

**GEOGRAPHY FORM 3 PAPER 1**  
**TERM 3 2023**  
**MARKING SCHEME**

1. (a) How does a sea breeze occur?
- **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 (Any 2 x 1 = 2 mks)**
- (i) Name the ocean currents marked H, J and K
- **H - Mozambique/Agulhas (1 mk)**
  - **J - Benguela (1 mk)**
  - **K - Guinea (1mk)**
- (ii) State two effects of a warm ocean current on the adjacent land
- **It warms up the adjacent land**
  - **It increases the humidity of the adjacent land**
  - **It may lead to rainfall on the adjacent land (Any 2 x 1 = 2 mks)**
2. Give two processes involved in each of the following types of weathering
- (a) Physical weathering
- **Pressure release/ offloading/ sheeting**
  - **Block disintegration**
  - **Exfoliation**
  - **Frost action/ frost shattering**
  - **Crystal growth/ crystallization**
  - **Slaking/ wetting and drying**
  - **Granular disintegration (Any 2 x 1 = 2 mks)**
- (b) Chemical Weathering
- **Hydrolysis**
  - **Solution**
  - **Oxidation**
  - **Carbonation**
  - **Hydration (Any 2 x 1 = 2 mks)**
3. (a) Name the plants marked F and G
- **F - Mars (1 mk)**
  - **G - Neptune (1 mk)**
- (b) State three effects of the rotation of the earth on its axis
- **It causes the occurrence of day and night**
  - **It causes deflection of winds and ocean currents**
  - **It causes the rising and falling of the ocean tides**
  - **It causes variation in time at difference longitudes**
  - **It causes difference in atmospheric pressure on the surface of the earth (Any 3 x 1 = 3 mks)**
4. (a) Name two scales used to measure the intensity of an earthquake
- **The Rossi – forrel scale**
  - **The Mercalli scale (2 x 1 = 2 mks)**
- (b) Give three causes of earthquakes

- **Gravitational pressure**
- **Collision of tectonic plates**
- **Energy release in the mantle**
- **Isostatic adjustment**
- **Violent Volcanic eruptions**
- **Nuclear explosions**
- **Adjacent along fault lines**
- **Building reservoirs**
- **Magma movement within the crust** ( Any 3x 1 = 3 mks)

5. (a) (i) Calculate the annual range of temperature for the town  
 $28^{\circ} - 24^{\circ}\text{C} = 4$  ( 2 mk)

(ii) Calculate the mean annual rainfall for the town ( 2mk)  

$$\frac{25+38+99+140+277+439+277+69+142+201+71+25}{12} = 150.25\text{mm}$$

## **SECTION B**

6. Study the map of Oyugis 1:50,000 (sheets 130/1) provided and answer the following questions

a) i) What type of map is Oyugis extract ? (1mk)

- **Topographical map( 1 x 1 = 1 mks)**

ii) Give two scales that have been used in the map extract. (2mks)

- **Ratio scale/representative fraction(1:50,000)**
- **Linear scale( Any 2x 1 = 2 mks)**

iii) Measure the length of the township boundary shown on the map. Give your kilometers. (2mks)

**6km ± 0.5 ( 1 x 2= 2 mks)**

iv) Calculate the area covered by kodera forest. Give your answer in square kilometers. (2mks)

**13 half squares divide by 2 x 1km<sup>2</sup> = 6.5km<sup>2</sup> ± 0.5 ( 1 x 2= 2 mks)**

b) i) Identify the methods that have been used to represent relief of the area covered by the map. (2mks)

- **Contours /contour lines**
- **Trigonometrical station at grid reference 8635, 8418 etc**
- **Spot heights at grid reference 9021, 9320 etc ( Any 2x 1 = 2 mks)**

ii) Name the physical features found in the grid square 6842. (2mks)

- **hill /mountain**
- **A river**
- **A valley( Any 2x 1 = 2 mks)**
- 

c) Describe the drainage of the area covered by the map. (6mks)

- There are dams like Kuna dam at grid square 7629, Tinga Dam at grid square 7036 etc
- There are quite a number of rivers in most parts of the area covered by the map
- Most of the rivers are permanent
- Some rivers flow from the Northern part of the area covered by the map
- Most of the rivers form dendritic pattern
- There is a seasonal swamp at grid square 9336, 9335

**NB: Give any other relevant answer ( Any 6x 1 = 6 mks)**

d) (i) Apart from agriculture, name two other economic activities in the area covered by the map.

