



312/1 MS
GEOGRAPHY
Paper 1
MARKING SCHEME
DECEMBER 2022

THE KENYA NATIONAL EXAMINATIONS COUNCIL
KENYA CERTIFICATE OF SECONDARY EDUCATION
GEOGRAPHY

Paper 1

MARKING SCHEME
(CONFIDENTIAL)

THIS MARKING SCHEME IS THE PROPERTY OF THE KENYA NATIONAL EXAMINATIONS COUNCIL AND IT MUST BE RETURNED TO THE KENYA NATIONAL EXAMINATIONS COUNCIL AT THE END OF MARKING

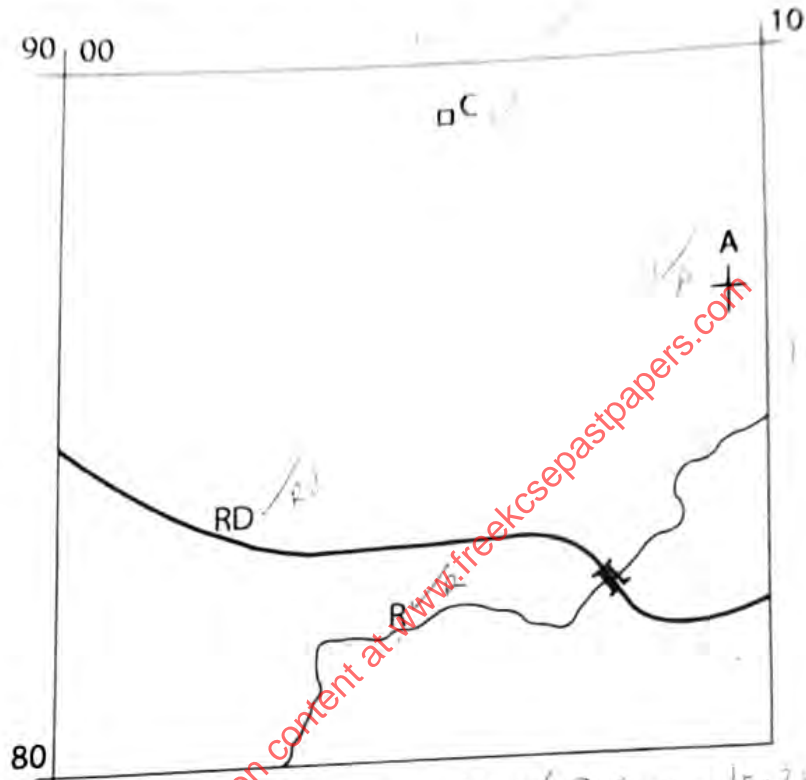
This marking scheme consists of 15 printed pages.

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Turnover

(b)

Draw a square 10cm by 10cm to represent the area enclosed by eastings 00 and 10, and Northings 80 and 90. On it mark and name the following:

SQUARE REPRESENTING THE AREA BOUND BY EASTINGS 00 AND 10, NORTHING 80 AND 90



KEY

- A Air photo principal point (04)
- C Chiga market
- RD All weather road bound surface
- R River Ombeyi

Rectangle-(1mark)

Each feature (1 mark)=(4 marks)

S-1
RD-1
R-1
C-1
A-1

5 5

(b)	<p>State two ways through which aspect influences distribution of natural vegetation.</p> <ul style="list-style-type: none"> Windward slope of mountains/hills support growth of a wide variety of vegetation ✓ The leeward side supports scanty vegetation ✓ The South facing slopes of temperate latitude areas of the Northern Hemisphere tend to favour luxuriant growth of forest, while the North facing slopes encourage the growth of grass ✓ <p><i>The North facing slopes of the Northern Hemisphere tend to favour luxuriant growth of forest, while the South facing slopes encourage the growth of grass.</i></p>	<p>Any 2 x 1 (2 marks)</p>	<p>2 2 5</p>
4. (a)	<p>What is a mineral?</p> <ul style="list-style-type: none"> It is an inorganic substance occurring naturally beneath/at earth's surface. ✓ 	<p>(2 marks)</p>	<p>2 2</p>
(b)	<p>Classify the following rocks according to their formation:</p> <p>Marble - Metamorphic ✓</p> <p>Granite - Igneous ✓</p> <p>Mudstone - Sedimentary ✓</p>	<p>3 x 1 (3 marks)</p>	<p>1 1 1 3 5</p>
5. (a)	<p>Differentiate soil profile from soil catena.</p> <ul style="list-style-type: none"> Soil profile is the vertical arrangement of the soil into layers/horizons from the surface to the bedrock, while soil catena is the sequence of different soils down a slope. ✓ 	<p>(2 marks)</p>	<p>2 2 5</p>
(b)	<p>State three importance of soil texture.</p> <ul style="list-style-type: none"> It influences the ease of plant root penetration into the soil. ✓ It regulates the soil water content. ✓ It controls aeration of the soil. ✓ It controls the availability and retention of nutrients within the soil. ✓ It controls the size and spacing of pores in the soil. ✓ 	<p>Any 3 x 1 (3 marks)</p>	<p>3 3 5</p>

