**ACK MUMIAS DIOCESE EXAM 2022**

**GEOGRAPHY**

**PAPER I**

**MARKING SCHEME**

**SECTION A**

1 (a) ***What is the relationship between geography and mathematics (2 mks)***

* Mathematics principals / formulae are used in Geography to calculate distance /area/population.
* Geography information can be analysed / presented accurately through the application of mathematics technique.
* Geographical concepts are applied in calculating direction / bearing in mathematics.

(b) ***State four reasons why it is important to study Geography (2mks)***

- It enables learners to understand / appreciate different environmental influences.

-It enc ourages international awareness / co-operation

- It helps learners to develop important social values.

- It promotes positive attitudes towards protection of resources.

- It leads to development of career opportunities.

- It help learners to manage time properly.

- It enables learners to explain the origin and function of the earth and land forms

2 **a) What is a line of longitude?**

- Is a line based on angular distance of a place east or west of prime meridian (00 longitude).

Or

- An imaginary line drawn on a map from North pole to South Pole and is measured in degrees east or west of the prime meridian. (0 degree) (1×2= 2 marks)

**b) What is the local time of Alexandria 300  E when the local time at Malindi 400 E is 12.00 noon?**

Degree difference 400-300=100

If 10 = 4 min

100 = 4 X 100 = 40 min

10 = 4

Time at Alexandria 12.00 noon –40 min

= 11.20 am (2 marks)

**3. a) State three causes of earth movement.**

- Istatic adjustment.

- Gravitative preassure.

- Magma movement within the crust.

- Conventional currents in mantle. (3×1= 3 marks

**b) Name two main earth quake zones in the world.**

- The circum pacific belt.

- The mid-atlantic ridge.

- The Mediterranean-Himalayan belt.

- Rift valley. (2×1= 2 marks)

4 **a) Name three features found on emerged high coast.**

Raised cliffs, raised wave cut platform, raised beaches, raised caves,

archs, stacks, stump blow holes, goes (3 marks

**b) State three conditions necessary for the formation of a spit.**

- The waves must carry large amounts of load/ the supply of sand being transported.

- The long shore drift must be weak.

- It must be a shallow shore/ continental shelf.

- Waves must have a strong wash and weak backwash/ constructive waves. (3 marks)

5 **a) Highlight any three factors that necessitate the occurrence of an artesian basin.**

- The aquifer must lie between two permeable rocks.

- The aquifer must outcrop in a region which is a source of water.

- The aquifer must dip from a region of water intake and the rock layer must form a broad syncline or basin.

- The the north of the well must be lower than the intake area.

**b) Apart from lakes, rivers and seas, name any other two sources of underground water.**

- Rain water.

- Melt water.

- Magmatic/ plutonic water. (3 marks)

**SECTION B**

1. **Study the map of NYERI 1:50,000(sheet 120/4) provided and answer the following questions.**
2. **i) What is the title of the map extract (1 mks)**

- East Africa 1:50,000 (Kenya)

**ii) Name two districts covered by the map extract (2 mks)**

* Nyeri
* Laikipia

**iii) Give three physical features found in grid square 5085 (3 mks)**

* River
* River Valley
* Steep slope
* Scrub vegetation

1. **(i) Give the longitudinal extent of the area covered by the map. (2mks)**

- 36°45’-37°00’

**(ii) What is the magnetic declination shown on the map? (2mks)**

- 1° 31’

1. **(i) What is the altitude at the peak of Nyeri hill? (2mks)**

- 2216m

**(ii) Give three methods used to represent relief on the map (3mks)**

- Trigonometrical station

- Use of contour lines

- Spot-heights

**(iii) Measure the length of the dry weather road (Naivasha road) from Tusha welfare centre junction school to the edge of the map towards North Kinangop and Naivasha in kilometres** (2mks)

- 10.7km ± 0.1

1. **Describe the drainage of the area covered by the map (5mks)**

* There are many permanent rivers
* Rivers chanya and Ambone are the main rivers
* Most rivers flow eastwards
* Aberdare forest is the source of many rivers
* River chanya and its tributaries form dendritic drainage pattern
* There is trellis drainage pattern in grid 7360

1. **Citing evidence from the map, identify three social services offered in Mweiga municipality (3mks)**

Education -presence of schools

Administration- Presence of district office.

