4.10 GEOGRAPHY (312)

4.10.1 Geography Paper 1 (312/1)

SECTION A

1. (a)	**Define the term environment.** - Environment is the external conditions that surround an organism/ external conditions that influence the development and behaviour of an organism.	(2marks)
(b)	**Name two divisions of physical Geography.** - Climatology/Meteorology - Biogeography/Ecology - Geomorphology - Hydrology - Pedology Any 2 x 2	(2 marks)
2. (a)	**Give three characteristics of comets.** - They are made up of frozen gases, dust and small rocky particles. - They have a head and tail. - They move along oval-shaped orbit. - They cross orbits followed by the planets. Any3x1=	(3marks)
(b)	**State three proofs that show the shape of the earth is spherical.** - Circumnavigation along a straight path leads one to the starting point from the opposite direction. - Photographs taken from satellite/a high level clearly show the earth is spherical. - The gradual emergence of a ship approaching the shore. - During lunar eclipse spherical shaped shadow of the earth is cast on the moon. - The earth is a planet and all planets are spheres. - The different times during which the sun rises and sets in different parts of the world. - The earth's horizon appears circular/curved when viewed from a very high point. Any 3x1=	(3 marks)
3. (a)	**Give two types of igneous rocks.** - Intrusive igneous rocks/plutonic/hypabyssal. - Extrusive igneous rocks/Volcanic.	(2marks)

(b) **Identify three uses of rocks.**

- Rocks weather down to form soils which support agriculture.
- Some rock features are tourist attraction.
- Rocks provide materials for building/construction.
- Some rocks provide raw materials for manufacturing industry e.g., limestone
- Some rocks are source of minerals.
- Some rocks are used in carving.
- Some rocks are source of salt/food.
- Some rocks are used for scrubbing human bodies/sharpening tools.
- Some rocks store water for use
- Some rocks contain fossils

Any 3x1= (3marks)

4. **The table below shows the rainfall and temperature data for town Y. Use it to answer question (a)**

Month	J	F	M	A	M	J	J	A	S	O	N	D
Temperature (°C)	21	21	20	18	15	14	13	13	15	16	18	20
Rainfall (mm)	24	25	30	74	17	143	131	126	70	55	31	27

(a) (i) What is the mean annual range of temperature? (1 mark)

21 – 13 = 8°C

(ii) Calculate the rainfall totals for town Y. (1 mark)

753mm

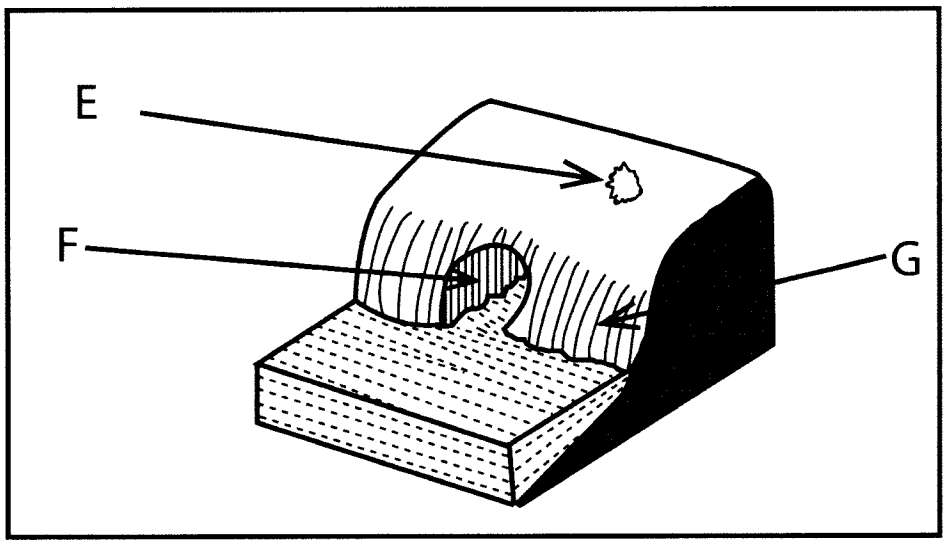
(b) **State three climatic conditions experienced in the hot deserts.**

- Low rainfall/below 250mm per year.
- Erratic rainfall
- High temperatures throughout the year over 35°C.
- The diurnal range of temperatures is very large/hot days and cool nights.
- Low humidity below 45%.
- The skies are cloudless/clear skies.
- There are strong dusty winds/sand storms/dry winds.

