speed and high rate of deposition*
- *Meanders become more pronounced with narrow necks*
- *Increased deposition along the channel raises the river bed*
- *Deposition along the banks of the river channel lead to formation of levees*
- *Reduced spread and increased deposition blocks the river mouth forcing the river to form distributaries/delta*

Any 7 x 1=7 marks

c) i) Superimposed drainage system:

- *Develops on rock structure that overlay a totally different one*
- *The river layers cuts through the surface rock layers onto the underlying rocks*
- *Gradually the surface rocks are removed and the underlying rocks, now become exposed on the direction of flow*
- *Has no relationship to the existing rocks structure*

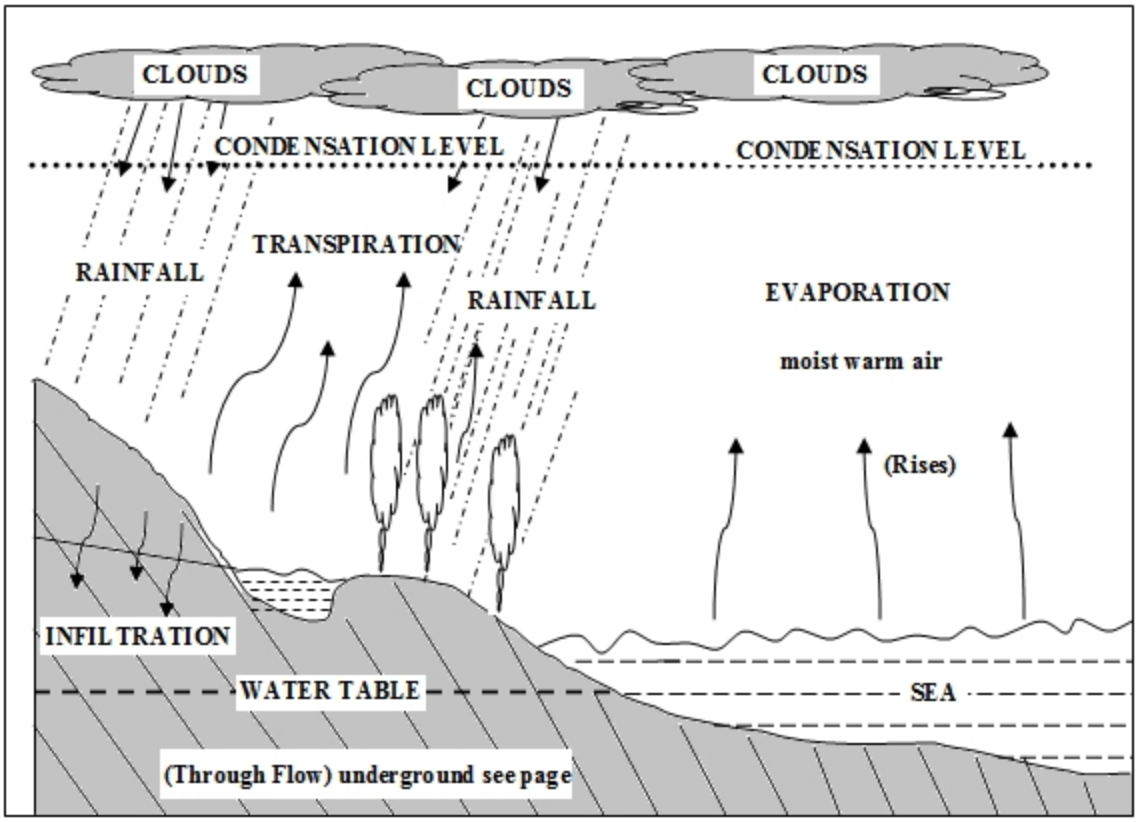
Any 3 x 1 = 3marks

ii) Centripetal

- *Develops in an area with a central basin*
- *Rivers drain into the depression from different direction*

Any 2 x 1 = 2 marks

(d) Draw a well labeled diagram of the hydrological cycle. (6marks)



TITLE / FRAME = 1 mk other correct details 5x 1) = 5 marks Total = 6 max

10. (a) (i) What is soil? (2 marks)

- *Soil is the superficial layer of loose / unconsolidated rock material overlying the crustal rocks and on which plants grow*

Or

- *Soil is an accumulation of rock particles, minerals , organic matter, water and air found on the surface of the earth*

(ii) Identify ***two*** components of soils. (2 marks)

- *Air/gases*
- *Water/moisture*
- *Organic matter/humus*
- *Inorganic matter/minerals*

(iii) Differentiate between soil structure and soil texture. (2 marks)

- *Soil structure is the way the individual soil particles are arranged into aggregate compound particles while soil texture is the degree of fineness or coarse of the soil particles.*

(iv) Name ***two*** types of soil according to soil texture. (2 marks)

- *Loam soil*
- *Clay soil*
- *Sand soil*
- *Silt/gravel*

(b) Explain how the following factors influence the formation of soil.

(i) Climate (2 marks)

- *Rainfall provide water which make it possible for rocks to decay/disintegrate to form soil*
- *Seasonal variation of rainfall can cause accumulation/concentration of salts in soil*
- *High temperatures increases the rate of weathering/accelerate the rate of bacterial activities which generates some of the organic matter in the soil*

(ii) Topography (2 marks)

- *Valley bottoms encourage formation of deep fertile soil due to deposition of weathered materials*
- *Steep slopes encourage rapid removal of the top soil thus slowing down formation of soil. Hence they have thin soils*
- *Flat areas may be saturated with water or are water logged and this slows down soil formation.*
- *Gently sloping areas have well developed soils because they are well drained*

(c) The diagram below shows a soil catena.

HILL TOP			VALLEY BOTTOM
W	X	Y	Z

(i) Name the type of soils found in position **W** and **Z**. (2 marks)

- *W – lateritic soils/laterites*
- *Z – peat/bog*

(ii) State ***two*** characteristics of soils found in section marked **W** and **Z.** (4 marks)

W

- *Red in colour*
- *Are acidic soils*
- *Are rich in alluminium oxides and iron*
- *Are of low agricultural value*
- *Have developed soil profile*
- *Are mature soils*
- *Are sticky soils*
- *Have low humus content/organic matter*

Z

- *Peat/bog soils*
- *Poorly drained soils/water logged*
- *Grey/blue in colour*
- *Are acidic*
- *Have poorly developed soil profile*

(d) Explain ***two*** causes of chemical soil degeneration. (4 marks)

- *Monoculture/overcropping leads to exhaustion of soil minerals making it infertile and bare leading to erosion*
- *Monoculture leads to loosening of soil particles thereby encouraging soil erosion*
- *Continuous application of fertilizers increases acidity of the soil which destroys micro organisms in the soil which could have helped in the formation of humus*
- *Continuous application of fertilizers on farm lands increases acidity thus making it unsuitable for plants growth*
- *Heavy rainfall can cause water logging in the low land areas leading to acidic soils*
- *Heavy rainfall can cause leaching of certain minerals making the top soil deficient of such minerals*
- *Prolonged drought causes accumulation of mineral salts on the top layer of soils/saline soils*

(e) State ***three*** measures of conserving soils. (3 marks)

- *Maintaining soil fertility*
- *Prevention of soil erosion*
- *Preserving of soil.*