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**GEOGRAPHY**
**Paper 1**
**MARCH/APRIL 2020**

**ARISE AND SHINE TRIAL 1 EXAM**
**MARCH/APRIL-2020**

# MARKING SCHEME

**SECTION A**

1. **(a) What is a Stevenson screen? (2 marks)**
   It is a white wooden box in which meteorological instruments are kept at a weather station.

   **(b) Name two forms of precipitation that commonly occur in Kenya (2 marks)**
   - ✓ Rain
   - ✓ Hail
   - ✓ Dew
   - ✓ Fog/mist (Any 2 X1 = 2marks)

2. **(a) State three characteristics of the crust (3 marks)**
   - ✓ Rocks are generally brittle.
   - ✓ Extends between 6 to 80km.
   - ✓ Divided into two layers, continental crust/sial and sima/oceanic crust
   - ✓ Sima contains silica, magnesium and iron
   - ✓ Sial contains silica and aluminum
   - ✓ Sial is lighter than sima/ has density of 2.65 to 2.70 g/cc
   - ✓ Sima is heavier than sial/ has density of 2.7 to 3.0g/cc
   - ✓ Sial rest on sima
   - ✓ Sial has mainly basaltic rocks
   - ✓ Sima is fairly flexible. (Any 4 X 1 = 4 marks)

   **(b) Give three reasons why the intensity of insolation is higher at equator than at Polar Regions. (3 marks)**
   - ✓ The sunrays are received at right angle hence spread over a small area within the equator
   - ✓ The sun rays travelled a shorter distance with few obstacles hence less heat is lost within the equator.
   - ✓ The sun is virtually overhead along the equator throughout the year.

   (Any 2 X 1 =2 marks)

3. **(a) Identify two theories used to describe the origin of Fold Mountains. (2 marks)**
   - Conventional Currents Theory

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- Continental Drift Theory
- Plate Tectonics Theory
- Contraction Theory

**(b) Give three effects of Fold Mountains on climate. (2 marks)**

- The slopes of mountains facing the sun receive direct sunshine or are warmer than slopes facing away from the sun.
- Mountain slopes causes the development of local winds due to variation in pressure between the mountain and the valley.
- The windward slopes of mountains receive high rainfall due to orographic effect.
- Atmospheric pressure reduces with increasing altitude along mountain slope/increases with decreasing altitude.
- Temperature decreases with increasing altitude/increases with decreasing altitude
- Mountain tops experiences mist/fog or snow due to very low temperatures.

(Any 3 X 1 = 3 marks)

**4. (a) Name two types of earth movements that occur within the earth's crust. (2 marks)**

- Horizontal/lateral/orogenic movement
- Vertical/epeirogenic movement

**(b) Name three tectonic plates (3 marks)**

- ✓ Eurasian plate
- ✓ Australian plate
- ✓ African plate
- ✓ North American plate
- ✓ South American plate
- ✓ Pacific plate
- ✓ Antarctic plate

**5. (a) Define faulting (2 marks)**

Faulting refers to the breaking/fracturing of crustal rocks due to tectonic forces.

**(b) State three effects of faulting on human environment (3 marks)**

- Faulting may lead to destruction of properties in built up areas.
- Faulting may change the drainage pattern leading to disappearance of rivers into the fault causing shortage of water for domestic
- Faulting lead to loss of life when it occurs in built up places.
- Features formed promote tourism.
- Windward sides of Block Mountains promote forestry/crop growing.
- Escarpments make expensive to construct roads/railways.
- Faulting exposes minerals making easy to extract.