Security- police station.

Water supply- presence of water tank.

**7. a) i) Name three types of faults. (3mks)**

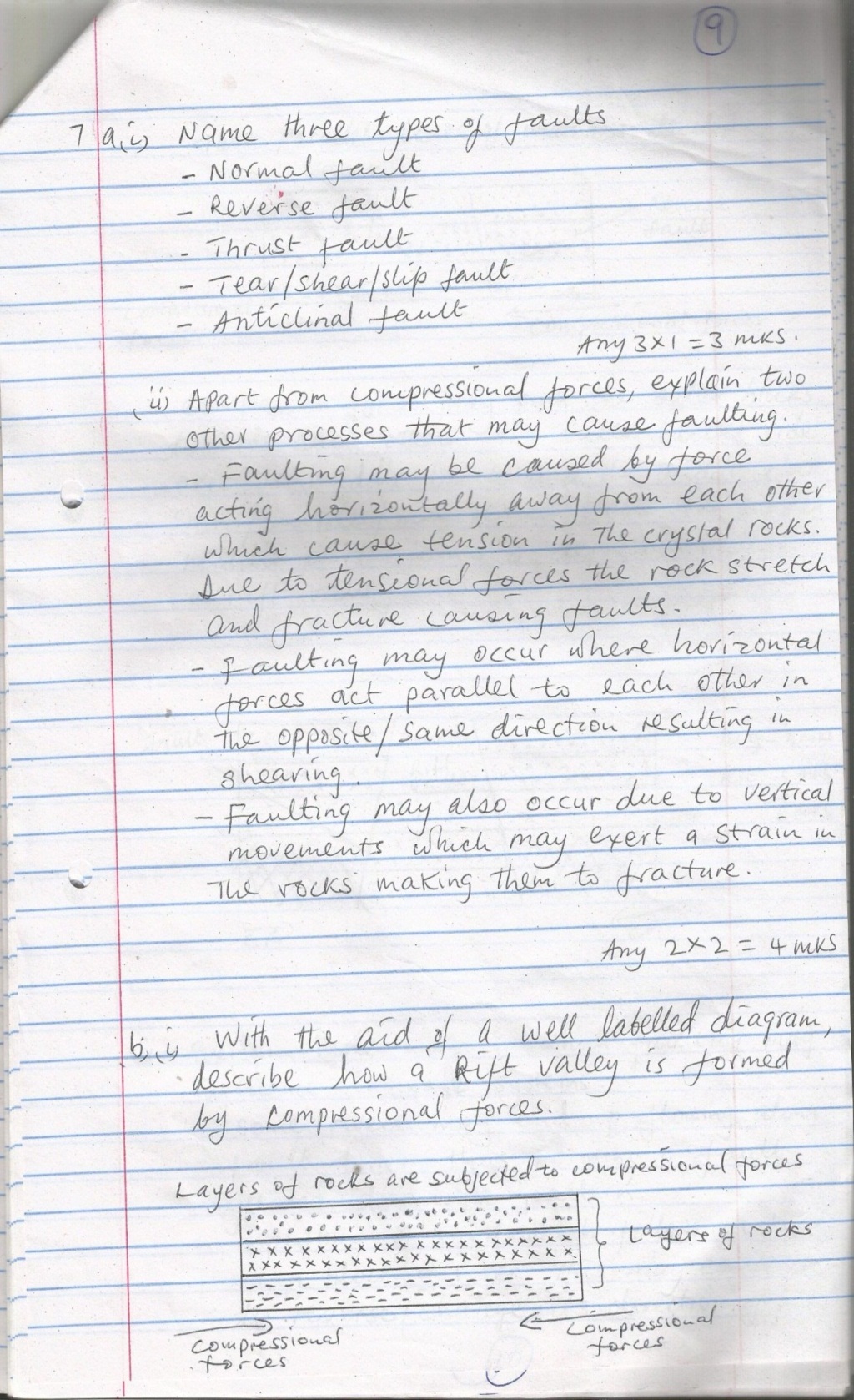
* Normal Faults
* Reverse Fault
* Thrust Fault
* Tear. Shear/Slip Fault.
* Anticlinal Fault

