

KANDARA SUB-COUNTY SECONDARY SCHOOLS FORM 3 2016
JOINT EXAMINATION
GEOGRAPHY

Paper -312/1
October - 2016

MARKING SCHEME

1. a) Components of the solar system

- Sun
- The planets
- Asteroids
- Meteors/meteorites

Any 3 x 1 = 3 mks

b) Types of high level clouds

- Cirrus
- Cirro-cumulus
- Cirro-stratus

Any 2 x 1 = 2 mks

2. a) Causes of earthquakes

- Gravitational pressure
- Convergence/collision/shearing of tectonic plates
- Movement of magma within the earth's crust/volcanic eruption
- Folding/faulting
- Isostatic adjustment
- Energy release from the mantle.

Any 3 x 1 = 3 mks

b) Major earthquake zones of the world

- the circum-pacific belt
- the tethyan/Mediterranean belt
- the great rift valley
- mid-Atlantic ocean belt

Any 2 x 1 = 2 mks

3. a) Chemical weathering process

- Solution
- Hydration
- Hydrolysis
- Oxidation

Any 2 x 1 = 2 mks

b) Carbonation as a process of weathering.

- Water in the atmosphere picks up carbon dioxide to form weak carbonic acid.
- Carbonic acid reacts with calcium carbonate to form calcium bicarbonate which is soluble.
- Carbonation mainly affects limestone
- It involves the reaction of hydrogen carbonate ions with a mineral to give a soluble compound.

Any 3 x 1 = 3 mks

4. a) i) Q- Equatorial low pressure belt/Doldrum

- ii) K- is the North East trade winds
Any 1 x 1 = (2 mks)

b) Characteristics of ITCZ

- Zone within the tropics between latitude $23\frac{1}{2}^{\circ}$ N and $23\frac{1}{2}^{\circ}$ S
- Zone with low atmospheric pressure/Doldrums
- Convergence zone of N.E and S.E trade winds.
- Migrates or shifts north or south of the Equator with the apparent movement of overhead sun.
- Its associated with convectional rainfall which has thunder and lightning.
- Characterised by high pressure.
Any 3 x 1 = 3 mks

5. a) Soil

- accumulation of rock particles, minerals organic matter and air on earth's surface.
(1 mk)

b) Soil profile

- the vertical arrangement of soil in layer of horizontal from the surface to the bedrock (A-D)
- Soil Catena is the regular horizontal arrangement of soil particles on a hill slope from the top to the bottom. (2 mks)

c) Importance of humus to maintain soil fertility

- Helps to retain moisture/prevent leaching
- Improves porosity/soil aeration
- Provides essential mineral in the soil
- Improves soil texture
- Protects the soil against erosion
Any 2 x 1 = 2 mks

SECTION B

Answer question 6 and any other TWO questions from this section

6. Study the map of Busia 1: 50,000 (sheet 101/1) provided and answer the following questions

a) i) What type of map is Busia sheet

-Topographical map (1 mk)

ii) Convert the ratio scale of the map extract into a statement scale.

1 cm on the map represents 1/2 km

OR

0.5 km on the ground

(2 mks)

iii) What is the magnetic variation of the map of Busia when it was drawn

2° 21'

(2 mks)

iv) Give any two methods used to represent relief on the map

-Contours

-Spot height

-Trigonometrical stations

Any 2 x 1 = 2 mks

v) What is the bearing of the trigonometrical station at Odiado hill grid reference 290333 from the road junction at Bumala market grid reference 336339

262 ± 1

(2 mks)

b) Draw a square 10cm by 10cm to represent the area west of Eastings 30 and north of Northing 40. On the square mark and label:

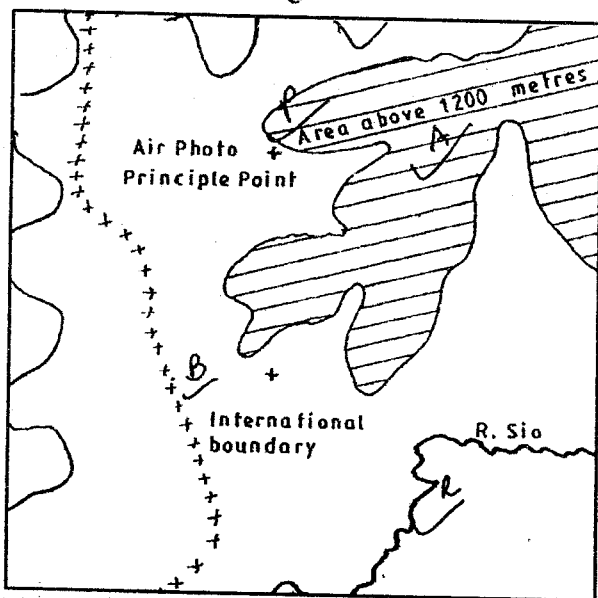
i) An International boundary

ii) An air photo principal

iii) River sio

iv) The area above 1200 metres sea level

v) Correct drawing



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c) Describe the drainage of the area covered by the map of Busia

-The drainage features consist of rivers/dam/reservoir and swamps.