Any 3x1= (3 marks)

5. (a) **Differentiate between ocean and sea.**

- An ocean is a large/extensive body of saline water occupying a basin between continents, while a sea is a large body of saline water along the continental margins. (2marks)

(b)	**The diagram below shows some coastal features. Name the features marked E, F and G.** E – Blow-hole F – Cave G – Cliff  	(3 marks)

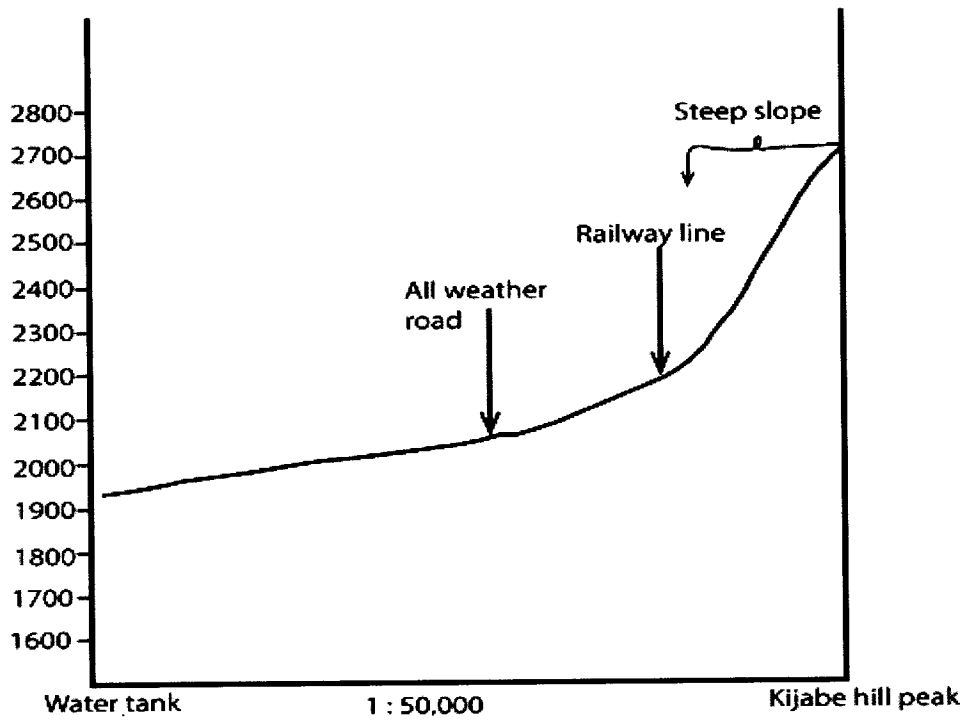
SECTION B

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

6. (a)	**Study the map of Kijabe 1:50,000 (Sheet 134/3) Provided and answer the following questions.**	
(i)	Convert the scale of the map into a statement scale. Map scale: 1:50,000 1cm rep 50,000 5000cm = $\frac{50000\text{km}}{100000}$ = 0.5km Statement scale is 1cm represents 0.5/½km	(2 marks)
(ii)	**What is the bearing of the pump house at grid square 3893 from the trigonometrical station at Mweri.** 299°-301°C/N60°W	(2 marks)

(iii)	**Calculate the area of the part of the forest to the East of Easting 40 and South of Northing 97. Give your answer in square kilometres.** Full squares = 15 $\frac{1}{2}$ square 20/2 = 10 25 = 25±0.5km^2	(2 marks)
(b) (i)	**Apart from forest give three types of natural vegetation found in the area covered by the map.** - Thicket - Woodland - Scrub - Bamboo - Scattered trees. Any 3x 1	= (3 marks
(ii)	**Identify three drainage patterns found in the area covered by the map.** - Radial drainage pattern. - Dendritic drainage pattern. - Parallel drainage pattern.	(3 marks)
(c) (i)	**Using a vertical scale 1cm to represent 100 metres, draw a cross section from the water tank on grid square 2592 to the peak of Kijabe Hill on grid square 2699.** On it, mark and label the following: - All weather road bound surface. - Railway line. - Steep slope.	(4 marks) (3 marks)