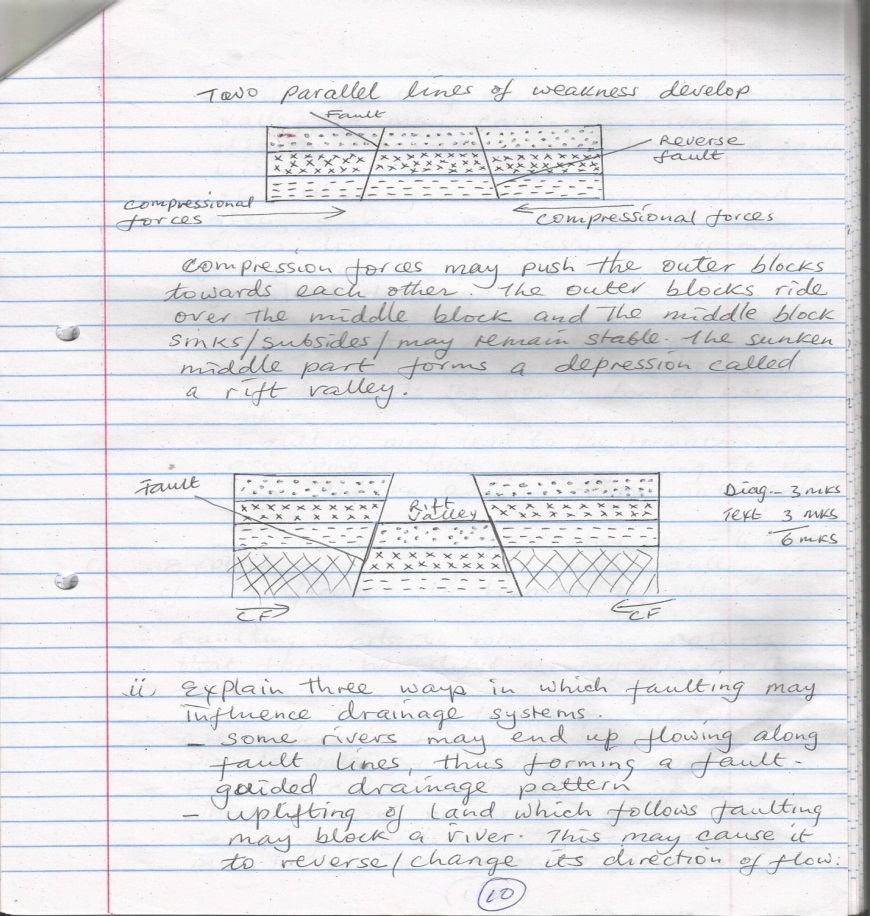
**ii) Apart from compressional forces, explain two other process that may cause faulting. (4mks)**

* Faulting may be caused by force acting horizontally away from each other which cause 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/ same direction resulting in shearing .
* Faulting may also occur due to **vertical movement** which may exert a strain in the rocks making them to fracture.

**b) i) With, the aid of a well labeled diagram, describe how a rift**

**valley is formed by compressional forces. (6mks)**

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* Compressional forces may push the outer blocks towards each other. The outer blocks ride over the middle block and the middle block sinks/ subsidies/ may remain stable. The sunken middle part forms a depression called a rift valley.

**ii) Explain three ways in which faulting may influence drainage system. (6mks)**

* Some rivers may end up flowing along faults lines, thus forming a fault guided drainage pattern .
* Uplifting of land which follows faulting may block a river. This may cause it to reverse / change its direction of flow.
* When faulting occurs across a river valley, it may cause the river to disappear into the ground through a fault line.
* If rift valley occurs in an enclosed area, a basin may be formed. When rivers flow into the basin a lake may be formed. This basin may become an area of inland drainage.
* When faulting occurs across a river valley, vertical displacement of land may occur. The river forms a waterfall where it descends the newly formed escarp.
* Faulting may lead to the formation of escarpments with springs forming at the base due to exposure of the water table.

