

KENYA HIGH EXAMINTIONS 2021

312/1

GEOGRAPHY

PAPER I

MARKING SCHEME

SECTION A

Answer ALL questions in this section.

Question1.

(a) Weather is the condition of the atmosphere of a given place over a given period of time/ shot period of time. (3 marks)

(b) *Five factors considered when siting a weather station.*

- ✓ Secure place; should be sited in a secure place to avoid vandalism and theft.
- ✓ The site should be away from obstruction (e.g. buildings, vegetation).
- ✓ The site should be relatively flat and free from flooding.
- ✓ The site should be in an open space where there's free flow of air.
- ✓ The site should have a wide view of surrounding landscape and sky.

Question2.

(a) *Ways that make it possible for geographers to study the earth's interior.*

- ✓ By studying seismic shock waves
- ✓ Through study of volcanic lava flows
- ✓ Through study of rocks on the moon and meteorites
- ✓ Through very deep mining drilling. (1 x 2 = 2mks) any 2 points

(b) *Changes that may occur in a rock after it has undergone metamorphism*

- ✓ New minerals are formed
- ✓ Rocks change in hardness
- ✓ The rock change in physical appearance
- ✓ Rock particles become compacted
- ✓ Minerals recrystallise further. (1 x 3 = 3mks)

Question3.

(a) *Differentiate between folding and faulting.*

- ✓ *Folding* is the bending of crustal rocks due to earth movements while
Faulting is the breaking / fracturing of crustal rocks due to tectonic forces.

(b) *4 orogenesis periods in fold mountains formation.*

- ✓ Charnianorogeny: e.g. African block, Laurentian shield, Russian platform & Deccan Plateau.
- ✓ Caledonian Orogeny: e.g. Akwapim hills, Scottish Highlands
- ✓ Hercynian Orogeny: e.g. Cape ranges, Appalachian Mtns, Ural
- ✓ Alpine Orogeny: e.g. Atlas, Alps, Himalayas, Rockies & Andes Mountains. (1 x 4= 4mks)

Question4.

(a) *Differentiate between a spring and a well.*

- ✓ *A spring* is a place on the surface of the earth where underground water flows out onto the surface while
- ✓ *A well* is a relatively deep hole in the ground which is dug by people for the purpose of getting water. (1 x 2 = 2mks)

(b) *Ways by which springs develop.*

- ✓ When a permeable rock lies on top of an impermeable rock.
- ✓ When the hilly country rocks are well jointed.
- ✓ When a dyke acts as a dam
- ✓ When limestone rocks (escarpments) overlie impermeable rocks.
- ✓ When gently sloping layers of permeable rock alternate with layers of impermeable rock. Any 3 (1 x 3 = 3mks)

Question5.

(a) *Two ways in which mulching improves soil.*

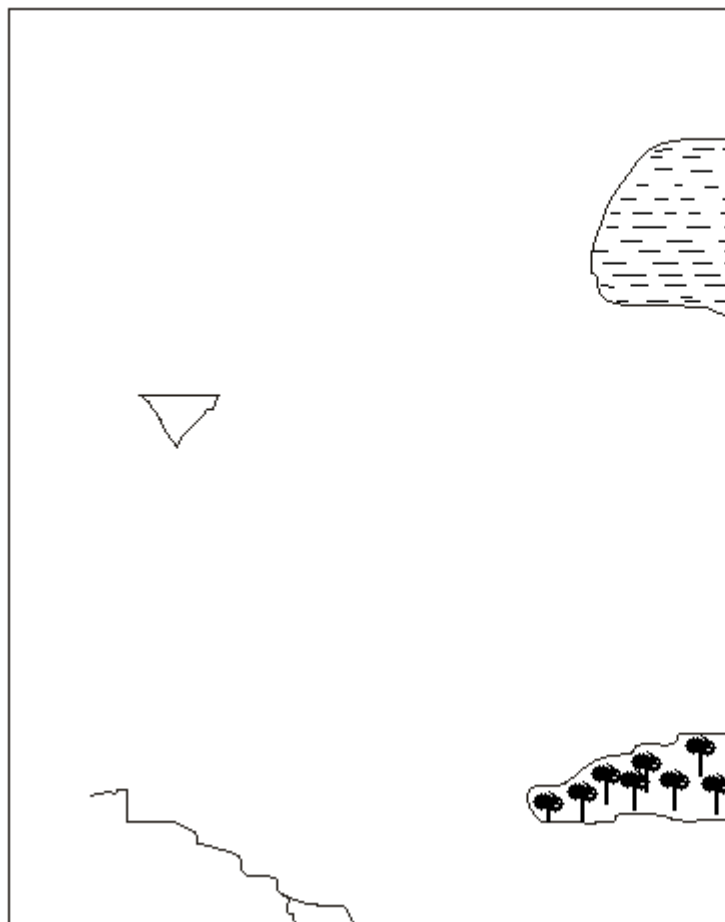
- ✓ Enhancing infiltration / reduce run off.

