312/1 MS
GEOGRAPHY
Paper 1
MARKING SCHEME
March 2022

THE KENYA NATIONAL EXAMINATIONS COUNCIL

KENYA CERTIFICATE OF SECONDARY EDUCATION

GEOGRAPHY

Paper 1

MARKING SCHEME
(CONFIDENTIAL)

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This marking scheme consists of 14 printed pages.

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MARKING SCHEME

SECTION A

1. (a)	**Apart from dew, name <u>three</u> other forms of precipitation.** - Rain - Mist/fog - Frost/Hoar frost - Hail - Sleet - Snow - Rime/glaze/ice		Any 3 × 1 = (3 marks)	3 3
(b)	**State <u>two</u> conditions for the formation of dew.** - The air on the ground should be calm. - Daytime temperature should be warm. - The sky should be cloudless at night.		Any 2 × 1 = (2 marks)	2 2 (5)
2.	**The diagram below represents crustal rocks that have undergone faulting process. Use it to answer question 2(a).** 			
(a)	**Name the parts marked R, S and T.** R – ~~Heave~~ Hade S – ~~Hade~~ Heave T – Down throw	(1 mark) (1 mark) ~~(1 mark)~~	3 3
(b)	**Give two processes by which Rift valleys are formed.** - Divergent/tensional. - Convergent/compressional. - Anticlinal arching/up warping. - ~~Seafloor spreading~~		Any 2 × 1 = (2 marks)	2 2 (5)

3. (a)	Name the two layers *of* discontinuity in the internal structure of the earth. - Gutensberg discontinuity. - Moho/Mohorovic discontinuity.	**2** ~~(2 marks)~~	2
(b)	Give three characteristics of the SIMA layer. — *It is 6-10km thick* - It forms the bulk of the oceanic floor. - It underlies the continental crust. - It has rocks which are mainly basaltic. - The most common minerals are silica, magnesium and iron. - The average density is between 2.8 – 3.0 g/cc. - Temperature is about 400°C *Plastic like / flexible* - Rocks are ~~semi-molten and fairly mobile.~~	**3** Any 3 x 1 = (3 marks)	3 ⑤
4. (a)	What is an iceberg? - It is a large mass of ice floating in the ocean. ✓✓	**2** ~~(2 marks)~~	2
(b)	List three erosional features found in glaciated lowlands. - Depressions. - Roche moutonnee. - Crag and tail. - Ice eroded plains.	**3** ~~Any 3 x 1 = (3 marks)~~	3 ⑤
5. (a)	Identify <u>two</u> types of soil by texture. - Sandy - Gravel - Silt - Clay — *Loamy*	**2** ~~Any 2 x 1 = (2 marks)~~	2
(b)	State <u>three</u> ways in which humus contributes to the quality of soil. - By retaining of moisture. - By facilitating the aeration of the soil. - By improving the soil texture. - By providing mineral matter in soil. - By providing food for micro- organisms in the soil.	**3** ~~Any 3 x 1 = (3 marks)~~	3 ⑤

- By binding soils particles together/improve soil structure

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SECTION B

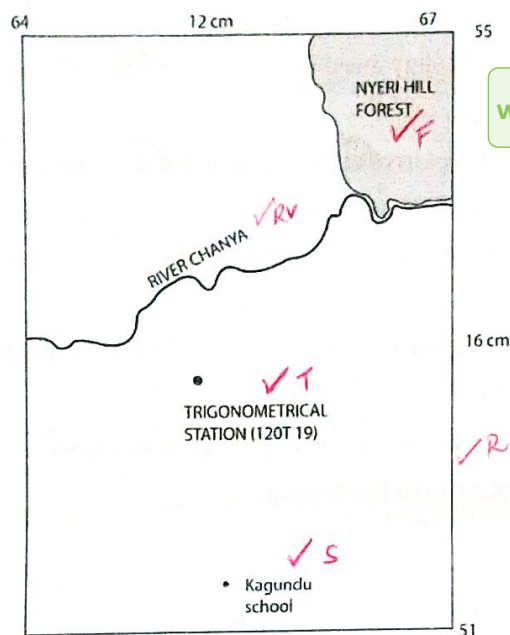Answer question 6 and any other two questions from this section.