(Any 3 X 1 = 3 marks)

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**SECTION B**

***Answer Question 6 and Any Other Two Questions in This Section***

6. **Study the map of Yimbo 1:50,000 (sheet 115/1) provided and answer the following questions**

   a) **What is the map name of the extract given?** **(1 mark)**

   - Yimbo

   b) **Name the type of boundaries in the map extract.** **(2 marks)**

   ✓ Regional/provincial boundary
   ✓ International boundary
   ✓ District boundary

   (Any 2 X 1 = 2 marks)

   c) **Calculate the area of Mageta island** **(2 marks)**

   Complete squares = 0
   Incomplete squares =19√ (1 mark)
   19 ÷ 2 = 9.5√ (1 mark)

   d) **(i) Using a scale of 1cm represent 20M, draw a cross-section from grid reference 270850 to 330850.** **(3 marks)**
   **On it, mark and name the following features:**

   - **Forest**
   - **Hill**
   - **River**
   - **Swamp**

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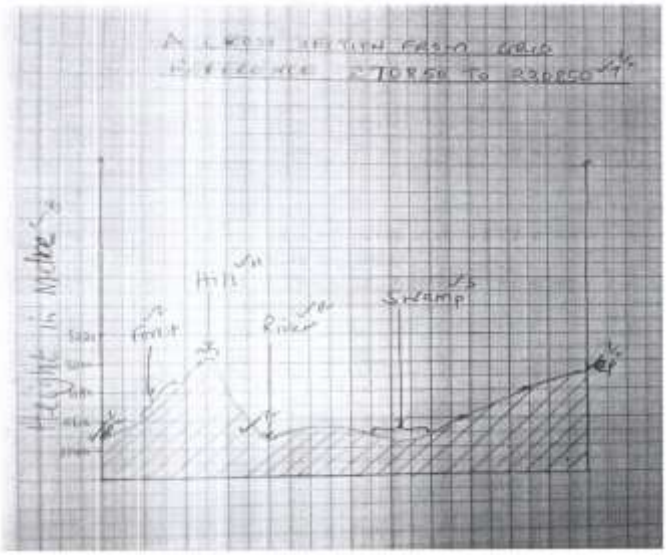


| | |
|---|---|
| Starting point (SP) (btw 1140 – 1160) | $\frac{1}{2}$mark |
| Ending point (EP) (btw 1180 – 1200) | $\frac{1}{2}$mark |
| Trend | 1 mark |
| Title | $\frac{1}{2}$mark |
| Vertical scale | $\frac{1}{2}$mark |
| Total | 3 marks |

**Features**

- Forest 1 mark
- Hill 1 mark
- River 1 mark
- Swamp 1 mark

Total 4 marks

**(ii) Calculate the vertical exaggeration of the map. (2 marks)**

V.E = Vertical Scale ÷ Horizontal Scale

1:2000 ÷ 1:50,000
= 25 times (a tick for each step = 2 marks)

**e) Describe the long profile of River Yala. (5 marks)**

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- ✓ River Yala has meanders at its lower stage
- ✓ The river valley widens downstream
- ✓ The volume of water increases downstream
- ✓ River Yala has several tributaries
- ✓ Tributaries join the river at right angle/trellis drainage pattern
- ✓ River Yala flows through a swamp
- ✓ The gradient of the river is low. (Any 5 X 1 = 5 marks)

**f) Citing evidence from the map, explain the factors that influence trade in the area covered by the map. (6 marks)**

- Presence of market√ as evidenced by many settlements√ which buy goods/large purchasing power√
- Availability of transport√ as evidenced by roads√ /waterways for easy movement of goods and people to the market√
- Presence of numerous markets/shops√ e.g Usengi market√ provide room for trading activities√
- The area is economically productive√ /presence of resources as evidenced by posho mill√ adds value to products /provide goods.

**NB – Tick for evidence** √e, factor √f and explanation √Ex i.e the three must be clearly mentioned for one point to score 2 marks

(Any 3 X 2 = 6 marks)

**7. (a) Define the following**

**(i) Aridity (2 marks)**

- Aridity is the condition of rainfall deficiency in an area. (It is characterized by irregular rainfall, little vegetation cones and excessive evaporation in comparison to precipitation.