-Most of the rivers are permanent.

-The major river is Sio whose direction of flow is North East to South West.

-There are several swamps on the northern part of the map.

-There are some disappearing rivers e.g saka, Namwithaia, Yafwa, Ludathu, Wakhungu among others.

-Most of the rivers rise from the Samia ridge and around hills such as Odiado and Nyahanja.

-Some of the disappearing rivers form dendritic drainage pattern while river Sio forms a lot of meanders with several swamps.

Any 5 x 1=5 mks

d) Explain how the drainage has influenced the distribution of settlements in the area covered by the map.

-Areas that are well drained have many/nucleated settlements.

-Areas that are poorly drained/swampy have few/no settlements.

-There are no settlement near most of the rivers (because they be prone to flooding)

Any 2 x 1= 2 mks

e) Citing evidence from the map state two economic activities carried out in the area covered by the map.

Economic activity	Evidence
Farming	Several cotton stores
Transportation	all weather roads
Trade	market centres

Any 2 x 2=4 mks

*Evidence must be mentioned to score maximum

7. Sources of rivers

-Lakes

-Melting ice/snow

-Spring

-Swamps

ii) Features formed at Youthful stage

-Rapids/water falls/ cascades

-U-shaped valleys/canyon/gorges

-Potholes

-Plunge pools

-Interlocking spurs

Any 2 x 1= 2 mks

Mature stage

- meanders
- river cliff/bluff
- slip-off slope
- alluvial fans

Any 2 x 1= 2 mks
(Accept any other correct)

Old stage

- meanders
- ox-bow lake
- braided channels/isle
- flood plain
- levees

Any 2 x 1=2 mks
(Accept any other correct)

b) Processes by which rivers transport its loads.

i) Traction process

- The large and heavy loads of a river are rolled/dragged along the river bed by the force of the moving water and gravity.

ii) Saltation

- Some large fragments that cannot remain suspended in the water are momentarily lighted and dropped by water turbulence. The series of leaps and hops move the load down the river.

iii) Suspension

- Light soluble materials such as sand and silt grains are carried and maintained within the water by turbulence and transported downstream.

iv) Solution

- The soluble minerals are dissolved in the river water and carried away.

any 3 x 2= 6 mks

c) Dendritic pattern

- It develops in an area where rocks have uniform structure.
- The direction of flow is influenced by the slope of the road.
- The tributaries join the main rivers at acute angles.
- Tributaries converge on the main river forming a shape like that of a tree and its branches.

Any 3 x 1= 3 mks

Trellis Pattern

- Develops where soft and hard rock alternate vertically
- Tributaries join the main river at right angles.
- Consequent streams are parallel to the main river
- Some obsequent streams flow to the opposite direction of the main river.
- The main river and its tributaries form a rectilinear pattern.

Any 3 x 1= 3 mks

d) Methods used to collect data

- Observation/digging deposits
- Collecting samples
- taking photographs
- interviewing

Any 2 x 1=2 mks

ii) Advantages of studying

- It enables one to collect first hand information.
- Promotes development of practical skills.
- Promotes application of acquired knowledge.
- One is able to develop skills of data analysis.
- To break the classroom monotony.

Any 2 x 1= 2 mks

8. a) Process through which wind erodes the surface

- Deflation
- Abrasion
- Attrition

Any 2 x 1= 2 mks

ii) Three ways through which wind transport its load.

Suspension

- The fine dust particles are lifted clear off the ground.
- Eventually they are blown away by wind current.

Any 2 x 1= 2 mks

Saltation

- Larger fragment/sands particles are lifted from the ground by eddy action.
- They are moved in a series of hops surface.

Any 2 x 1= 2 mks

Surface creep/Traction

- Heavy materials/small stone/pebbles are dragged along the ground by wind currents.

Any 2 x 1=2 mks

b) An oasis

- A pre-existing depression formed through faulting is exposed to wind erosion.
- Wind eddies remove unconsolidated materials through deflation.
- As deflation continues, the depression is deepened and enlarge by weathering process.
- Continued deflation, the level of water table is reached.
- Water oozes out of the ground and collects into the depression to form an oasis lake.

Any 5 x 1=5 mks

ii) Zeugens

- Formed in area where alternating horizontal layers of hard and soft rocks occurs.
- The top layer of hard rock is jointed/has cracks.
- Weathering opens up the joints
- Wind abrasion erode the joints deepening the softer layer.
- Continued abration furrows are formed and gradually widen.
- The hard/resistant rock forms ridges separating the furrows.
- The process creates a ridge-furrow landscape known as zeugen.