- ✓ Protect soil against splash erosion
- ✓ Enable soil to regain fertility / add humus to soil
- ✓ Enable moisture retention / reduces excess evaporation. *Any 2 pints (1 x 2 = 2mks)*

SECTION B

Question 6

- (a) (i) 21km² **2marks**
 (ii) 6.2 km **2marks** 4fig (1mk)
 (iii) 517 388 **2marks** 6fig (1mk)



Key



Lake victoria

kanyambala forest

River ogongo

Secondary trigonometric station

(iv)

F - 1

L - 1

R - 1

Fr - 1

sT - 1

5 Marks

- (b) *Using evidence from the map, state three functions of Homabay town*

Function	Evidence
✓ Industrial centre	Ginnery
✓ Health centre	Hospital
✓ Educational centre	Schools/ nursing training, farmers training centre
✓ Transport centre	Roads / Pier
✓ Communication centre	Post office
✓ Trading centre	Market

Any 3 (3x1=3mks)

NB: The point should be qualified (evidence) to earn a mark

- (c) (i) **3 types of vegetation**

- Forests
- Papyrus swamp
- Scrub **(3 marks)**

- (ii) **Settlement patterns**

- Linear

- Nucleated
- Dispersal (3 marks)

(d) **Describe the relief of the area covered by the map.**

- ✓ The area between Easting 51 and 54 is hilly as indicated by the presence of Ruri Hills
- ✓ The West of the area covered by the map is flat as indicated by widely spaced contour.
- ✓ There are rivers valleys around Ruri Hills
- ✓ Around Olambwe East the region is very steep as indicated by dense contours.
- ✓ The land is plainsland around Olambwe Valley national reserve. (1 x 5 = 5mks)

Question 7

(a) **Definition of vulcanicity**

- ✓ It's the processes through which solids, liquids, gaseous and molten materials are forced out of the earth's interior or are intruded into the earth's crust. (1x2 = 2 marks)

(b) **Four characteristics of a composite volcano.**

- ✓ Has vertical vent / pipe/ fissure
- ✓ Composed of alternating layers of ash / lava
- ✓ Its conical in shape / steep sided
- ✓ Has side vents
- ✓ Its made up of acidic lava / viscous lava
- ✓ Has conelets / parasitic cones
- ✓ At the summit, it may have caldera / crater / plug. (4 x 1 = 4mks)

(c) **How a lava plateau is formed.**

- ✓ Formed when magma reaches the earth's surface through fissures / vents
- ✓ Lava is ultra basic / low intensity
- ✓ Lava flows over a long distance spreading over a large area before cooling.
- ✓ Lava cools slowly forming an extensive lava platform bounded by steep slopes. (4 x 1 = 4mks)

(d) **Four negative effects of vulcanicity.**

- ✓ Volcanic eruptions can result in loss of lives
- ✓ Volcanic eruptions can destroy property
- ✓ Weathered volcanic rocks / materials e.g. ashes and granite can result in infertile soils.
- ✓ Volcanic features like mountains create barriers to transport and communication
- ✓ The rugged nature of volcanic landscape discourages economic activities e.g. agriculture and settlement.
- ✓ Volcanic eruptions produce poisonous gases e.g. sulphur CO_2 which pollute the environment / threaten human life.
- ✓ Volcanic mountains create a rain shadow effect which discourage farming activities
- ✓ Recent lava flows have immature soils which are not suitable for farming.
- ✓ Volcanic eruptions and related hazards cause panic and affect people psychologically / inhibit development.
- ✓ Dust particles from volcanic eruptions absorb and scatter solar energy, lowering global temperatures; resulting to health problems to man.
- ✓ Volcanic eruptions may cover / burry minerals making mining difficulty and expensive.