Or

- Aridity is the state of land being deficient in moisture leading to scanty vegetation or lack of it.

**(ii) Wind (2 marks)**

- Wind is air in motion. The motion is created by difference in temperatures so that air moves from colder areas to warmer areas.

***(2 marks for full definition)***

**(b) (i) Explain three ways in which wind erodes weathered materials in arid areas. (6 marks)**

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**Deflation** – is the process by which wind moves dry unconsolidated materials like dust and sand from surface of the earth by filting and rolling which depends on wind velocity.
**Abrasion –** is frictional or mechanical weathering down of rocks by wind borne materials like coarse sand which is the erosion tool.

**Attrition** – since water borne materials are at constant state of movement they rub against rocks and each other produce rounded sand.

(2 X 3 = 6 marks)

**(ii) Name three features which develop under arid conditions as a result of wind erosion. (3 marks)**

- ✓ Deflation hollows
- ✓ Yardangs
- ✓ Zeugens
- ✓ Rocks pedestals
- ✓ Ventifacts
- ✓ Inselbergs, millet-seed, gours, desert pavements
- ✓ Mushroom block

(Any 3 X 1 = 3 marks)

**(c) State four factors which influence wind transportation in desert. (4 marks)**

- Speed and the force (strength) of the wind
- Nature of the load i.e either light or heavy
- Intervening obstacles e.g. dead animals, twig or rock
- Water mass and vegetation (Any 4 X 1 = 4 marks)

**(d) (i) Apart from Wadis, name any three resultant features of water action in arid areas. (3 marks)**

- Bajada
- Inselbergs
- Pediplains
- Playas
- Selinas
- Dry river valleys/Lagh (Any 3 X 1 = 3 marks)

**(ii) Describe the formation of a Wadi. (5 marks)**

- Flashfloods occur on a steep and undulating landscape. The flash flood cut rills which in turn developed into gullies.
  *The stream enlarges the gullies rapidly to form steep dry hollows in an arid area called wadis

*Tick on underlined points*
*NB (*must be mentioned for maximum score of 5 marks)*

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**8. (a) What is a glacier? (2 marks)**

✓ Glazier is a mass of ice having limited width and moving outwards from the point of accumulation.

**(b) Describe how the following glacial erosional processes occur.**

**(i) Plucking (3 marks)**

- The melt water will enter into cracks of well-joined rocks.
- Temperature slightly reduces/falls and the melt water freezes in the cracks.
- Repeated action of freezing and thawing enlarges the rock cracks and eventually causing part of the rock to fall off, pulled and carried away by the moving glacier.

**(ii) Abrasion (3 marks)**

- Ice moves downwards as it carries materials over rock surface.
- The rock debris/moraine at the base and sides of the glacier is used as a tool for scratching and polishing.
- The underlying rocks will be smoothened when the debris are dragged along the rocks as the glacier moves.

