312/1 MS
GEOGRAPHY
Paper 1
MARKING SCHEME
November 2023

THE KENYA NATIONAL EXAMINATIONS COUNCIL

KENYA CERTIFICATE OF SECONDARY EDUCATION

GEOGRAPHY

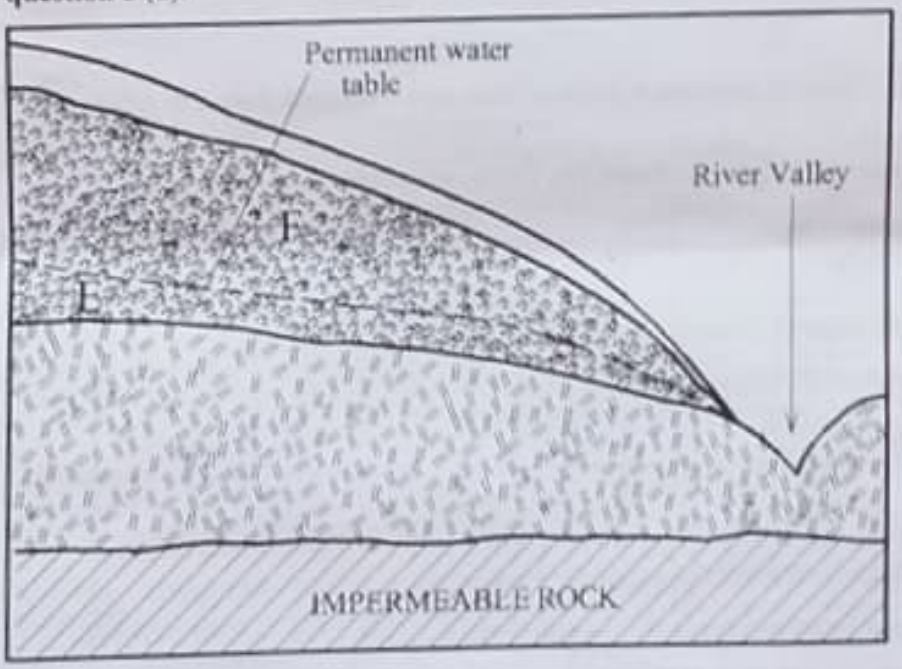
Paper 1

MARKING SCHEME
(CONFIDENTIAL)

This marking scheme consists of 13 printed pages.

