PAVEMENT FORM 4 TRIAL 1 EXAMINATION 2021/2022

Kenya Certificate of Secondary Education (K.C.S.E)

321/1 – GEOGRAPHY PAPER 1 MARKING SCHEME

1. (a) **Asteroids** – planet-like bodies (planetoids) which are found between Mars and Jupiter and Orbit the sun. (2mks)

   (b) **Two weakness of the passing star theory**. (2mks)
   - The origin of the star and the sun are not known.
   - Chances of another star approaching the sun are minimal.
   - The materials would have dispersed and not condensed.

2. (a) **Two other forms of precipitation apart from rainfall in Kenya**.
   - Dew.
   - Hail
   - Mist and fog. (Any 2x1mk=2mks)

   (b) **Three instruments found in a Stevenson's screen**.
   - Wet bulb thermometer.
   - Dry bulb thermometer.
   - Maximum thermometer.
   - Minimum thermometer.
   - Six's thermometer. (Any 3x1mk=3mks)

3. (a) **Two sources of underground water**.
   - Rain water that infiltrates into the ground.
   - Melt water which percolates into the ground.
   - Seepage from lakes/oceans.
   - Magmatic water retained in the ground. (2mks)

   (b) **Significance of karst regions**. (3mks)
   - Features formed act as tourist attractions.
   - Limestone blocks are used for building houses.
   - Limestone is a raw material in the cement industry.

4. (a) **External land forming processes leading to formation of lakes**.
   - Erosion by running water, wind, moving ice, rivers.
   - Solution/weathering.
   - Mass wasting.
   - Deposition by rivers, waves and ice. (2mks)

   (b) **Formation of L. Victoria**.
   - Downwarping occurred.
   - A shallow depression was formed.
   - The depression was filled with water from rivers, rain water and underground water leading to formation of a lake. (4mks)

5. (a) **Two factors that influence leaching**. (2mks)
   - Nature of soil especially texture and solubility of minerals.
   - High rainfall in the rainy season alternating with a dry season.
   - Topography.

   (b) **Three causes of soil degradation**. (3mks)
   - Poor land use practices.
   - Poor cultivation techniques.
   - Heavy rainfall leading to excessive soil erosion.
   - Drought.

MAPWORK

6. (a) (i) Topographical map. (1mk)

(ii) Latitude O°45¹S
Longitude 34°30¹E . (2mks)

(iii) Loose surface road
Huts (2 x 1 = 2mks)

(b) (i) 3900 Feet (1mk)

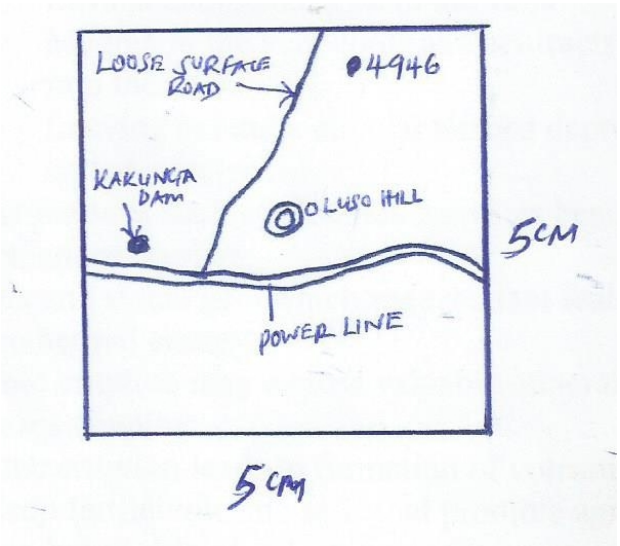
(ii)
- Transportation evidenced by roads.
- Trading evidenced by shops/markets .
- Crop farming evidenced by cotton store/
- Forestry evidenced by Kodera forest
- Manufacturing/processing evidenced by coffee factory
- Brick making evidenced by Brick works (Any 3 x 1 = 3mks)

(iii) 715445 (2mks)

(iv) No of full squares = 0
No of half squares = 14
Area = 14/2
= 7 ± 1km² (2mks)

(c)
- There are many hills.
- Several River valleys
- Steep slopes on the south Eastern parts
-Gentle slopes on the West of Easting 80
- Many spurs
- Dissected relief.
-Several ridges
-Land generally slopes from East to the west (Any 4 x 1 = 4mks)

(d) (i) (ii) **SQUARE 5CM TO REPRESENT AREA**



Title – 1mk
Frame – 1mk
Power line – 1mk
Loose surface road - 1mk
Kakungu dam – 1mk
Oluso hill – 1mk
Spot height – 1mk

7. (a) **Vulcanicity**. (2mks)
It is the process through which solid, molten and gaseous materials are forced out of the interior of the earth into the earth crust or onto the surface of the earth.

(b) **Difference between a sill and a dyke**. (2mks)
A sill is nearly horizontal sheet of igneous rock formed from solidified magma between bedding planes of the country while a dyke is a vertical or nearly vertical sheet of igneous intrusive rocks formed when magma cools and solidifies across the bedding planes of the rocks.