SECTION B

Answer question 6 and any other two questions from this section

Study the map of Kisumu East 1:50,000 (Sheet 116/2)

Provided and answer the following questions:

(i) Give the longitudinal extent of the area covered by the map

$34^{\circ}45' E$ to $35^{\circ}00' E$

11 marks

(ii) Name the three human-made features in the grid square

0193

Main track (motorable track)

Plantation

Agricultural Department

- Houses

- Built up areas

Any 3 x 1 = (3 marks)

(iii) Identify the methods used to show relief on the map.

- Contours

- Trigonometrical stations

- Relief shading / hachures / pictorial

(2 marks)

(iv) Calculate the area of Kisumu town. Give your answer in square kilometres.

Complete squares = $5 \times 1 = 5 \text{ km}^2$

Incomplete squares = $16 \times \frac{1}{2} = 8 \text{ km}^2$

Total area

$13 \text{ km}^2 + 0.5 (12.5 = 13.5 \text{ km}^2)$

(2 marks)

(v) Name two types of natural vegetation.

- Scrub

- Scattered trees

- Woodland

- Papyrus

Any 2 x 1 = (2 marks)

<p>(b)</p>	<p>State two ways through which aspect influences distribution of natural vegetation.</p> <ul style="list-style-type: none"> - Windward slope of mountains/hills support growth of a wide variety of vegetation. - The leeward side supports scanty vegetation. - The South facing slopes of temperate latitude areas of the Northern Hemisphere tend to favour luxuriant growth of forest, while the North facing slopes encourage the growth of grass. <p><i>The North facing slopes of the Northern Hemisphere tend to favour luxuriant growth of forest, while the South facing slopes encourage the growth of grass.</i></p>	<p>Any 2 x 1 (2 marks)</p>
<p>4. (a)</p>	<p>What is a mineral?</p> <ul style="list-style-type: none"> - It is an inorganic substance occurring naturally beneath/at earth's surface. <p><i>Rock of the</i></p>	<p>(2 marks)</p>
<p>(b)</p>	<p>Classify the following rocks according to their formation:</p> <ul style="list-style-type: none"> Marble - Metamorphic ✓ Granite - Igneous ✓ Mudstone - Sedimentary ✓ 	<p>(3 marks)</p>
<p>5. (a)</p>	<p>Differentiate soil profile from soil catena.</p> <ul style="list-style-type: none"> - Soil profile is the vertical arrangement of the soil into layers/horizons from the surface to the bedrock, while soil catena is the sequence of different soils down a slope. <p><i>Ways in which</i></p>	<p>(2 marks)</p>
<p>(b)</p>	<p>State three importance of soil texture.</p> <ul style="list-style-type: none"> - It influences the ease of plant root penetration into the soil. - It regulates the soil water content. - It controls aeration of the soil. - It controls the availability and retention of nutrients within the soil. - It controls the size and spacing of pores in the soil. 	<p>Any 3 x 1 (3 marks)</p>

Some rivers may disappear to the ground through a fault forming underground streams.

Vertical faulting across a river may cause a change in the base level resulting in the formation of a water fall.

Uplift of some parts of the river channel may cause river rejuvenation.

Basins/depressions resulting from faulting may be filled with water to form lakes/inland drainage basins.

Uplift of the landscape which may cause rivers to reverse their direction of flow.

Existing rivers may expose underground water to form springs.

Transport

Presence of fault scarps makes it difficult/expensive to construct roads/railways across fault scarps.

When faulting occurs part of the land is disjointed, this disrupts forms of transport/pipelines/power lines/railway lines.

Faulting may lead to subsidence of land which damages roads/railways/pipelines.

Fault features such as waterfall/cataracts become a barrier to water transport.

Faulting across a river may form a pass where transport lines are constructed.

Some rift valley lakes are used for water transport.