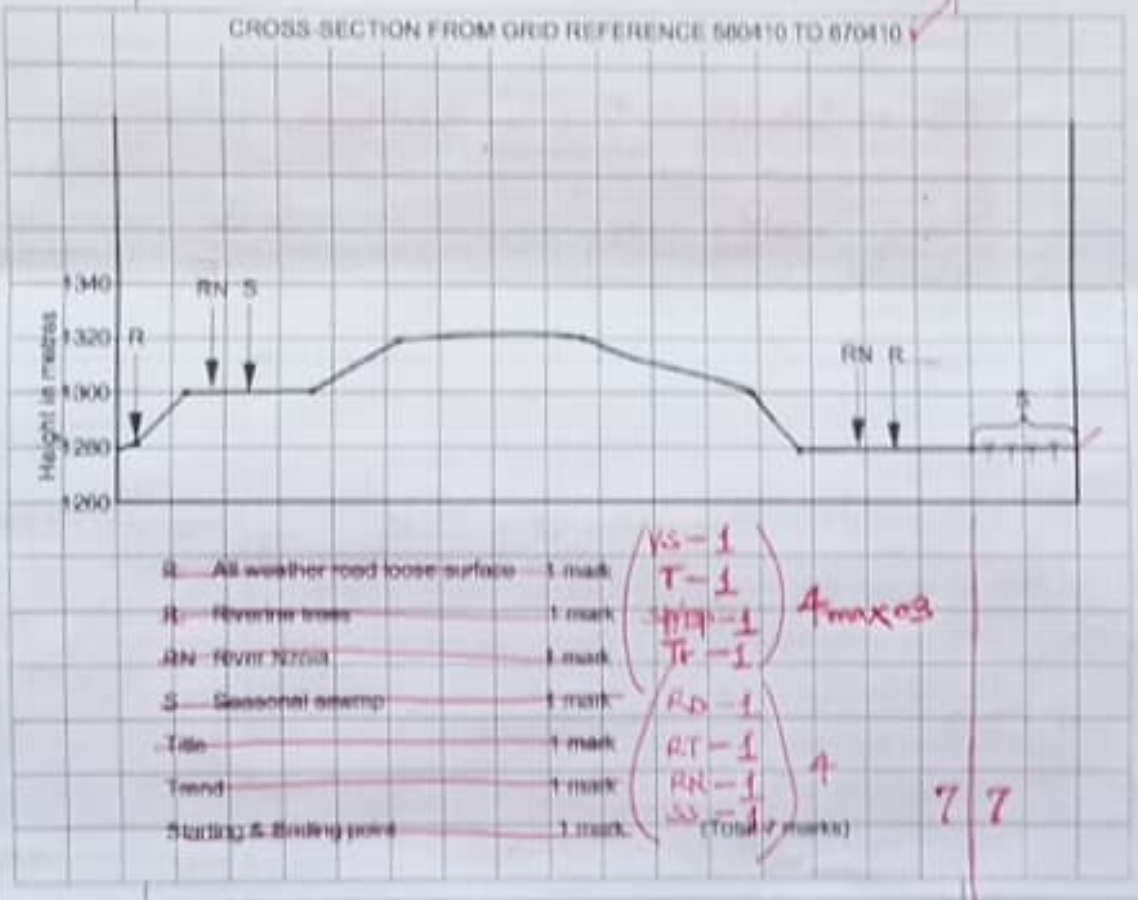
SECTION A

No	Marking Scheme	Marks
1. (a)	**Differentiate between weathering and mass wasting.** Weathering is the breaking down/disintegration/decomposition of rocks in situ while mass wasting is the down slope movement of weathered materials under the influence of gravity. //	2 2 ~~Any 2x 1 = (2marks)~~
(b)	**Identify three ways in which temperature change influences physical weathering.** - It causes block disintegration; - It causes heat action. - It causes exfoliation; - It causes granular disintegration. 1st 3x1	3 3 ~~Any 3 x 1 = (3marks)~~
2.	**Describe how a land breeze occurs.** - During the night, the land cools faster than the sea since the land looses heat more rapidly. - High pressure develops over the land, ~~while low pressure is created over the sea~~ - Warm air above the sea begins to rise. causing low pressure. - Cool/cold air over the land flows towards the sea to replace the warm rising air. - This movement of cool air from the land to the sea during the night is called land breeze.	5 5 ~~(5 marks)~~
3. (a)	**Distinguish between weather and climate.** Weather is the state/condition of atmosphere of a given place at a given time/over a short period of time while climate is the average weather conditions of a place observed over a long period of time, over 30 years. //	2 2 ~~(2 marks)~~
(b)	**State three negative effects of desertification on the physical environment.** - It leads to destruction of water catchment areas/drying up of water bodies. - It leads to drying up/destruction of vegetation; - It leads to development of infertile soils, ~~dry soils~~; - It leads to development of dry soils; - It leads to wind erosion (any erosion scars) - Leads death/migration of animals 1st 3x1	Any 3 x 1 = (3 marks) 3 3

4. (a)	**State two factors that influence river erosion:** - The volume of water - The gradient of slope/Velocity - The nature of the bedrock - The nature/amount of load 1st 2×1	2. 2 Any 2 x 1 = (2 marks)
(b)	**Name the three types of sand dunes:** - Draas - Barchans - Star - Seif/longitudinal/Linear/Lateral/Tail - Transverse/Wave/Ripple/Wake 1st 3×1 - Parabolic	3. 3 Any 3 x 1 = (3 marks)
5. (a)	**The diagram below shows zones of ground water. Use it to answer question 5 (a).**  	