A cross section from water tank in grid 2592 to peak of Kijabe hill



Title-1mark
Horizontal. axis-1mark
Vertical axis-1mark
Trend-1

Road-1 mark
Railway line-1 mark
Steep slope-1 mark

(ii) **Calculate the vertical exaggeration of the cross section.**

$$VE = \frac{VS}{HS} = \frac{1:100m}{1:50,000cm}$$

$$= \frac{1:1000}{1:50,000} = 1 \times 5$$

= 5 times

(2 marks)

(d) **Citing evidence from the map identity two economic activities in the area covered by the map.**

Economic activity	Evidence
- Transportation	- Roads/railway
- Trade	Line/ motorable track.
- Quarrying	-shops
- Lumbering	- Murram pit/quarry
- Cattle rearing/keeping	- Saw mills
- Manufacturing/ processing	- Cattle dip/dairy
- Forestry	- Kagwe carbacid plant
- Communication	- Forest, forest station/forest guard
- Crop farming	- Post office
	- Plantation Any 2 x 2 =

(4 marks)

7. (a) (i) **Define the term vulcanicity.**

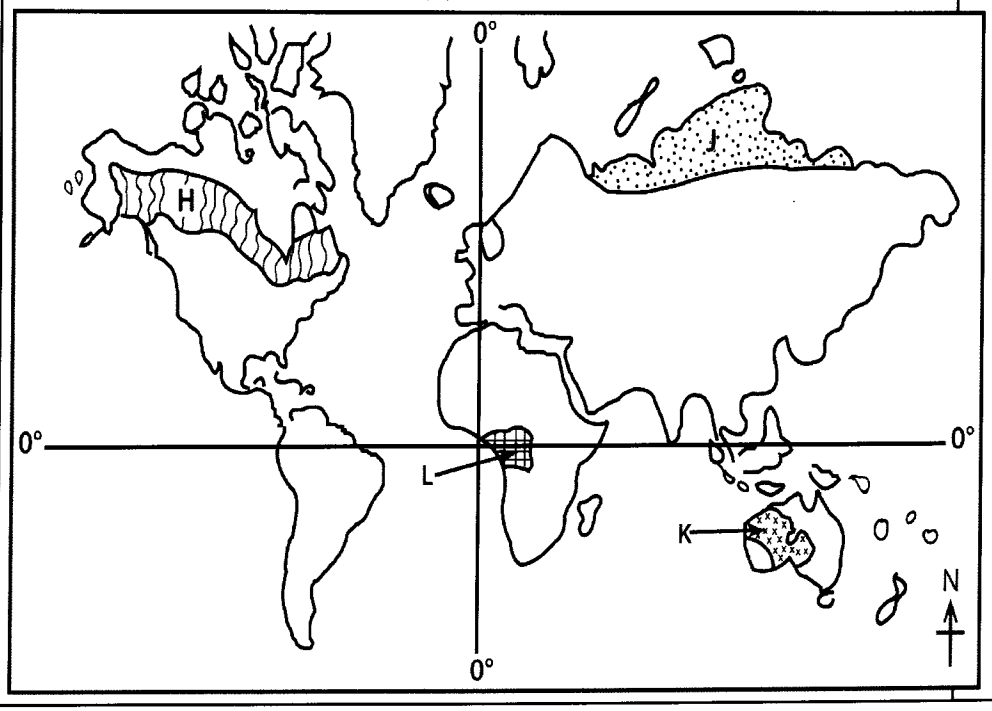
Vulcanicity is the process through which liquid, solid or gaseous materials are forced into the earth crust or onto the surface of the earth due to high pressure and temperatures. (2 marks)