Any 3 x 2 = (6 marks)

Any 3 x 2 = (6 marks)

8. (a) (i) Name the instruments used to measure the following elements of weather

Humidity - Hygrometer

Atmospheric pressure - Mercury barometer/Aneroid barometer

(2)

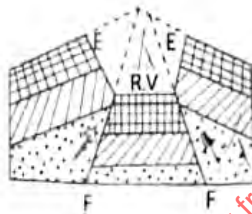
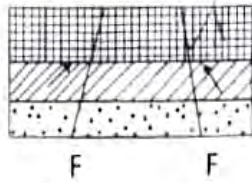
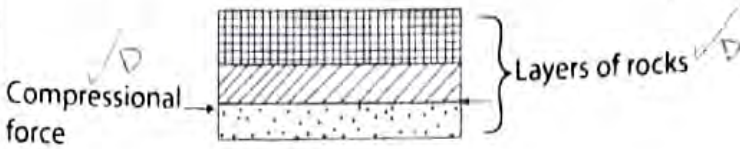
Psychrometer / Wet & dry bulb thermometer

1 mark

1 mark

(ii)

With the aid of well labelled diagrams, describe how the Rift Valley may be formed by compressional forces.



- Layers of rocks are subjected to compressional forces then there is some instability within the earth crust.
- Lines of weakness develop to form reverse faults.
- The compressional forces push the outer blocks towards each other.
- The middle block may remain static but at a lower level/sunk forming the floor of the Rift Valley.
- (The overhanging parts of the outer blocks eventually collapse/ are eroded to form an escarpment)

Drainage

- Some rivers may disappear into the ground through a fault forming underground streams.

Text (5 marks)

Diagrams (3 marks)

(c) Describe the distribution of settlement in the area covered by the map.

- There are few clustered settlements within the plantation.
- There are few/no settlements in the poorly drained areas/seasonal swamp/windmill
- Dense clustered settlements are found within Kisumu town and the surroundings/market centres/well drained areas.
- There is linear settlement along the roads.
- There are no settlements on Nyando escarpment in the North East

Any 4 x 1 = (4 marks)

(d) Citing evidence from the map, give three economic activities carried out in the area covered by the map:

ACTIVITY	EVIDENCE
Transportation ✓ A	Roads/motorable track/railway
Trade ✓ A	Markets ✓ E / Trading centres
Quarrying ✓ A	Quarries ✓ E
Crop farming ✓ A	Cotton ginnery/agricultural research stations/sisal factory
Milling ✓ A / Processing	Flour milling ✓ E / Sisal factory
Community ✓ A	Police office ✓ E / Workshop

Plantation
Cotton
Ginnery
Any 3 x 2 = (6 marks)

7. (a) What is faulting?

Faulting is a process of fracturing/breaking/cracking/displacement of crustal rocks due to tensional/compressional/shear forces. / due to tectonic forces

(2 marks)

(b) Apart from the Rift Valley, name three other features that result from Faulting

- (i)
- Fault blocks/horst mountains/block mountains
 - Tilt blocks ✓
 - Fault steps ✓
 - Escarpment / Fault Scarps
 - Depositional Rift valley lakes

Any 3 x 1 = (3 marks)

10) State three traditional methods of weather forecasting

- Observing movement of animals and migration of birds
- Observing changes in plants/shedding of leaves
- Observing heavenly bodies/appearance of the moon
- Observing changes in the wind patterns
- Observing changes in temperature

Any 3 x 1 =
(3 marks)

11) The statistical table below shows temperature and rainfall amounts for a given station X in Africa. Use it to answer question b(i) and b(ii)

Month	J	F	M	A	M	J	J	A	S	O	N	D
Temperature (°C)	27	27	26	25	23	22	21	21	22	23	25	26
Rainfall (mm)	366	376	452	399	264	282	302	203	132	99	117	262

(i) Calculate:

Annual range of temperature

$$27^{\circ}\text{C} - 21^{\circ}\text{C} = 6^{\circ}\text{C}$$

(2)

(2 marks)

Total annual rainfall

$$366 + 376 + 452 + 399 + 264 + 282 + 302 + 203 + 132 + 99 + 177 + 262 = 3254 \text{ mm}$$

(2 marks)

(ii) Describe the climatic conditions of the station X

- It experiences high rainfall totals /3254 mm annually
- Temperatures are high throughout the year.
- Low annual temperature range/6° C.
- The wettest month is march / 452 mm
- There is no dry month throughout the year. / recorded throughout the year
- October receives the lowest rainfall amount / 99 mm