6. (a)	Study the map of Nyeri 1:50,000 (Sheet 120/4) provided and answer the following questions.	
(i)	Identify the **two** types of scale used in the map. - Linear scale. - Ratio scale./Representative Fraction	2 ~~(2 marks)~~
(ii) ✱	Give six figure grid reference of trigonometrical station 120TT27 in the North Western part of the area covered by the map. 511648 ✓ - 510648 ● 510647, 510648, 510649 (only for Large print)	2 ~~(2 marks)~~ 4
(b) ✱	Measure the length of the All-weather road loose surface from Easting 57 to Easting 66. Give your answer in kilometers. 10.1 ± 0.1 km (10.0 – 10.2 Km) Accept for Large Print ± 0.2 (9.9 – 10.3)	2 ~~(2 marks)~~ 2

(c)	Draw a rectangle 12cm by 16cm to represent the area enclosed by Easting 64 and 67 and 51 and 55.	(1 mark)

RECTANGLE REPRESENTING THE AREA ENCLOSED BY
EASTING 64 TO 67 AND NORTHING 51 TO 55

64   12 cm   67   55

NYERI HILL
FOREST ✓F

RIVER CHANYA ✓Rv

16 cm

✓T
TRIGONOMETRICAL
STATION (120T 19)

✓R

✓S

• Kagundu
school

51

$$\left.\begin{matrix} R-1 \\ F-1 \\ Rv-1 \\ T-1 \\ S-1 \end{matrix}\right\}$$

5 5

11.8 – 12.2
15.8 – 16.2

(For large print accept an error of ± 0.2 in) lengths

	On the rectangle mark and name the following:	
	(i) Nyeri hill forest.	(1 mark)
	(ii) River Chanya.	(1 mark)
	(iii) Trigonometrical station 120T19	(1 mark)
	(iv) Kagundu School.	(1 mark)

(d)	**Describe the distribution of natural vegetation in the area covered by the map.**	
	- Most of the forest vegetation is found in the western part/there are patches of forest in the eastern part of the area covered by the map.	
	- Patches of woodland vegetation are found in the central and western part of the area covered by the map.	
	- Scrub vegetation is mainly found in the Northern part of the area covered by the map.	
	- There are few scattered trees in the Northern part of the area covered by the map.	
	- Bamboo vegetation is found in the western part of the area covered by the map.	
	- Thicket vegetation is found within Nyeri Hill forest, Nyeri forest and Kiganjo forest.	Any 4 x 2 = (8 marks)

(margin note: v — can score alone but d can't score alone.)

(margin note: v — 6 max 4 / d — 6 max 4)

(margin marks: 8   8)

(e)	**Citing evidence from the map, identify three economic activities carried out the area covered by the map.**	

Economic Activity	Evidence	
- Transportation	- Roads/motorable tracks/Airfield/Airstrip/Pipeline	
- Crop Farming	- Coffee factories/Plantation/Farms	
- Trade	- Markets/shops.	
- Coffee processing	- Coffee factories.	
- Tourism	- Aberdare National Park/Ark Lodge/ Outspan Hotels/Camps/Park gates.	
- Quarrying	- Quarries/Murram pits	
- Ranching	- Monte Carlo Ranch	
- Communication	- Post office	
- Lumbering	- Saw mills	Any 3 x 2 = (6 marks)
- Leather processing	- Tannery	
- Forestry	- Forest/Forest guard posts/Forest station/Forest huts	

(margin note: A can score on pts only E cant score alone)

(margin note: A — max 3 / E — max 3)

(margin marks: 6   6   (25))