**c) Explain three ways in which faulting is of significance to human**

**activities. (6mks)**

* Faulting leads to formation of features that form beautiful scenery which attracts tourists.
* Faulting leads to formation of lakes that are important fishing grounds /tourists sites/ provide water for irrigation / for domestic use.
* Faulting causes displacement of rocks which exposes minerals that are mined.
* Faulting may lead to the formation of mountains /horst which experiences rainfall on the windward side that give rise to rivers which provide water for industrial / domestic/ agricultural use.
* Block mountains formed through faulting lead to formation of relief rainfall on the windward side which favors agriculture/ forestry settlements.
* Faulting may cause subsidence of land which may lead to loss of life /property .
* Faulting creates deep faults which are passage of steam jets which may be utilized for geothermal power production.
* When faulting occurs a ridge it may provide a dip which could form a mountain pass where transport /communication lines can be constructed/may hinder development of transport.

8. **a) i) What is micro-climate? (2mks)**

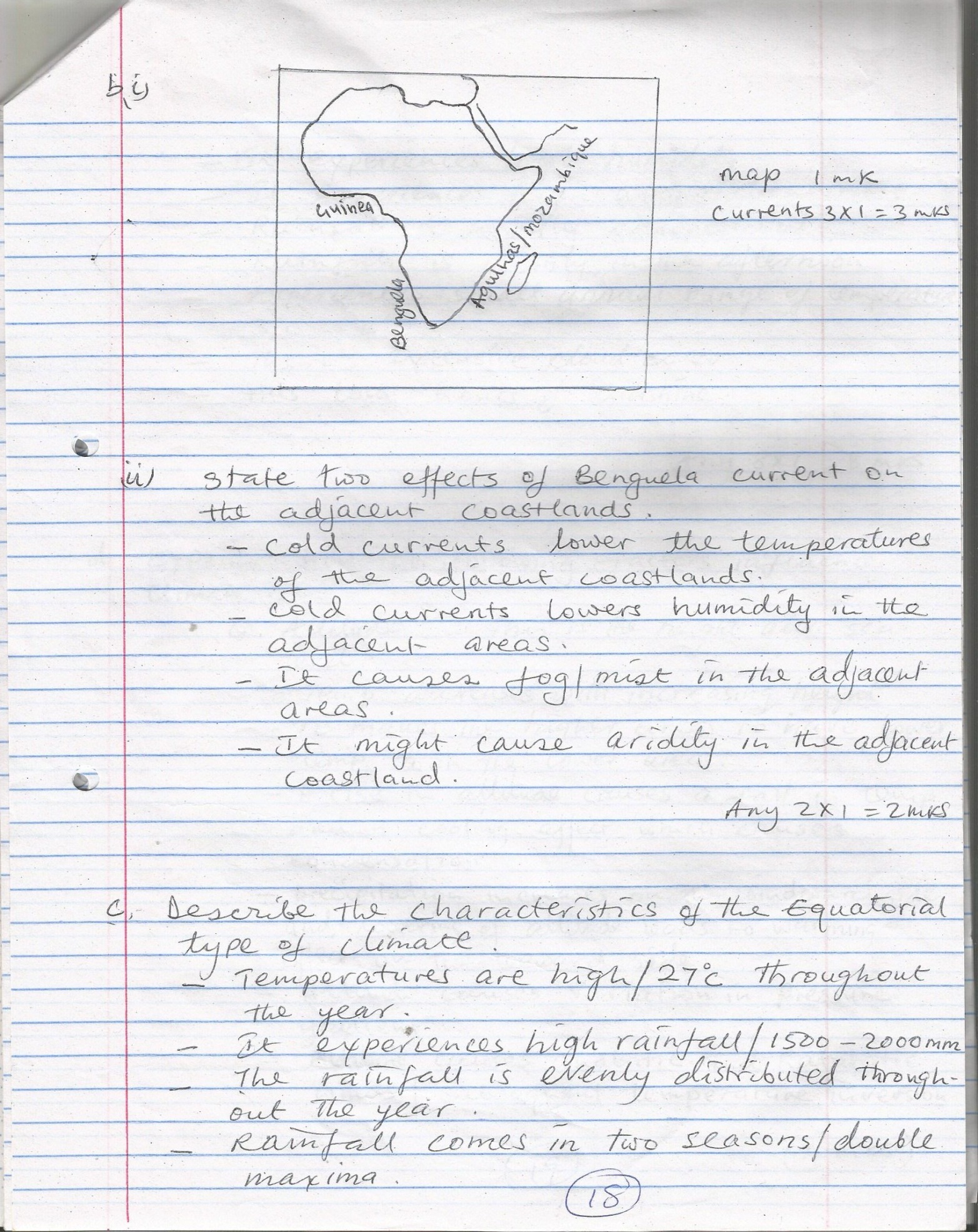
* It is a climate condition in a restricted area due to small differences such as aspects, slopes, vegetation and human land-escapes.