4 x 1 =

(4 marks)

- It has a single maximum

9 (a)	<p>Apart from landslides, list the other two forms of rapid mass wasting.</p> <ul style="list-style-type: none"> - Earthflow - Mudflow - Avalanche 	2 marks
9 (b)	<p>Explain how each of the following factors facilitate mass wasting.</p> <p>(i) Nature of the rock</p> <ul style="list-style-type: none"> - Massive rocks overlying weak rocks move/slide faster along the slope - Large rocks are likely to be overcome by gravity more easily than finely weathered materials. - Steeply dipping rocks will easily experience movement - When materials contain a lot of water they are lubricated and become susceptible to rapid movement. <p>(ii) Human activities</p> <ul style="list-style-type: none"> - Human activities such as ploughing, clearing of vegetation, mining/quarrying affect the stability of surface materials causing their movement downslope. - External forces from moving vehicles/earth tremors from explosives shake the ground causing some materials to move downslope. - Some of the human activities create favourable conditions for other factors to exert their influence moving the material easily and rapidly. 	<p>Any 2 x 2 = 4 marks</p> <p>Any 2 x 2 = 4 marks</p>
9 (c)	<p>Explain the effects of mass wasting on the environment.</p> <ul style="list-style-type: none"> - Landslides may cause rivers to change their course reducing the water volume downslope. - Mass wasting leads to formation of derelict land with scars which spoils the beauty of the environment. - Some mass movement bury people and animals under large materials leading to loss of lives. - Landslides cause damage to property when materials cover roads/farms/homes. - Movement of materials downslope facilitates the loosening of the top soil increasing weathering. - Mass movement may create sceneries that may become tourist attractions. 	<p>Any 4 x 2 = 8 marks</p>

- Materials deposited at the slope base form deep soils
- Mass wasting leads to the formation of new landforms
- Mass wasting leads to loss of plant life (vegetation) & Biodiversity

• **Crag and tail**

- A large block of rock stands on the path of oncoming glacier. ✓
- The moving ice plucks off weak rock fragments from the upper side of the rock.
- As the ice moves round and over the resistance rock it carries the eroded materials to the lee side.
- The leeward side does not experience erosion.
- Eroded materials are deposited on the leeward side of the rock. ✓
- With time the moving ice smoothens the side of the oncoming ice while deposited materials increase on the lee side. ✓
- The resistant rock is the crag while the materials deposited on the lee side form the tail. ✓

Any 6 x 1 =
6 marks

6

Explain the significance of glaciated upland areas to human activities.

- Corrie lakes/ tarns, offer suitable areas for trout fishing. ✓
- Glaciated mountains discourage human settlements hence growth of forests and therefore lumbering is practiced. ✓
- U-shaped valleys form natural route ways. ✓
- Fjord coastline form deep well sheltered natural harbours/ good fishing grounds. ✓
- Glaciated upland areas form magnificent features that encourage recreation/ tourism. ✓
- Waterfalls formed in glaciated uplands provide suitable sites for hydro-electric power production. ✓
- The warm glaciated valleys are suitable for livestock farming/ cultivation. ✓

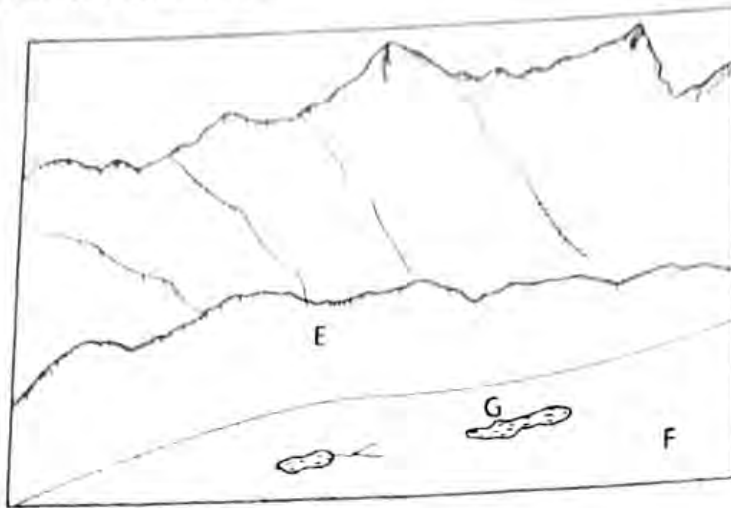
Any 3 x 2 =
6 marks

- Glacial erosion exposes minerals leading to mining. ✓
- Melting glaciers form rivers which provide water for domestic (industrial) Agricultural use. ✓