**(c) The diagram below shows features on a glaciated lowland.**

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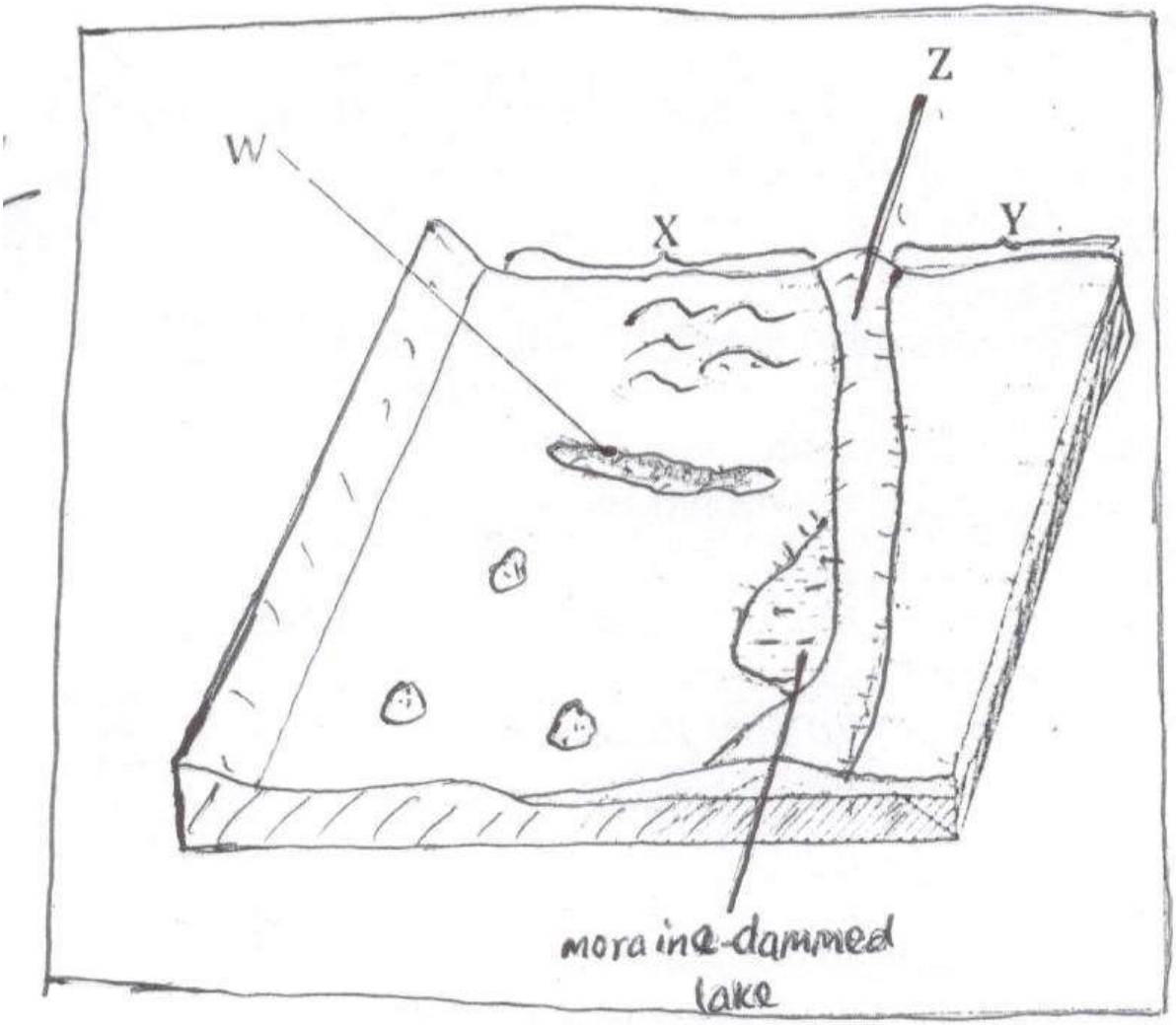


**(i) Name the features marked W, X, Y and Z.** **(4 marks)**

W - Esker

X - Boulder clay plain/till plain

Y - Outwash plain

Z - Terminal moraine

**(ii) Describe how a drumlin is formed.** **(5 marks)**

- They are formed when deposition of glacial materials/clay on the plains/ boulder clay plains beneath ice due to friction between the bed rock and the boulder clay plain.

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- Continual deposition leads to formation of large mounds of the deposits irregularly as long as egg-shaped hills whose upstream side being steep and smoothened and gentle downstream features called drumlins.

**(d) Explain four negative effects of glaciations in low-land areas. (8 marks)**

- ✓ Outwash plains may have infertile sand deposits making such area unsuitable for agriculture
- ✓ Deposits of moraine results in the formation of numerous Moraine-dammed lakes reducing land for settlement and agriculture.
- ✓ Boulder clay plains may create marshy conditions having poor drainage discourage human settlement and agriculture.
- ✓ Presence of erratic, drumlins and kettle lakes makes the landscape rugged discouraging construction of transport and communication lines.
- ✓ Some minerals may be buried deep underneath the moraine making it difficult/expensive to mine.