7. (a) (i)	**Give three components of the solar system.**	
	- Asteroids/Planetoids	
	- Meteors.	
	- Planets.	
	- Meteorites.	
	- Comets.	
	- Satellites/Moons	
	- Sun.	Any 3 x 1 = (3 marks)
	- Dwarf Planets	
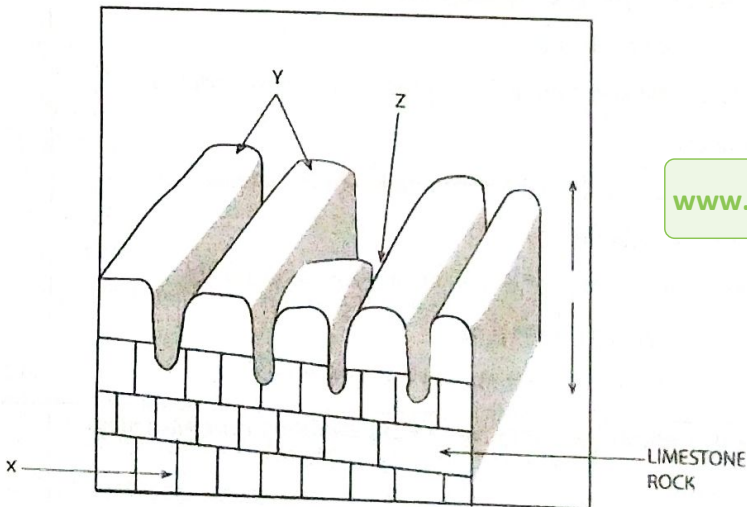
(margin mark: 3)

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(ii)	State **three** weaknesses of the Passing Star theory.		3	6
	- Chances of another star approaching the sun are minimal.			
	- High temperature materials drawn from the sun or star would disperse rather than condense.			
	- The theory does not explain the origin of the sun and the star.			
	- The sun could be broken up by gravitational force generated by the star hence materials could not condense to form planets.	Any 3 × 1 = (3 marks)		
(b) (i)	What is the local time at Kinshasa 15°E when local time at Malindi 40°E is 12.00 noon?		3	
	- Difference in degrees between Kinshasa and Malindi is 40° - 15° = 25° ✓			
	- The difference in time between 1° Longitude is 4 minutes.			
	- The total difference between the two towns is 25 × 4 = 100 mins = **1** hrs 40 mins. ✓			
	- Kinshasa is West of Malindi. Therefore, the local time at Kinshasa is 12:00 noon – **1** hours 40 mins = 10.20 a.m. ✓ / 10.20 hrs	(3 marks)		
(ii)	Give **two** reasons why the earth has a spherical shape.		2	
	- The force of gravity pulls towards the centre which creates the shape.			
	- The centripetal constantly pulls the North and South poles towards each other.			
	- The equator of the earth experiences centrifugal force that causes a bulge.	Any 2 × 1 = (2 marks)		
(iii)	State **three** effects of revolution of the earth around the sun.		3	8
	- It causes varying length of day and night.			
	- It causes the change in the position of midday sun at different times of the year.			
	- It causes lunar eclipse/solar eclipse			
	- It causes the four seasons.	Any 3 × 1 = 3 marks		
(c) (i)	Apart from the core, list the other **four** main layers of Earth's structure.		4	
	- Crust./Lithosphere			
	- Mantle./Asthenosphere			
	- Hydrosphere.			
	- Atmosphere.	4 marks		

(ii)	**State three characteristics of inner core of the earth.**		
	- It is solid in nature.		
	- It is made up of iron.		
	- It has radius of ~~about~~ 1278km.		
	- The density is 17.0 g/cc. /very high density		3
	- The temperature range is 5000°C – ~~5500°C~~. 6000°c /very high temp	Any 3 x 1 = (3 marks)	
(iii)	**Explain why the interior of the earth is hot.**		
✱	- After materials broke away from the sun the planet earth started cooling. The interior of the earth cooled at a lower rate. ✓		
	- The weight of the overlying materials exert great pressure that generates a lot of heat making the interior hot. ✓		11
	- Nuclear fission in the interior of the earth releases a lot of heat which is retained. ✓ /Radioactivity	Any 2 x 2 = (4 marks)	(25)
8. (a) (i)	**Name two saline lakes that are found in Kenya.**		
	- L. Magadi		
	- L. Nakuru		
	- L. Turkana		2
	- L. Bogoria — L. Elmentaita — L. Simbi — L Logipi	Any 2 x 1 = (2 marks)	
(ii)	**Give four reasons why some lakes in the Rift valley are saline;**		
	- Some lakes have inadequate fresh water rivers emptying in-to them.		
	- Some lakes are fed by rivers/run offs which flows over rocks with higher salt content.		
	- Some lakes lack outlets.		
	- Some lakes experience high evaporation rate increasing their salt content.		
	- Some lakes have underlying salt bearing rock which dissolve in-to lakes.		
	- Some lakes are fed with underground water which contains high concentration of salt.	Any 4 x 1 = (4 marks)	4 6
(b) (i)	**Apart from cirque lake, list two other lakes that are formed through glaciation process.**		
	- Ribbon/finger lake/ Rock basin Lakes		
	- Moraine dammed lake.		2
	- Kettle lake.	Any 2 x 1 = (2 marks)	