6

<p>(d)</p>	<p>You intend to carry out a field study in an area affected by landslides within the vicinity.</p> <p>(i) Give three reasons why it is important to seek permission from the school administration.</p> <ul style="list-style-type: none"> - To enable the administration provide essential tools for use during the field study. - It is an official requirement. - To enable the administration to take care of the disruptions of the school programme. - To enable the administration arrange for transport/ lunch - To enable the administration to take the necessary safety precautions. <p><i>It is possible for the school administration to provide the necessary safety precautions.</i></p>	<p>Any 3 x 1 = 3 marks</p>
	<p>(ii) State the advantages of studying landslides through fieldwork.</p> <ul style="list-style-type: none"> - It enables learners to apply the knowledge learned in the classroom. - It makes learning interesting. - It helps learners to develop manipulative skills. - It enhances retention of memory. - It provides detailed/ in-depth/ broader learning. - It makes learning real. 	<p>Any 4 x 1 = 4 marks</p>
<p>10.</p>	<p>Name two mountains in East Africa that are ice capped.</p> <p>(a) (i)</p> <ul style="list-style-type: none"> - Mt Kenya. - Mt Kilimanjaro <p><i>- Kilimanjaro ✓</i></p>	<p>(2 marks)</p>
	<p>(ii) Give two types of moraine</p> <ul style="list-style-type: none"> - Lateral. - Terminal. - Medial - Englacial - Ground/subglacial <p><i>Push moraine</i> <i>Debris Moraine</i></p>	<p>(2 marks)</p>

(b) The diagram below represents an upland glaciated landscape. Use it to answer question b (i).



(i) Name the features marked

- E-Truncated spur | Hanging valley / Wink-tall
 F-Glacial trough/U-shaped valley ✓
 G-Ribbon lake ✓ | Finger lake

1 mark

1 mark

1 mark

3

(ii) Describe the formation of each of the following features.

(1) • Pyramidal peak

- Ice accumulates in several cracks/ hollows on mountain sides.
- (Ice exerts pressure on the cracks/ hollows.)
- Plucking action of ice enlarges the hollows allowing more ice to collect in them. ✓
- ~~Freeze-thaw~~ ^{abrasion} action leads to enlargement of cracks/ hollows ^{deepening} making large basins called cirques/ corries. ^{forming}
- Moving ice plucks off loose rock materials from the basin thus enlarging them further. ✓
- Nivation eats into the back wall of basins making them recede into the mountain side. ✓
- Steep-sided knife-edged ridges ^{Arête} are formed separating the basins.
- Three or more of these ridges/ aretes converge at the mountain top forming a jagged peak known as a pyramidal peak/ horn.

Any 6 x 1 =

6 marks

3 marks

SECTION A

1.	<p>Give the three forces which have contributed to the geoid shape of the earth.</p> <p>(a)</p> <ul style="list-style-type: none"> - Centrifugal force ✓ - Centripetal force ✓ - Gravitational force ✓ 	
	<p>(b) Name the minerals that make up the core of the earth.</p> <ul style="list-style-type: none"> - Iron ✓ - Nickel ✓ 	(3 marks) 3
2. (a)	<p>List two examples of volcanic igneous rocks.</p> <ul style="list-style-type: none"> - Pumice ✓ - Basalt ✓ - Obsidian ✓ - Trachyte ✓ - Rhyolite ✓ - Andesite ✓ - Scoria ✓ - Phonolite ✓ <p><i>Handwritten notes: Trachyte, Tuff</i></p>	(2 marks) 2
(b)	<p>Give three characteristics of sedimentary rocks.</p> <ul style="list-style-type: none"> - They form from pre-existing/original rocks. ✓ - They have cleavage/bedding planes. ✓ <i>Joints</i> - They form horizontal layers/are stratified. ✓ - They are non-crystalline. ✓ - Some sedimentary rocks contain fossils ✓ - They have bedding planes. ✓ - Many are multicoloured ✓ 	Any 3 x 1 = (3 marks) 3
3. (a)	<p>Apart from aspect, list three other factors that influence the distribution of natural vegetation.</p> <ul style="list-style-type: none"> - Altitude ✓ - Terrain / Slope / Gradient ✓ - Drainage ✓ - Climate ✓ - Soils ✓ / Edaphic factors ✓ <p><i>Handwritten notes: Biotic factors, Human activities</i></p>	Any 3 x 1 = (3 marks) 3