(Any first 4 X 2 =8 marks)

**9. (a) (i) Define weathering (2 marks)**

- Weathering is the breaking /disintegration /decomposition of rocks in the earth/on the earth surface without movement /*in situ*

**(ii) Explain the following processes of weathering**

**a. Hydration (2 marks)**

- Certain minerals in rocks absorb water and expand.
- This causes internal stress in the rock and eventually disintegrates.

**b. Oxidation (2 marks)**

- Oxidation takes place in rocks with iron.
- Iron combines with oxygen forming ferric oxide/iron oxide
- The rocks then change colour and easily crumbles.

**c. Frost action (3 marks)**

- In high mountains/temperate areas water may occupy cracks in the rocks during the day.
- At night temperatures drop below freezing point causing the water to freeze/expand, exerting pressure on the cracks.
- During the day, temperatures rise, causing the ice to melt thus releasing pressure in the cracks.
- This alternate freezing and thawing action weakens the rocks causing it to disintegrate.

**(b) State three conditions that influence the process of Solifluction. (3 marks)**

- ✓ The presence of a gentle slope.
- ✓ The occurrence of alternate warm and cold season.

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- ✓ The presence of a permafrost/frozen ground/bedrock.
- ✓ Unconsolidated saturated weathered material.

(Any 3 X 1 = 3 marks)

**(c) Describe how an exfoliation dome is formed. (5 marks)**

- ✓ In arid and semi-arid areas, there is large diurnal range of temperature.
- ✓ During the day homogenous rock is intensely heated/at night the rock loses heat rapidly
- ✓ The differential heating causes the outer layer to expand/contract faster than the inner layer.
- ✓ When this expansion and contraction takes place repeatedly, stress develops in the outer layer of rocks. Cracks appear on the surface layer.
- ✓ Eventually the outer layer peels off.
- ✓ The peeling off leaves behind a rounded mass of rock known as **exfoliation dome**

**(d) Explain four physical factors that enhance movement of material along the slope due to gravity. (8 marks)**

**Nature of materials**
Heavy and large materials move faster on a slope as they are more likely to be overcome by gravity/thinly bedded layers have a tendency to move faster.

**Angle of slope**
The steeper the slope the faster the rate of movement/where rocks are dipping steeply, movement is faster.

**Climatic factors/amount of water**
The more saturated the soil/material/rock, the more likely it is to move as water adds weight and lubricates/alternate freezing and thawing encourages movement.

**Vegetation cover**
Bare surfaces are more likely to experience mass wasting because there is no vegetation to bind the materials together.

**Earth movement**
Earthquakes/vulcanicity/isostatic adjustments cause vibrations which may trigger widespread movement of weathered rock materials.

(Any 4 X 2 = 8 marks)

**10. (a) Define the term vegetation. (1 mark)**

- Vegetation refers to collective plants cover growing in a particular area/is the plant cover that occurs naturally or widely on the earth surface.

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**(b) Explain how the following factors influence the distribution of vegetation.**