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(ii)	**Describe the formation of cirque lake.**	
	- Snow accumulates in a pre-existing depression on the mountain side.	
	- Snow gets compacted into ice forming a cirque glacier.	
	- The hollow is enlarged by frost and thaw action.	
	- It is deepened by ice abrasion.	
	- The back-wall of the hollow is steepened by plucking process.	
	- Eventually a deep arm-chair depression known as a cirque is formed.	
	* - The cirque is filled with melt water to form a cirque lake. _(The * must be mentioned to score in max of 5)_	Any 5 x 1 = (5 marks) ~~5~~ 7
(c)	**Explain four positive effects of lakes to human activities.**	
*	- Some lakes contain fish ~~which is an important source of~~ _Which Promote fishing_ ~~protein~~/some people earn income through selling fish.	
	- Some lakes are sources of valuable minerals which are sold to earn _income_ ~~income.~~ - _Lakes Modify the Climate of the surrounding areas encouraging Agriculture/Settlement_	
	- Some lakes are good reservoirs for the production of hydro-electric power which is used in industries and homes.	
	- Some lakes provide good scenery which attracts tourists thus earning foreign exchange.	
	- Fresh water lakes/manmade lakes provide water for industrial domestic use.	
	- Fresh water lakes are used for irrigation which increases agricultural production.	
	- Some lakes are sources of rivers which provide water for irrigation/domestic/industrial use.	
	- Some lakes provide water transport for people and goods. _Some lakes contain sand which is harvested for building and construction_	Any 4 x 2 = (8 marks) ~~8~~ 8
(d)	**Your class is planning to carry out a field study on economic uses of a nearby lake.**	
(i)	**Give two reasons why they would require a route map.**	
	- To guide in estimating time for the field study.	
	- To help identify the direction to be followed.	
	- To help estimate distance to be covered.	Any 2 x 1 = (2 marks) 2

- To help in preparing a time schedule
To help to locate the lake
To help estimate the cost of study

(ii)	**List two methods of data collection they are likely to use.** - Taking photographs/videos /filming - Observation. - Interviewing. — Literature review - Administering a questionnaire. — Reading for secondary sources / Content Analysis	Any 2 x 1 = (2 marks) 2 4 (25)
9. (a) (i) ✱	**What is Karst scenery?** /dolomine/chalk Karst scenery is a limestone area/region where water action has created unique rugged features on the surface and underground.	(2 marks) 2
(ii)	**Give four conditions necessary for the development of Karst scenery.** - The rainfall should be moderate to high /humid conditions - The temperatures should be high /hot conditions - Presence of hard/ well jointed rocks. - The water-table should be deep below the surface. - The area should have thick limestone on the surface and beneath. /chalk/dolomite	Any 4 x 1 = (4 marks) 4 6
(b)	**The diagram below shows surface features in a limestone area. Use to answer question b(i).** 	

(i)	Name the features marked X, Y and Z.	
	X – Joint	
	Y – Clints	
	Z – Grike / Gryke	(3 marks) **3**
(b) (i)	Describe how the following Karst scenery features are formed.	

Stalagmite

– Rain water absorbs Carbon iv oxide to form weak Carbonic acid

- Water percolates through the joints in the rocks on the roof of a limestone cave.
- The limestone rock is dissolved in water to form calcium bicarbonate solution.
- The solution drops slowly from the roof of the cave to the floor.
- On the floor the solution spreads out and water evaporates leaving crystals of calcium bicarbonate.
- As more solution falls on the floor and water evaporates more crystals are formed.
- The accumulated crystals form a column of limestone rising towards the roof of the cave known as Stalagmite.