**ii) State two negative effect of desertification. (2mks)**

* It leads to shortage of water/destruction of water catchment area.
* Leads to drying up of vegetation.
* Leads to dying up of soils /development of infertile soils.
* Causes migration of people /animals .
* Causes destruction of vegetation.

**b) Draw a sketch map Africa and indicate the ocean currents.**

1. **Benguela, Guinea, Agulhas/ Mozambique. (4mks)**

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1. **State two effects of Benguela Current on the adjacent coastlands. (2mks)**

* Cold currents lower the temperatures of the adjacent coastland.
* Cold currents lowers humidity in the adjacent areas.
* It causes fog/mist in the adjacent areas.
* It might cause aridity in the adjacent coastland.

**c) Describe the characteristics of the Equatorial type of climate. (8mks)**

* Temperatures are high/270 C throughout the year.
* It experiences high rainfall /1500-2000mm.
* The rainfall is evenly distributed throughout the year.
* Rainfall comes in two seasons /double maximum.
* It experiences high humidity.
* It experiences high evaporation rates.
* Rainfall is mainly convectional.
* Rainfall is mainly in the afternoon.
* Experiences small annual range of temperatures 30c to 40c .
* There is extensive cloud cover.
* Has long hours of sunshine.

**d) Explain how the following factors influence climate.**

1. **Altitude. (4mks)**

* This is the highly above sea level.
* Temp. decreases with increasing height.
* It makes the higher areas to have lower temp. that lower areas.
* A rise in altitude causes a fall in temp. and a cooling effects which causes condensation.
* Precipitation increases on the windward side and lowering of altitude leads to warming effect on the leeward side.
* Altitude causes variation in pressure gradients.
* Altitude causes anabatic and katabatic winds/ subsequent temperature inversion

1. **Distance from the sea. (3mks)**

* Areas closer to the sea are water than those far from the sea due to maritime influence.
* During summer ,land surfaces are warmer than sea surfaces so that inland areas are warmer than those nearer the sea.
* In winter the land surface are colder than the sea bodies hence the land near the sea is cool while away from the sea the land is cold.
* Winds blowing over the sea pick moisture and shed it as rainfall on the coastal areas. They blow as dry winds further inland causing inland aridity.

9. **a. i. Differentiate between a watershed and a drainage basin. (2 marks)**

- A watershed is a region where a river starts while a drainage basin is the area drained by a river system.

**ii. State three processes of river erosion. (3 marks)**

**- Hydraulic action** - This is the action caused by the force of moving water.

- **Abrasion/Corrasion** - Its weaving down of the river channel by the load carried in the water.

- **Solution -** River water contains weak inorganic acids which react with some rocks to form new minerals which are soluble in water.

- **Attrition** - This is the process by which the load carried by river water is itself broken down.

**b. i. Give three ways in which river transport its load. (3 marks)**

**-** Through suspension

- Through saltation.

- Through traction.

- Through solution.

**ii. State four factors which influence river deposition. (4 marks)**

- obstacles in the stream channel.