(c) (i) Apart from volcanoes, other volcanic features include. (2mks)
- Craters of calderas.
- Geysers/hot spring.
- Fume roles/solfatara/moffetes
- Lava plateaus.

(ii) Characteristics of a shield volcano. (2mks)
- Gently sloping.
- Wide base.
- Has a crater.
- Has a single vent.

(b) **Formation of a** : (5mks)
(i)**A Geyser**.
- Rainwater percolates down through cracks in the rocks.
- The water gets into contact with hot igneous rocks.
- The water is superheated and gases resulting to formation of steam.
- Pressure builds up in the cracks.
- The pressure causes steam and water to be ejected explosively as jets to the surface intermittently as a geyser. (5 x 1 = 5mks)

(ii) **A crater**. (4mks)
- Volcanic eruption occurs.
- Lava accumulates around the vent.
- Magma in the vent cools and contracts while withdrawing back into the vent.
- Leaving behind a circular shaped depression on top of the volcano called a crater. (4 x 1 = 4mks)

(c) Volcanic features such as mountains creates beautiful scenery that lead to the development of tourism.
- Geysers and steam gets which are resultant feature of volcanicity are tapped for geothermal energy.
- Volcanic eruption may expose valuable minerals which are deeply seated and this eases winning.
- Volcanic eruption leads to formation of volcanic rocks which weathers into deep fertile volcanic soils that promote agriculture.
- The windward side of volcanic mountain receives high rainfall such promotes crop production,
- The leeward side of volcanic mountain receive little rainfall making the side suitable for nomadic patriolism. (4 x 2 = 8mks)

8. (a) It refers to seasonal variation or fluctuation in the volume of water flowing in a river. (1 x 2 = 2mks)

(b) -The gradient/steepness of the slope.
- Obstacles along course of river.
- The amount of load carried/being transported. (2 x 1 = 2mks)

(c) (i) A waterfall. (1 x 1 = 1mk)

(ii) X – Resistant rock/sill
Y – Plunge pool. (2 x 1 = 2mks)

(iii) - It can be used for the generation of hydroelectric power used to run machines in factories.
- The feature forms spectacular landform which attract for who earns the country foreign exchange. (2 x 1 = 2mks)

(d) - Head ward erosion.
- Vertical erosion.
- Lateral erosion. (3mks)

(e) (i) - The powerful river/pirate river and the misfit must flow in adjacent valleys/parallel to each other.
- The pirate river should have a wider valley than the misfit.
- The pirate river must have more active head ward erosion than the neighbouring river.
- The pirate river should be flowing at a lower level. (3 x 1 = 3mks)

(ii) River capture may occur by head ward erosions which extends the long profile of a powerful/pirate river.
- This happens when rivers are sharing a watershed.
- The pirate has more erosive power than the other.
- The more powerful river erodes both vertically and laterally faster than the weaker river.
- The most powerful river erodes away the ridge that separates the two by head ward erosion.
- Eventually it encroaches into the valley of the weaker rivers diverting its water into its valley. (4 x 1 = 4mks)

(f) **The drainage develops in an area with a central basin**.
- Rivers drain into the depression from different directions forming a centripetal drainage pattern. It is influenced by slope. (1 x 2 = 2mks)

9. (a) (i) **Desert surfaces**. (3mks)
- Sandy surfaces.
- Rocky surfaces.
- Stony surfaces.

(ii) **Wind erosion process**. (4mks)

(a) Abrasion – It is the mechanical erosion of rocks by the materials carried in the wind currents. Particles carried by the wind grind, scrape and polish rock surfaces.

(b) Deflation – wind blows away dry and unconsolidated materials like dust. Some are rolled along while others are carried in air currents.

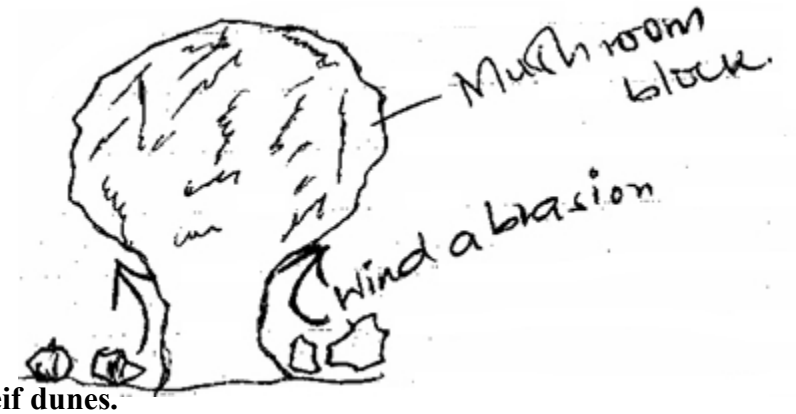
(c) Attrition – Particles carried by the wind collide with one another and reduce in size. (2 x 2 = 4mks)

(b) **Formation of**:

(a) **Mushroom block.** (4mks)
- A homogeneous rock stands along the path of the wind.
- Rock particles and sand erode the rock base by abrasion.
- Lower parts are eroded faster than upper parts due to their heavier particles carried close to the.
- Upper parts undergo slow polishing arid smoothening.
- Rocks are attacked on all sides as the wind periodically changes direction.
- Results to a rounded block of rocks with a broad top and narrow base resembling a mushroom.