(4x2 = 8 marks)

(e) (i) **Four sources of information that you would use in the preparation for the study**

- ✓ Written materials / magazines/ newspapers / text books
- ✓ Maps
- ✓ Photographs / films
- ✓ Resource persons

- ✓ Electronic media e.g. T.V / radio ($4 \times 1 = 4\text{mks}$)
- (ii) **Three factors that would make it difficult for you to collect accurate data during the field study.**
- ✓ Fear of eruptions
- ✓ Inaccessibility of some areas due to piled up lava
- ✓ Inadequate information because people have been evacuated
- ✓ There may be restrictions to access the area. ($3 \times 1 = 3\text{mks}$)

Question 8

(a) Three agents of weathering

- ✓ Heat / temperature
- ✓ Water / rainfall / moisture
- ✓ Plants
- ✓ Animals
- ✓ Man
- ✓ Wind ($3 \times 1 = 3\text{mks}$)

(b) Frost action as a process of weathering.

- ✓ Occurs where temperatures are within the freezing point
- ✓ When temperatures rise, snow melt and water enters the crack in the rock
- ✓ When temperatures drop, the water freezes, expands and widens the cracks
- ✓ Continued process of freezing and thawing lead to break up of rocks. ($4 \times 1 = 4\text{mks}$)

(c) Explain how an exfoliation dome is formed.

- ✓ High temperatures during the day causes rocks to expand
- ✓ At night temperatures are low hence rocks contract
- ✓ Repeated expansion and contraction cause stress on the rocks hence cracks develop.
- ✓ Eventually, the outer layer peels off leading to rounded mass of rock known as exfoliation dome.
- ✓ Further wind action may smoothen the surfaces.

($5 \times 1 = 5\text{mks}$)

(d) 3 factors that influence the rate of mass wasting.

- ✓ Steep slopes increase the rate of mass wasting
- ✓ The heavier the material, the faster the movement of the material
- ✓ The higher the rainfall the faster the movement of the material
- ✓ Bare surface increase the rate of the movement of the material
- ✓ Earth movements trigger movement of materials
- ✓ Human activities e.g. mining / farming / construction accelerate the rate of materials movement.

($3 \times 2 = 6\text{mks}$)

(e) Four slow types of mass wasting.

- ✓ Soil creep
- ✓ Talus creep
- ✓ Solifluction
- ✓ Scree creep
- ✓ Rock creep ($4 \times 1 = 4\text{mks}$)

(f) Three positive effects of mass wasting.

- ✓ Create scenery that attract tourists for foreign exchange
- ✓ It facilitates deposition of rich soils for agriculture in the low lands
- ✓ Landslides create barriers across river courses / valley leading to formation of lakes.
- ✓ It causes slope retreat encouraging human activities ($3 \times 1 = 3\text{mks}$)

Question 9

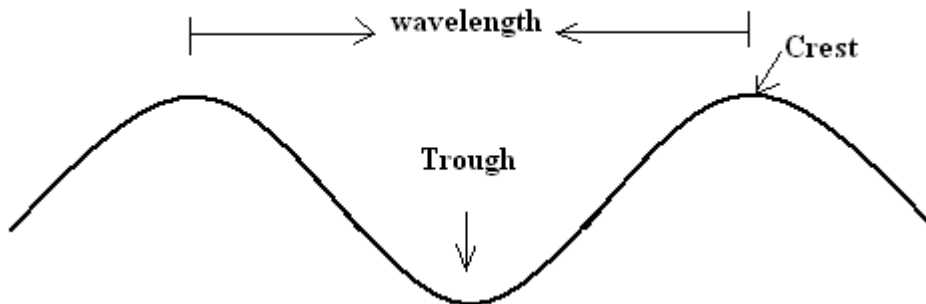
(a) (i) Three factors that influence transportation of materials in the sea.

- ✓ Ocean currents
- ✓ Tidal currents
- ✓ Strength of waves
- ✓ Nature of materials
- ✓ Depth of water
- ✓ Slope of the coast / shore
- ✓ alignment of the coast

Any 3 x 1 = 3 mks

(ii) A simple well labeled diagram of a sea wave.