- width of the river bed when the river channel become wide, the water spreads out over a wider surface area hence the speed reduces thus deposition .

- When river water freezes the load its carrying is brought to a standstill. When the water flow, the load is deposited.

- When river gradient reduces, velocity is also reduced hence deposition.

- When volume of water reduces, rivers capacity to transport also reduces hence deposition.

- Nature and amount of load. Heavy load is transported over short distances.

- Obstacles in the stream channel.

**c. Give three characteristics of a river in its middle stage. (3 marks)**

- Lateral erosion is more dominant .

- The river has a large volume of water.

- The river valley has a u-shaped valley.

- The concave bank is eroded and undercut steeping it to form river cliffs.

- Deposition start to take place the last middle stage

- Features formed include river meander, river bluffs.

**d. i. Name two features produced by river rejuvenation. (2 marks)**

- Knick points

- River terraces.

- Incised meanders.

- Rejuvenation gorges.

**ii. Describe how river capture occur. (4 marks)**

- Initially there are two rivers which are adjacent to each other.

- The river with more erosive power due to its volume of water flow over soft rocks.

- The more powerful river erode its valley through head ward erosion.

- The river valley of more powerful river therefore becomes deeper and wider and so the river flows

at a lower level than the weaker river.

- The powerful river extend its valley backwards by head ward erosion.

- Eventually it joins the valley of the weaker river.

- The head waters of the weak river start flowing in to the valley of the pivate river.

**iii. Explain two positive effects of rivers to the human environment. (4 marks)**

-Provide water for both domestic and industrial purposes / irrigation.

- Some rivers are navigable hence used as transport routes.

- Some rivers are rich fishing grounds.

- Rivers are dammed and their water used for generation of hydroelectric power.

- Some alluvial sediments may contain valuable minerals e.g. gold and diamond.

- Features formed by rivers e.g. waterfall, gorges, meanders, attract tourists who bring in foreign currency.

10. **a. i. What is an ice sheet? (2 marks)**

- It is a continuous mass of ice covering a large area / surface.

**ii. Give two reasons why there are no ice sheets in Kenya (2 marks)**

-Kenya experience high temperatures under which ice sheets cannot form.

- Most parts of Kenya have low altitudes.

- Kenya is found at low latitudes

**iii. Explain three factors that influence the movement of ice from the place of accumulation (6 marks)**

**-**  Gradient of the land - Ice move faster when the slope is steep.

- Temperatures / Seasonal changes - higher temperatures result in to thawing, leading to faster movement of ice.

**-** Nature of the surface - When the surface on which ice is moving is rough, it causes friction lowering the speed of the movement of ice / smooth surface increase speed of movement of ice.

- Size / thickness of glacier - large masses of ice exert pressure which lead to melting of ice underneath. This increases the speed of ice movement.

(3 × 2 = 6 marks)

b. **Describe how an arête is formed (4 marks)**

**-** Two adjacent cracks / hollows exists on a mountain side.

- The two hollow / cracks are filled with ice.

- The ice erodes the sides through plucking and deepens the hollow through abrasion.

- Through erosion, the back walls of the hollows slowly recede.

- Eventually the hollows / cirques are separated by a knife edged ridge .

- The ridge is called an arête (Any 4 × 1 = 4 marks)

**c. The diagram below shows types of moraines in a valley glacier.**

**i. Name the type of moraines marked S, T and V. (3 marks)**

S - Medial (1 mark)

T - Lateral (1 mark)

V - Terminal (1 mark)

**ii. Explain four positive effects of glaciations in lowland area. (8 marks)**

**- G**lacial till provide fertile soils for arable farming.

- Ice sheets in their scouring effect reduce the land surface and depth to expose mineral seams which become easy to extract.

- Outwash plains comprises of sands and gravel which are used as materials for building and construction.

- Lakes formed through glaciation can be exploited for various economic uses such as fishing,

transportation or as tourist attraction.

- Glaciated lowlands are generally flat due to erosion and depositions and are ideal for construction of buildings and communication lines.

(4 × 2 = 8 marks)