(2mks)

- **Transportation as evidenced by roads, airstrip**
- **Trading as evidenced by town are with permanent buildings , markets ,shops**
- **Brick making as evidenced by brick works at grid square 7930,7918,9018.**
- **Processing industrialization as evidenced by coffee factory , sugar research station etc**
- **Tourism as evidenced by a lodge at grid square 9142( Any 2x 1 = 2 mks)**

(ii) Citing evidence from the map, give three reasons why the area covered by the map is suitable for agricultural activities. (6mks)

- **Presence of many permanent rivers in almost all the parts of the area covered by the map**
- **Presence of dams can be used for irrigation as evidenced by Tings Dam at grid square 7036.**
- **Eastern part of the map is highland as evidenced by the presence of very close contours of over 4,000 metres above the sea level**
- **Undulating /gentle sloping terrain or topography which are decreasing gradually towards the sea level.**
- **Good transports network as evidenced by presence of all weather roads, Dry weather roads air strip at grid square 8825.**
- **NB: Give any other relevant answer ( Any 3x 2 = 6 mks)**

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

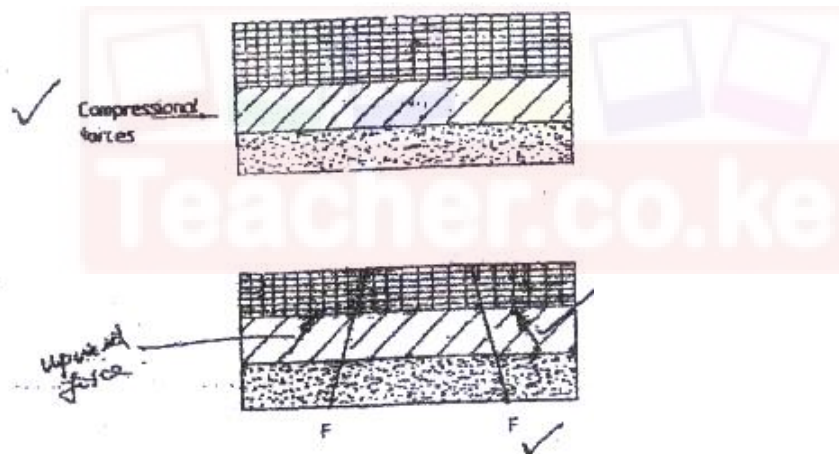
- **Normal fault**
- **reverse fault**
- **Tear/ shear fault/ slip/ transform/ wrench/ strike slip**
- **Thrust fault**
- **Ant clinical fault** ( Any 3x 2 = 3 mks)

(ii) Apart from compression forces explain two other processes that may cause faulting

- 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 movements which may exert a strain in the rocks making them to fracture. ( Any 4x 1 = 4 mks

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

- Layers of rocks are subjected to compression forces



Two parallel lines of weakness development and these reverse faults





8.(a)(i) What is an ice sheet?

- **It is a continuous mass of ice covering a large area/ surface (2mks)**

(ii) Give two reasons why there are no ice sheets in Kenya

- **Kenya experience high temperatures under which ice- sheets cannot form**
- **Most parts of Kenya have low altitudes**
- **Kenya is found at low latitudes ( Any 2 x 1 = 2 mks)**

(ii) Explain three factors that influence the movement of ice from the place of accumulation

- **Gradient of the land- Ice moves faster when the slope is steep**
- **Temperatures/ seasonal changes-Higher temperatures result into 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**
- **Size/ thickness of glacier – large masses of ice exert pressure which lead to melting of ice underneath. This increases the speed of ice movement (Any 3x2 = 6mks)**

(b) Describe how an arête is formed (4mks)

- **Two adjacent cracks/ hollows exists on a mountain side**
- **The two hollows/ 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/ ciques are separated by a knife- edged ridge**
- **The ridges called an arête ( Any 4 x 1 = 4 mks)**

(c) (i) Name the types of moraines marked S, T and V (3mks)

<b>S</b>	-	<b>Medial</b>	<b>( 1 mk)</b>
<b>T</b>	-	<b>Lateral</b>	<b>( 1 mk)</b>
<b>V</b>	-	<b>Terminal</b>	<b>( 1mk)</b>

(ii) Explain four positive effects of glaciations in lowland area (8mks)

- **Glacial till provides 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 though glaciation can be exploited for various economic uses such as fishing, transportation or as tourist attraction.**
- **Ice melts into rivers exploited for domestic use**
- **Glaciated features are tourists attractions**
- **Glaciated lowlands are generally flat due to erosion and deposition and are ideal for construction of buildings and communication lines ( Any 4 x 2 = 8 mks)**