(c) **Factors influencing wind transportation**.

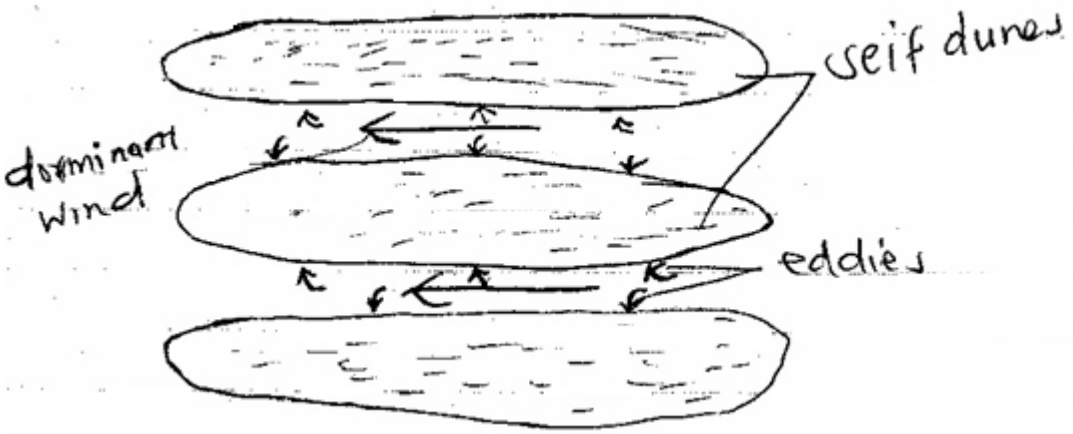
- Strength and speed of the wind – A strong wind can transport more and heavier load than a weak one. The strength of the wind is determined by its speed. The higher the speed, the stronger the wind.
- Presence of obstacles along the path of the wind blocks the movement of the wind and reduce its speed through friction. The friction reduces the wind's capacity to transport.
- Nature of the load – light particles e.g. dust can be transported in suspension over long distances, while The heavier ones are transported over short distance and along the ground. Heavier pebbles and stones are rolled on the ground if the wind is strong enough.



Exp – (3mks)
Dia – (1mk)

(ii) Seif dunes.

- As the prevailing wind blows between dunes, eddy currents are created and cause the sand to more towards the sides.
- This results to accumulation of sand on the sides of the dune. They are lengthened by the prevailing wind resulting to steep ridges which are the self dunes.



(d) **Importances of desert landforms.**

- Loess are curved into dwelling places for people.
- Features like yardangs and mushroom blocks act as tourist action.
- Deflation hollows may certain water used by nomadic communities.
- Provide grounds for testing military weapons.
- The surfaces are used to test car engines.

10. **Difference between mass wasting and mass movement**

a) Mass wasting is the down ward movement of weathered materials under influence of gravity while mass movement is the movement of lubricated materials down slope. (1x2=2 mks)

b) i)Causes of soil creep

- alternate heating and cooling of soil
- alternate drying and wetting of soil
- ploughing down slope
- removal of soil down slope
- earth quakes (*Any* 2x1=2mks)

ii)Factors influencing mass wasting

- slope- steep slopes facilitate faster movement
- nature of materials- massive rocks can slide or move easily
- amount of water- Saturated materials move faster than dry ores
- climate- areas receiving heavy rainfall experience movement of materials
- absence of vegetation – facilitate movement
- tectonic forces – Cause widespread movement of materials
- use of explosive – in mining causes downward movement

(*Any* 3x2=6mks)

c) i) Processes of chemical weathering

- carbonation
- hydrolysis
- hydration
- oxidation
- solution (*Any* 4x1=4mks)

ii) Slaking

- Rocks take up the rain water during the wet season
- During the dry season, rocks loose this water through evaporation and the rock eventually dries, shrinks and fractures or breaks up.
- This breaking mainly affects rocks containing clay

(3mks)

Exfoliation

- First the rock masses are subjected to heat from the sun
- Then the rock surface becomes much hotter than the interior
- The difference make the rocks to expand and contract on the surface hence cracks develop
- The surface of the rock peels off like onion
- This process of weathering is called exfoliation

(3mks)

d) i) Preparations for the study

- Seeking permission for the study
- Conducting pre-visit
- Revising statement of objectives and hypothesis
- Choosing methods of data collection
- Assembling research equipment
- Preparing a working schedule. (*Any* 2x1=2mks)
-

ii) Identify three follow up activities you are likely to undertake after the study

- Compiling notes
- Displaying the labeled samples/ photographs
- Presenting findings of the study / field report
- Class / group discussions
- Data analysis (*Any* 3x1=3mks)