(a)	**Name the zones marked E and F.** E: zone of intermittent/saturation; ✓Seasonal/Temporary/Temporal F: zone of non-saturation ✓ 2	2 (1 mark) (1 mark)
(b)	**State three conditions that favour the formation of an artesian basin.** The aquifer must: - Be of some permeable/porous material ✓. - Be sandwiched between two impermeable rocks ✓ - Be exposed in an area with sufficient precipitation ✓/water source - Dip from a region of water intake/rock layers must form a broad syncline/basin ✓ - Have partial/total blockage sufficient for the water that comes in the higher portion of the aquifer. ✓ 1st 3x1 3	3 Any 3 x 1 = (3 marks)
	SECTION B Answer **question 6** and any other **two questions** from this section.	25
6.	**Study the map of Mumias (Sheet No. 101/2) provided and answer the following questions.**	
(a) (i) *	Convert the scale of the map into statement scale. 1 cm represents 50,000 cm $50{,}000\text{ cm} = \frac{50{,}000}{100{,}000}\text{ km}$ $= 0.5\text{ km}$ 1cm represents 0.5 km ✓✓ 2	(2 marks)
(ii) *	Give the **six** figure reference for the school at Mungabo. 503356 — 502357 ✓/503357 2	(2 marks)
(iii)	Identify **three** types of natural vegetation found to the south of northing 36. - Woodland. ✓ - Scrub. ✓ - Scattered trees. ✓ - Riverine trees. ✓ - Papyrus swamp vegetation. ✓ - Thicket. ✓ 1st 3x1 3	Any 3 x 1 = (3 marks)

(iv)	**What is the bearing of the school at Khamashia from the school Ihonje?** (061°, 062°, 063°) 062° ✓ 061° (N 61°E – N 63°E) 2 ✓	(2 marks)
(b)	**Using a vertical scale of 1 cm to represent 20 m, draw a cross-section from grid reference 580410 to 670410.** **On the cross-section, mark and name;**	
(i)	all weather road loose surface	(1 mark)
(ii)	riverine trees	(1 mark)
(iii)	river Nzoia	(1 mark)
(iv)	seasonal swamp.	(1 mark)



YS – 1
T – 1
RT – 1
Tr – 1
4 max 3

RD – 1
RT – 1
RN – 1
SS – 1
4

7 | 7

(c) *	**Citing evidence from the map, explain two factors favouring trading in the area covered by the map.** - Presence of many markets/trading centres/shops provide opportunities for trade - The dense settlements show that there is high demand for goods/market. - Presence of dense road network that provides means of transport for goods. 1st 2x2	4	4 ~~2 x 2 = (4 marks)~~
(d)	**Describe the relief of the area covered by the map.** - The land rises from S.W to S.E/N.E/slopes from N.E/to S.W - The landscape is generally dissected by many river valleys/narrow river valleys. - The land along river Nzoia is generally low/wide/broad valley. - There are islands/atolls/islets along River Nzoia - The highest point/altitude is ~~approximately~~ 1368 metres. - There are several spurs - The lowest altitude is approximately 1200 metres - There is a col/ or (631) - The land is gently sloping. - There are hills.	5	5 ~~Any 5 x 1 = (5 marks)~~
7. (a)(i)	**Give three sources of lake water.** - Rain~~fall~~water - Rivers. - Melting ice. - Underground water. (magmatic spring) 1st 3x1	3	25 ~~Any 3 x 1 = (3 marks)~~
(ii)	**State three characteristics of lakes formed due to faulting.** - They are steep sided. - Most of them are long. - Most are narrow. - Most are deep. /some are shallow. - Most of them are salty. /some are fresh - Most lack outlets 1st 3x1	3	6 ~~Any 3 x 1 = (3 marks)~~

(b)	**Describe how the following lakes are formed:**	
(i)	**Moraine dammed:** - A mass of ice approaches a wide low lying area; - Ice starts to melt at the edge; - This leads to deposition of terminal moraine across the valley resulting to a transverse ridge; (barrier) - More deposition of the terminal moraine raises the transverse ridge; - As the ice melts, the melt waters accumulates behind the ridge; - The glacier continues to retreat towards the snow field as it is melting; - The water that accumulates behind the ridge of terminal moraine forms a moraine dammed lake. (7 max ok) 6	any 6 x 1 = (6 marks)
(ii)	**Lagoon** - Sand/shingle are moved by the longshore drift and deposited at the entrance of the bay; - The deposits gradually accumulate forming a spit/sand bar/ridge; - The continued deposition elongates the spit, eventually linking the two headlands to form a bay bar; - The bay bar separates part of the sea water from the open sea; - The enclosed sea water is the lagoon. 5 11	(5 marks)