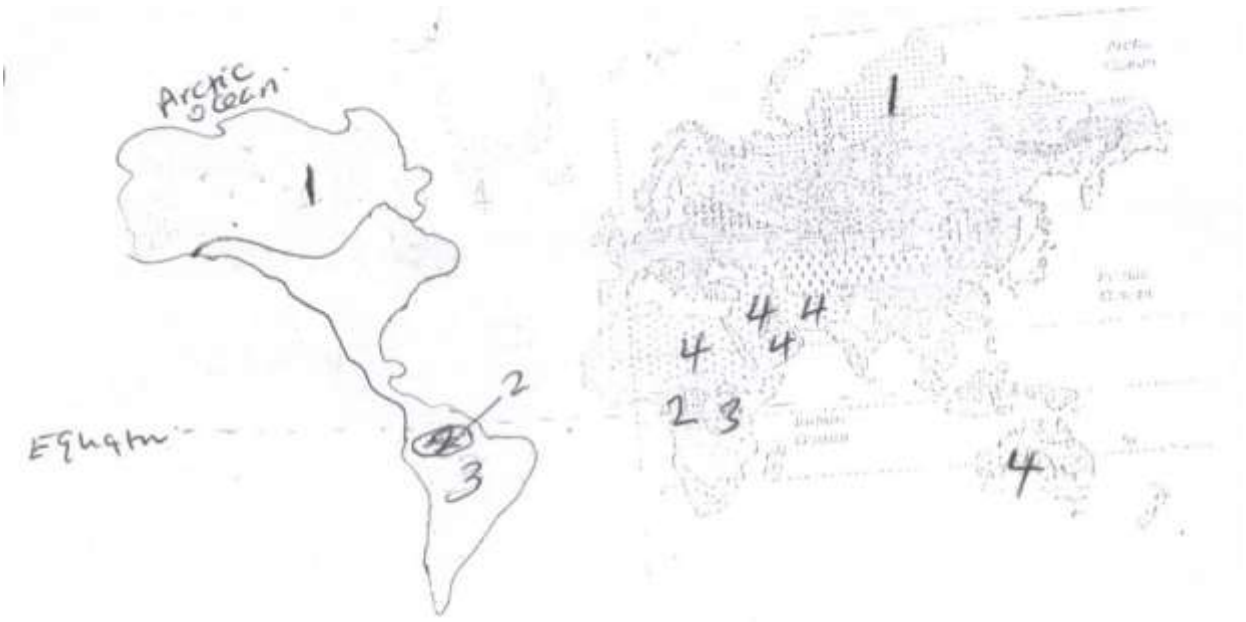
**(i) Aspect** **(2 marks)**

- Slopes facing the sun have a variety of plants due to warm summers.
- Slopes facing away from the sun have few plants due to cool conditions or low temperatures.

**(ii) Relief** **(4 marks)**

- **Windward sides of mountains receive heavy rainfall leading to the growth of** thick forests.
- Mountain tops have no or little vegetation cover due to little rainfall and very low temperatures.
- Gentle slopes have thick vegetation due to deep fertile soils.

**(c) The map below shows world vegetation zone**




**(i) Name vegetation type marked 1, 2, 3 and 4.** **(4 marks)**

1 - Tundra
2 - Equatonal forests
3 - Tropical grasslands
4 - Desert vegetation

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**(d) Explain four ways in which trees in coniferous forests are adopted to the climatic conditions.** **(8 marks)**

- Needle - like leaves help to reduce loss of water.
- The leaves have a tough waxy skin to protect them from cold winter
- The trees have a conical shape and flexible branches to allow snow to slide easily and to maximize damage to trees.
- Most trees are evergreen to minimize sunlight during the short growing season.
- The tree trunks are flexible to enable them sway without breaking during strong winds.
- The trees have thick barks with a lot of resin which protect them from frost.

(4 X 2 = 8 marks)

**(e) A form four Geography class is planning to carry out a field study in Kakamega forest.**

**(i) State how they would use the following tools during the study.**

**a. A tape recorder** **(1 mark)**

✓ Used for recording conversations /interview In the field.

**b. A sketch map** **(1 mark)**

✓ To show routes/direction

✓ To fill in information during the study.

**c. A camera** **(1 mark)**

- Taking photographs of the forest/recording the observations.

**(ii) Give three methods they would use to collect the data during the study.** **(3 marks)**

- Observing
- Oral interviewing.
- Collecting samples taking photographs
- Digging
- Smelling and feeling
- Reading from books
- Taking photographs

(Any 3 X 1 = 3 marks)

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