(5)

~~Any 5 x 1 = (5 marks)~~

Polje *– Rain water absorbs Carbon iv oxide to form weak Carbonic acid*

The Water infiltrates through the well jointed limestone forming deep grooves *Grikes* through solution.

- The solution continues to extend to the grikes forming deep holes/*dolines*
- As the solution continues the deep holes *dolines* are enlarged at the surface.
- The enlarged holes collapse forming bigger hollows/*uvalas*
- As limestone continues to be dissolved the bigger holes collapse *hollows/uvalas*

  forming a larger depressions known as Poljes.

(5)

(5 marks) **10 13**

Method/Option 2 :
- *Rain water absorbs Carbon iv oxide to form weak Carbonic acid*
- *The Rain water passes through joints/faults on Limestone rock*
- *Water reacts with Calcium Carbonate forming a deep vertical hole called sink hole*
- *Further Solution on two or more adjacent Sink holes leads to the formation of a doline*
- *Continued solution on the walls of adjacent dolines leads to the formation of a large depression called uvala*
- *Several uvala join/Coalesce/Collapse to form a very large steep sided depression called polje.*

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(c)	Explain <u>three</u> reasons why these are few settlements on the Karst landscape.	
	- The landscape is rocky/rugged thus discourages settlement.	
	- The region experiences inadequate water supply both on the surface and underground discouraging settlement.	
	- The surface in most places has thin soils which discourages crop farming.	
	- There is scarcity of vegetation in most places limiting rearing of livestock.	
	- The landscape is rugged hindering development of transport network.	Any 3 x 2 = (6 marks)
10. (a) (i)	Name the <u>three</u> major deserts in Africa.	
	- Kalahari	
	- Sahara	
	- Namib	(3 marks)
(ii)	Give <u>two</u> reasons why wind action is distinct in hot deserts.	
	- There are a lot of loose/unconsolidated dry materials which are easily eroded.	
	- Hot desert surfaces are bare/have scanty vegetation cover leaving most of the surface exposed to wind erosion.	
	- Hot deserts experience strong, tropical storms which facilitate wind erosion.	Any 2 x 1 = (2 marks)
(b)	Describe the processes through which wind transports its load.	
	Suspension ✓	
	- It is where fine material is picked by wind raised high and blown over long distances.	(2 marks)
	Saltation ✓	
	- It is where coarse grained sand particles are transported through a series of bouncing/jumps along the surface.	(2 marks)

	Surface creep/rolling/*traction* - It is where large/heavy materials are rolled and pushed forward by the force of wind along the surface.	**(2 marks)**
(c)	**Describe how the following desert features are formed.** • Oasis - A pre-existing depression is exposed to wind erosion. - Wind eddies remove unconsolidated materials through deflation. - Wind abrasion deepens and widens/enlarges the depression. - Further, abrasion and deflation lead to the depression reaching the water table. - Water oozes out of the ground and collects into the depression to form a lake known as an oasis. *(The last point must be mentioned to score a max 4)* (4) • **Wadi** - Torrential rainfall in the desert causes flash floods. - The flash floods cut small channels known as rills. - With increased rain the rills widen and deepen to form gullies. - Temporary streams occupy and rapidly enlarge and deepen the gullies. - This results into a deep steep sided rocky valley (occasionally occupied by a seasonal stream) known as a Wadi. *(Last point must be mentioned to score max 4)* (4)	Any 4 x 1 = (4 marks) Any 4 x 1 = 4 marks
(d)	**Explain the significance of desert features in arid areas.** - The unique desert features such as Barchans, Zeugen are tourist attraction that earns the country foreign exchange. - ~~Alluvial deposits that are deposited as~~ loess form fertile soils th promote agriculture. - The extensive desert landscape form appropriate site for military training/film-making. */Nuclear testing* *Extensive desert landscape is ideal for film making* - Salt flats are economically used for salt production. - Wind deflation hollows/oasis are sources of water for agricultural/domestic use/ *settlement*	Any 3 x 2 = (6 marks)

- *Sand harvested is used for building & construction*
- *Shifting sand dunes hinder transport activities*
- *Extensive desert landscape form appropriate site for testing car and jet engines*

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