9. a) Differentiate between river rejuvenation and river capture.(2mks)
- **River rejuvenation is the renewal of the rivers erosive activity while river capture part of the river with more than that of the neighbouring river. (2 marks)**
- b) Give three features resulting from
- i) River rejuvenation (3mks)
- **knick point/waterfall**
  - **river terraces**
  - **incised meanders**
  - **river gorges/rejuvenation gorges**
  - **valley within a valley**
  - **Aberdare meanders( Any 3x 1 = 3 mks)**
- ii) River capture (3mks)
- **wind gap/dry river valley**
  - **elbow of capture**
  - **pirate stream**
  - **beheaded stream/misfit/captured river( Any 3x 1 = 3 mks)**
- c) Explain the four ways through which a river transports its loads.(8mks)
- **The fine particles such as silt are carried in suspension because they are light and can be maintained within the turbulence of the water/some of the light materials float on the surface of the water.**
  - **The fairly heavy particles/pebbles are lifted and bounce over short distances by the turbulence of the water. This process is known as siltation/hydraulic lift.**
  - **The large and heavy particles are slide along the river bed. The process is known as traction/welling.**
  - **Soluble materials are dissolved in water and carried in form of solution.**
  - **W - 4**
  - **E - 4 (8 marks)**
- d) You are planning to carry out a field study on the lower course of a river.
- i) - give three reasons why you would require a route map. (3mks)
- **To help identify the direction to flow.**
  - **To help prepare a work schedule**
  - **To help identify location of features for study**
  - **To help estimate distances to be covered**
  - **To help estimate the time the field study is likely to take. (3 marks)**
- ii) State three characteristics of a river at the old stage that you are likely to observe during the field study.(3mks)
- **The river flowing at a low speed**
  - **The river carrying silt in suspension/the water is brown**
  - **The river braids at a bend.**
  - **The river meandering in the flood plain( Any 3x 1 = 3 mks)**

iii) Give three follow up activities you would be involved in after the field study.(3mks)

- **Reading more on the topic.**
- **Displaying photographs/items collected**
- **Asking/answering questions**
- **Writing reports**
- **Discussing with the rest of the class**
- **-Analyzing/assessing the information collected against the hypothesis.**
- **(Any 3 x 1 = 3 marks)**

10. The diagram below represents a well developed soil profile. Use it to answer question (a)  
Refer to question paper

a) i) Describe the characteristics of horizon B(3mks)

- **It is the accumulation zone for leached minerals from horizon A.**
- **The soil texture is clay in nature**
- **The zone sometimes forms the hard pan/murram/lateric on the crust.(Any 3 x 1 = 3 marks)**

ii) Apart from humus, name three other components of soil air/soil

- **water/soil water**
- **rock particles/weathered materials**
- **living organisms (any 3 x 1= 3)**

iii) State three ways in which humus contributes to the quality of soil

- **it helps improve soil texture**
- **it provides essential minerals to the soils from the decomposed plant matter/humification and nitrification.**
- **it enables soil to retain moisture**
- **it facilitates aeration of the soil**
- **humus is a source of food for micro-organisms (3 marks)**

b) i) Differentiate between soil structure and soil texture

- **Soil structure is the way the individual soil particles are arranged into aggregate compound particles while soil texture is the degree of fineness or coarseness of the soil particles. (2 marks)**

ii) Explain how the following factors influence soil formation

- Topography

- **Valley bottoms encourage formation of deep fertile due to depositional/accumulation of weathered materials.**
- **steep slopes encourage of the top soil thus slowing down formation of soil/they have thin soil/have poorly developed soils formation (Any 3 x 2 )**

Time

- **Where soil formation processes takes a short duration the soils are generally immature/where the process has taken a long period of time soils are generally well developed/mature.**
- **-Young soils retain the characteristics of the parent rock because they have not been exposed to the factors that may cause change/mature soils may not display the characteristics of the parent rock. (Any 2 x 1 = 2 marks)**



c) Explain how the following farming practices may lead to the loss of soil fertility

i) Overgrazing

- **It leads to removal of vegetation cover thereby exposing soil to agents of erosion.(2 marks)**

ii) Frequent ploughing

- **This weakens soil structure making it easy for agents of soil erosion to carry it away.**
- **It increases oxidation which results in loss of organic matter. Any 2 x 1 = 2 marks**

iii) Continuous irrigation

- **It causes leaching of soil nutrients making the top soil deficient of soluble minerals/causes salinity (2 marks)**