(ii) **Name the three stages in the life cycle of a volcano**

- Active
- Dormant
- Extinct

(3 marks)

(b)	**Describe how the following volcanic features are formed.**	
(i)	**Lava plateau** - It is formed when magma reaches the earth surface through either single or multiple vents/fissures. - The lava is ultra-basic/extremely fluid. - The lava flows over long distances spreading evenly before cooling and covering hills and depressions. - The lava cools slowly and solidifies. - Successive eruptions lead to more and more layers building up forming a thick plain land/tableland called a lava plateau. Any 4 x1=	(4 marks)
(ii)	**Geyser** - Water percolates underground through cracks in the rock. - The water gets into contact with hot igneous rocks. - The water is superheated to form gases/vapour. - The pressure forces the steam and water to be ejected to the surface. - The water and steam is emmited intermittently as pressure level changes to form a geyser. Any 4 x 1 =	(4 marks)
(iii)	**Caldera** - Lava pours out of a central vent to form a volcanic cone. - The vent is sealed when lava solidifies in it. - The solidified lava blocks the gases and steam beneath, preventing them from escaping. - Pressure piles up below the lava. - The pressure leads to violent eruption which blows off the top of the cone forming a depression. - The depression is large and circular and it is known as a caldera/. OR - Lava pours out of a central vent to form a volcanic cone' - Magma chambers are left empty/void. - Due to the overlying weight at the top of the cone, an imbalance is created/pressure is exerted. - The top of the cone subsides/sinks forming a depression - This depression is large and circular and is called a caldera Any 4x 1=	(4 marks)

(c)	**Explain four positive ways in which volcanic features influence human activities.** - Volcanic lava upon weathering forms fertile soils which are used in agricultural activity. - Some volcanic plugs/aureoles have valuable minerals which are mined by human beings. - Steam jets are used in harnessing geothermal electricity for domestic/ industrial use. - Some volcanic features attract tourists earning a country foreign exchange. - Volcanic mountains influence the formation of relief rainfall on their windward slopes which encourages agricultural activities, settlement/ forestry. - Volcanic lakes are used for fishing which is a source of income/food. - Some lakes/springs are a source of water for domestic use. - Volcanic mountains are a source of rivers which provide water for domestic use/industrial use/irrigation/hydroelectric power. - Hot springs/spas are used for medicinal purposes. - Some volcanic rocks are used as building materials. Any 4x 2=	(8 marks)
8.	**The map below shows some vegetation regions of the world. Use it to answer question (a) (i) and (ii)**  	