(c) *	**Explain four ways in which lakes influence the climate of the surrounding areas.** - Lake breezes have a cooling effect on the surrounding land especially in the afternoons. - Moisture from evaporation leads to convectional rainfall mainly in the afternoon, increase amount of rainfall received in the area - The high rates of evaporation lead to a high relative humidity in the area. Increase - Evaporation from the lakes lead to increased cloud cover. - The lake breezes leads to moderated temperatures hence a low diurnal range of temperature all year round. - The lake/~~lake~~ breezes may strengthen/divert/reverse prevailing winds. - During cold season, lake breeze may bring warming effect on the land.	Any 4 x 2 = ~~(8 marks)~~ 1st 4x2 8
8. (a) (i) *	**~~What is~~ glaciation?** Glaciation is the process by which moving ice erodes, transports and deposits materials on the earth surface. Glaciation is the action of moving ice.	8 2,5 2 ~~(2 marks)~~
(ii) *	**Explain three negative effects of glaciation on human environment.** - The boulder clay deposited creates marshy landscape due to poor drainage making it unsuitable for human settlement. - The infertile soil deposited makes it unsuitable for agriculture. - The numerous lakes formed in the lowlands reduces the land available for use. - Glaciation results into rugged landscape making construction of transport networks/difficult. settlement/agriculture - Glacial deposit may bury minerals making mining difficult/expensive. - Avalanches may lead to destruction of properties/loss of life. 1st 3x2 6	8 Any 3 x 2 = (6 marks)

(b) (i)	**Give three ways in which ice moves.** - Basal slip. - Plastic flowage. - Extrusion flow.	(3 marks)
(ii)	**Explain two factors that influence movement of ice.** - **Gradient**: Ice move faster on steep slopes than on gentle slopes due to the force of gravity; - **Seasons**: Ice movement is faster in warmer areas /summer due to melt waters which acts as lubricant; - **Friction**: The Centre part of a glacier moves faster than the bottom and sides due to reduced friction/resistance. - **Thickness/weight of glacier**: Thick masses of ice exert great pressure on the layers beneath inducing melting hence faster movement.	Any 2 x 2 = (4 marks)
(c)	**Describe how each of the following features is formed.**	
(i)	**Outwash plain:** - Large ice sheets melt on gently sloping lowlands along the edge and at the bottom; - The melt waters flow beyond the terminus carrying along fine rock materials; - The melt waters deposit the fine rock materials as it flows; - The fluvial glacial materials deposited fill in the pre-existing valley/depressions; - The retreat of the ice sheet leaves behind an undulating plain of unconsolidated materials/silt/sand/gravel called an outwash plain.	(4 marks)
(ii)	**Roche mountonee:** - When an ice sheet erodes a low lying area and comes across a resistant rock; - The resistant rock eroded slower than the surrounding rocks; - The upstream is eroded more through abrasion; - On the downstream side, the ice erodes mainly by plucking; - When the ice retreats, the underlying resistant rock is exposed; - Consequently, the outcrop rock has a gentle and smooth side while the downstream is steep and rugged forming a Roche's mountonee.	(6 marks)

9. (a)	**Give two reasons why wind is more active in the hot deserts.** - The presence of loose unconsolidated materials that are easily acted upon by the wind; - The wind occurs in form of strong tropical storms; - There is limited vegetation cover. / No vegetation 1st 2x1	2 2 Any 2 x 1 = (2 marks)
(b)	**Describe how the following features found in hot desert are formed.**	
(i)	**Mushroom block:** It is formed from a homogenous rock which lies vertically on the path of the prevailing wind; There is wind abrasion by heavier materials near the ground resulting into intensive undercutting of the rock; - The top of the rock undergoes polishing and smoothening by fine airborne materials; - This results into a feature with a broad rounded top and a very narrow base/bottom known as mushroom block. 4	(4 marks)
(ii)	**Yardangs:** - They are formed by massive alternating layers of hard and soft rocks which are vertical/near vertical; - The rocks lie parallel to the direction of prevailing wind; - Wind abrasion acts on the soft layers; - The worn out materials are removed and transported by deflation; - The hard layers are left standing out as small ridges separated by furrows forming features known as yardangs. 4 8	Any 4 x 1 = (4 marks)

- Extensive desert landscapes forms ideal sites for film making
- Extensive " " is appropriate sites for testing cars & jet engines
- Sand is harvested for building and construction