3marks



(iii) **Three ways in which islands are formed.**

- ✓ Volcanic eruption
- ✓ Accumulation of coral into coral reefs
- ✓ Submergence of an upland coast
- ✓ Deposition across the bays / river mouths / lagoons
- ✓ Erosion of head lands (*any 3 x 1 = 3mks*)

(b) (i) **Hydraulic action**

- ✓ Action caused by the force of moving water in form of waves
- ✓ Involves direct wave force where the pounding force of the wave causes shattering of rocks on the cliff / causes compression of air in the cracks.
- ✓ As the wave retreats, the air expands explosively.
- ✓ Gradually the rock disintegrates. *Any 3 x 1 = 3mks*

(ii) **Solution**

- ✓ Is the process where sea water dissolves soluble minerals in the rock which are in contact with it on the sea side and bed. *2 x 1 = 2mks*

(c) **Formation of a spit.**

- ✓ It forms on a shallow shore at a point where there is a change in the angle of the coastline
- ✓ Sand and shingles are deposited from the headland seaward by long shore drift / oblique waves.
- ✓ Continued deposition leads into accumulation of materials seawards.
- ✓ With time, an elongated ridge of sand and shingles with one end attached to the mainland and the other projecting into the sea called a *spit* is formed. *Any 5 x 1 = 5mks*

(d) **3 economic importances of coastal landforms.**

- ✓ Coastal rocks e.g. coral limestone are used in building and construction
- ✓ Limestone rock is used as a raw material in cement industries
- ✓ Coastal features like coral reef attract tourist who bring in foreign exchange
- ✓ Fiord and rias provide suitable sites for construction of the harbours / breeding of fish
- ✓ Marine life is used in education and research
- ✓ Mud flats and mangroves swamps are drained and used for rice cultivation / mangrove forests are exploited to provide poles for construction
- ✓ Extensive coastal plains provide suitable sites for human settlements and agriculture. *Any 3 x 2 = 6mks*

Question 10

(a) **Four physical factors that contribute to development of deserts.**

- ✓ Continentiality / distance from large water bodies
- ✓ A place being located in an area with descending winds / anticyclones
- ✓ Rain shadow effect
- ✓ Prolonged droughts
- ✓ Cold ocean currents
- ✓ Prolonged / persisted high temperatures
- ✓ Climate change / global warming
- ✓ Persistent offshore / dry winds / cold winds *Any 4 x 1 = 4 mks*

(b) ***Four characteristics of desert landscape.***

- ✓ Most of the ground is bare / scanty vegetation
- ✓ Total absence / partial surface water
- ✓ Wind is dominant leading to desert sand storms
- ✓ Land surface is covered by fine sand / stones / rock outcrops
- ✓ Galleys / badlands are common
- ✓ Thin soils
- ✓ Little organic matter. *Any 4 x 1 = 4mks*

(c) ***Three factors that influence wind transport in the desert.***

- ✓ Speed and the force / strength of the wind
- ✓ Nature of the load / either light / heavy
- ✓ Intervening obstacles e.g. dead animals , twig or rock
- ✓ Water mass / rain / moisture. *Any well explained 3 x 2 = 6mks*

(d) ***How a deflation hollow is formed.***

- ✓ A pre-existing depression /localized fault is exposed to wind erosion.
- ✓ Wind eddies remove the unconsolidated materials by with deflation
- ✓ Weathering aids in breaking down the exposed rock
- ✓ Wind abrasion excavates the depression by eroding the rock along weak lines
- ✓ The depression is deepened and widened as a deflation continues to remove the loose materials leading to formation of a large depression known as deflation hollow. *Any 4 x 1 = 4mks*

(e) (i) ***Four preparations for your study.***

- ✓ Seeking permission
- ✓ Conduct a reconnaissance
- ✓ Formulate / adjust hypothesis and objectives
- ✓ Choose methods of data collection
- ✓ Assemble necessary tools / materials
- ✓ Prepare a working schedule
- ✓ Divide the students into groups
- ✓ Discuss the topic in class
- ✓ Literature review *Any 4 x 1 = 4mks*

(ii) ***List three water depositional features you identified.***

- ✓ Salina / playa
- ✓ Alluvial fans / cones
- ✓ Bajadas *3 x 1 = 3mks*