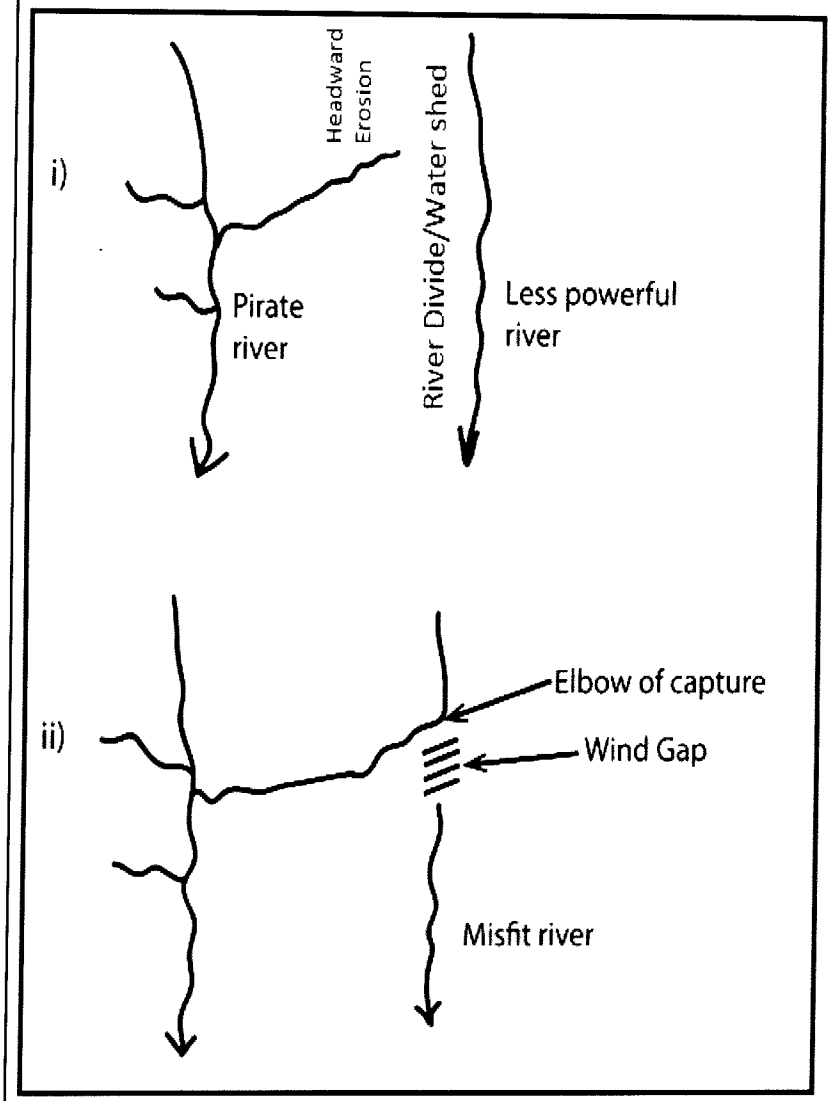
(a) (i)	Name the vegetation marked H, J and K. H – Coniferous Forest J – Tundra vegetation K – Tropical desert vegetation	3 marks
(ii)	**Describe the characteristics of the vegetation found in the area shaded and marked L.** - The trees grow close to each other/closely packed. - The trees form canopies/form three distinct layers/emergents. - The trees have straights, smooth trunks. - Most of the tree's species are hardwoods. - The forests are evergreen. - The trees have broad/leaves/drip-tipped leaves. - The forests have little or no undergrowth. - Forests consist of a variety of tree species. - Some of the trees have buttress roots. - The trees are tall. - The forest has climbers/ epiphytes. - Trees take long to mature. Any 6 x 1 =	(6 marks)
(b) (i)	**Explain how the following factors influence distribution of vegetation.** **Rainfall** - Areas receiving high rainfall encourage growth of many varieties of tree species/luxuriant. - Areas receiving low rainfall have few species/stunted/scarce vegetation. - Areas of low rainfall have stunted vegetation.	Any 1 x 2 = 2 marks
(ii)	**Soils** - Deep and well drained soils support growth of dense vegetation. - Poor/infertile/shallow/ thin soils support scanty vegetation.	Any 1 x 2 = 2 marks
(c)	**State five uses of savanna vegetation.** - The grassland area is used for livestock farming/grazing. - The vegetation provides habitat for wild animals. - Trees are used for bee keeping. - Some of the vegetation is used for medicinal purposes. - Some of the vegetation provides wild fruit and berries. - Trees are a source of wood fuel. - Some of the vegetation provide building materials. - Grass foliage decays to humus for soils.	Any 5 x 1 = 5 marks

(d) (i)	**You intend to carry out a field study on vegetation within the local environment.** (i) State three objectives you would formulate for the study. - To identify vegetation species dominant in the area. - To find out how the local people benefit from the vegetation. - To investigate problems facing vegetation in the area. - To find out methods used to conserve vegetation in the area	Any 3 x 1 = 3 marks
(ii)	**Give four reasons why it is important to have a work schedule.** - It helps in carrying out the field activities systematically. - It helps in estimating the total time required for the study. - It ensures all areas of study are adequately covered. - It helps in assessing progress of the study. - It enables for proper use of available time. - It confines one to the scope of the study.	Any 4 x 1 = 4 marks
9. (a) (i)	**Apart from biological weathering list two other types of weathering** - Mechanical/physical - Chemical	2 marks
(ii)	**Explain ways in which plants cause weathering of rocks.** - Roots of plants/trees penetrate into the joints/cracks of rocks widening them hence causing the rock to disintegrate. - Plants decompose/rot forming organic/humic acids which causes rock decay/disintegration. - Mosses and lichens moisten rock surfaces facilitating chemical weathering. - Widening of crack and joints by plants roots allows water and air to enter into the rocks hence accelerating weathering.	Any 3 x 2 = 6 marks
(b) (i)	**Explain how the following physical factors influence mass wasting.** **Earth movements** - Volcanic eruptions/earthquakes cause tremors which may trigger displacement of materials/ wide spread mass wasting.	2 marks
(ii)	**Nature of rock material** - Large/heavy rock materials move rapidly on a slope due to gravity. Thinly bedded layers tend to move faster on slopes. - Saturated rock materials move faster down a slope than dry materials. - Loose unconsolidated materials move easily down a slope.	Any 1 x 2 = 2 marks