(c) *	**Explain three ways in which features resulting from wind action in arid areas are important.** - Water from the oasis is used for irrigation/domestic/industrial purposes; - Desert landscapes are ideal for military training/testing of weapons since they have few settlements; - Wind-blown dust produces loess deposits which are deep, fertile and well drained hence suitable for crop growing; - Features resulting from wind action form beautiful scenery that attracts tourists. deflation hollows 1st 3x2 6	~~Any 3 x 2 = (6 marks)~~ 6
(d) (i)	**Some students carried out a field study on wind deposition features in an arid area in Kenya.** **Name three secondary sources of information they are likely to ~~have used in~~ while preparing for the study.** rely on - Text books. - Notes/Handouts - Magazines/journals/pamphlets/periodicals./Newspapers - Photographs/video ~~tapes~~/slides/Films/video clips - Maps - Internet/Electronic media for the student 1st 3x1 3	~~Any 3 x 1 = (3 marks)~~
(ii)	**State three reasons why it was necessary to visit the area before the actual field study.** - To determine the suitability of area for study. - To familiarize with the area of study. - To help in drawing a route map - To help identify methods of data collection. - To help adjust objectives & hypothesis - To be able to identify relevant equipment for data collection. - To seek permission from relevant authorities - To identify any problems likely to be encountered. - To estimate the cost of the study. - To assist preparing a working schedule. 1st 3x1 3	~~Any 3 x 1 = (3 marks)~~
(iii)	**Give three advantages of studying wind depositional features through field work.** - It enables one to acquire knowledge/skills. (problem solving skills/critical thinking) - It makes learning real. - It makes learners to understand better the concept learnt in class. - It breaks the monotony/makes learning interesting. - The learners get first-hand information. - It enhances retention of information. 1st - It help learners apply knowledge learnt in class 1st 3x1 3	~~Any 3 x 1 = (3 marks)~~ 9

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10. (a)	**Classify soils according to order.** - zonal - azonal - Intrazonal 3	3 ~~(3 marks)~~
(b)	**Explain how the following factors influence soil formation.**	
(i)	**Parent rock:** - Nature of parent rock determines the mineral composition of the soil. - Resistant/hard parent rock result in coarse grained soils/soft rocks lead to fine textured soils. - The minerals in the parent rock determine the soil colour while young. - The nature of parent rock influences the rate of weathering, in that soft rocks weather fast while hard rocks weather slowly. 4	~~Any 2 x 2 = (4 marks)~~
(ii)	**Climate:** - Rain water influences chemical and physical weathering leading to formation of soils through rock break up/decay. - Rainfall causes leaching resulting to laterite soils. - High temperatures facilitates chemical/physical weathering causing faster formation of soils. / low temps slow down rate of soil formation. - High temperatures quicken decay forming the organic matter in soils. - Wind may expose parent rocks to weathering processes/erode loose soil particles making them thin. - Wind/~~water/ice~~ rainwater may deposit light particles that accumulate to form soils. 6 10	~~Any 3 x 2 = (6 marks)~~
(c)	**State five economic uses of soil.** - Some soils are used in making ceramics/pottery/brick making. - Soil is a medium through which natural vegetation and crops grow. - Soil may contain valuable minerals. - Some soils are used for road construction/laying foundation to structures. - Some soils are consumed by livestock/human beings. - ~~Some soils are used as raw materials in the building and construction industry.~~ - Organic soil like peat serve as fuel resources. - Some soils have medicinal values. 1st 5x1 5 5	~~Any 5 x 1 = (5 marks)~~

(d)	**Students in a secondary school intend to carry out a field study on soils within their local environment.**	
(i)	**Give three activities the students are likely to carry out during the study.** - Testing the pH of the soils ✓ - Collecting/labelling samples of soil. ✓ - Measuring soil temp./depth ✓ - Taking notes. ✓ - Feeling soil texture ✓ - Taking photographs/videos of the soils. - Field sketching/drawing diagrams ✓ - ~~Administering/filling the questionnaire~~ Observing soil colour/profile/structure ✓ - ~~Filling the questionnaire~~ the student *data collection - recording 1st 3x1 3	~~Any 3 x 1 = (3 marks)~~
(ii)	**List four properties of soil you would study.** - Texture ✓ - Structure ✓ - Colour ✓ - Air ✓ - Moisture content ✓/soil water - Porosity/permeability ✓ - Temperature ✓ - Thickness. ✓ - Soil pH/Lime content - Organic matter/Humus 1st 4x1	~~Any 4 x 1 = (4 marks)~~ 4 7 25