(c) (i)	**Describe each of the following processes of mass wasting.** **Avalanche** - It occurs when a fresh fall of snow is not firmly consolidated hence slides over the older snow/ice rapidly. - The thawing action of ice lubricates weathered rock and large ice blocks making them slide downhill rapidly as an avalanche.	Any 2 x 1 = 2 marks
(ii)	**Rockfall** - It involves free fall of detached rocks down a steep/vertical slope. - They may fall directly downwards or bounce and roll down the slope. - It may occur due to freeze-thaw process/loosening action of plant /heating and cooling/earth movements.	Any 3 x 1 = 3 marks
(d) (i)	**Describe each of the following types of mass wasting.** **Earthflow** - It occurs in humid conditions. - Occurs on moderate slope. - Materials on the surface get saturated with water. - They flow/slide down the hill under the influence of gravity. - They leave behind shallow scars. - They form small bench like terraces at their destination.	Any 4 x 1 = 4 marks
(ii)	**Slump** - It occurs on very steep/concave slopes. - A massive sedimentary strata overlying weak rock materials e.g. clay. - The underlying rock material is saturated with water. - This causes undercutting/breaking off of the overlying rock materials. - The large mass of rock and loose materials shear/tear away along the concave plane. - The rock material slides downhill causing a slump.	Any 4 x 1 = 4 marks
10. (a) (i)	**Give three features found in the upper stage of river.** - V-shaped valleys. - Potholes/plunge pools. - Interlocking spurs. - Waterfalls/rapids/cataracts. - Gorges/canyons. - Winding channel.	Ay 3 x 1 = 3 marks
(ii)	**State four factors that favour the formation of braided channels** - The river must be carrying a large load. - There should be reduction in the stream gradient. - There should be presence of obstacles. - There should be reduction of volume of water in the river. - The river flows at low velocity. - Widening of the river channel.	Any 4 x 1 = 4 marks

(b)	**Explain the processes by which a river transports its load.** - Light insoluble materials such as silt and sand are carried in suspension and maintained within the turbulence of the water. Some of them float on the surface of the water. - Large particles/boulders are pushed and rolled along the river bed by the force of gravity and moving water. This process is known as traction - Soluble materials are dissolved in the water and carried down the stream in form of solution. - Some particles/pebbles which are fairly heavy are moved in a series of leaps/hops and jumps along the river bed through a process known as saltation.	4 x 2 = 8 marks

(c) **With the aid of well labelled diagrams describe how a river capture occurs.**



	- River capture may occur where there are two adjacent rivers/share a watershed. - One of the rivers has more erosive power than the other. - The more powerful river erodes vertically than the weaker river thus it flows at a lower level than the other one. - The more powerful river erodes its valley towards the valley of the other river, through headward erosion. - Eventually the powerful river joins the valley of the weaker river. - The powerful river diverts the head waters of the weaker river into its channel. - This diversion of head waters is called river capture.	Text – 4 marks Diagrams – 3 marks
(d)	**State three negative effects of rivers to human environment.** - Some rivers with almost stagnant water harbor vectors/ waterborne diseases. - Some rivers flood during rainy seasons causing destruction of property and life. - Some rivers are home to dangerous animals which may attack human beings/destroy crops. - Rivers which are unnavigable hinder transportation. - River flooding causes displacement of people.	Any 3 x 1 = 3 marks