(Correct description 5mks)

c) Ways of preparing field study

- reading from relevant material
 - Assembling relevant tools/equipments
 - formulating hypothesis/objectives
 - forming groups
 - carry reconnaissance
- Any other correct (any 2 x 1= 2 mks)

ii) Information collected through observation

- Sparse vegetation
- Sparse settlement
- Dust storms
- Evidence of wind erosion

any 2 x 1= 2 mks

measures taken in controlling desertification

- Planting trees
- Controlling grazing
- Avoid bush fires
- Controlling cutting down of trees
- Practice appropriate methods of cultivation

9. a) i) Mechanically weathering is the breaking down or disintegration of rocks into smaller particles without changing the mineral composition of the rock. (2 mks)

ii) Explain how exfoliation dome is formed

- In hot and arid areas, high day temperature causes the surface rocks to expand while at night the low temperatures causes contraction of rock layer, when this happens repeatedly cracks appear on the surface of the rocks and eventually the layer disintegrates peeling off and leaving behind a rounded off mass of rock known as exfoliation dome.

(Correct explanation 4 mks)

b) Factors influencing weathering

i) Climate.

- Temperatures influences weathering by increasing or lowering temp causing expansion and contraction of rocks.
- Rainfall areas will have enough water to

influence both chemical and biological weathering.

- Sunshine and frost also affect the rocks through contraction and expansion.

Any 3 x 1= 3 mks

ii) Plants and Animals

- Burrowing animals like rodents and insects like termites in the ground contribute to the mixing of particles weathered rocks thus facilitating weathering.
- Human activities like burning of vegetables can cause stress due to intense heating of the rocks resulting in weathering.
- Moving machines like bulldozers and heavy tracks causes intense pressure on rocks thus facilitating weathering.

Any 4 x 1=4 mks

c) Effects of soil creep

- It pushes posts and fences from their original and become inclined.
- Displacement of fine soil particles down slope leaves the steep upper slopes bare and exposed.
- It causes accumulation of particles at the base of a slope causing deep soils.
- Soil creep over a long period of time leads to slope retreat.
- It interferes with structures such as roads , railways making maintenance expensive.

Any 3 x 2= 6 mks

d) Significance of weathering

- It is an important stage in the soil forming processes good for agriculture.
- It breaks up rock that are used for construction purposes.
- Weathered rocks are tourist attraction e.g granitic.
- It exposes minerals hence making mining easier.
- Weathered crust of the earth is important in engineering to establish how deep it is and remove it to lay from foundation for roads building dam.

Any 5 x 1= 5 mks

10. a) Types of submerge coasts

- Ria
- Fiord
- Dalmation/longitudinal
- Estuarine

b) Processes of marine Erosion

i) Hydraulic action

- Erosion by shear power of waves
- Breaking wave/swash hit against the cliff.
- The rocks are shattered
- The force of breaking waves compress air in

the crack/joints

-The retreating wave/backwash carries loose particles towards the sea.

2 x 1 = 2 mks

ii) Abrasion

-Rock fragments carried by waves are used as tools to break the cliff as waves break against the cliff face.

-The materials broken are carried away

-The fragments scratch the sea floor as they are dragged.

2 x 1 = 2 mks

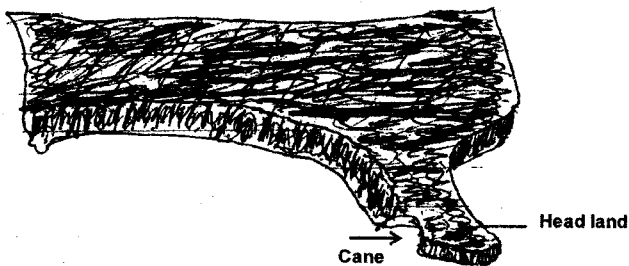
iii) Attrition

-This is wearing off of the individual particles continuous as they hit against each other

c) Process of forming a stump

Stage 1

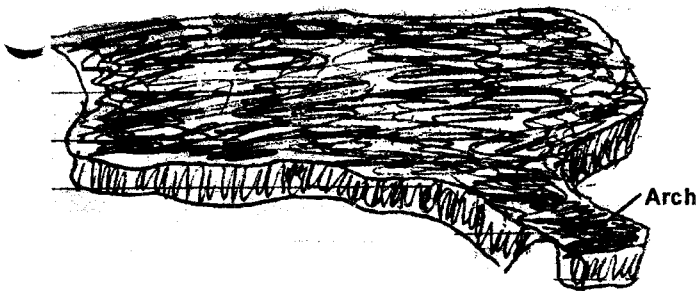
A coast with a head land is attacked by waves on opposite sides at a right angles. Abrasion and wave action at the base of the head land forms a cave.



Stage II

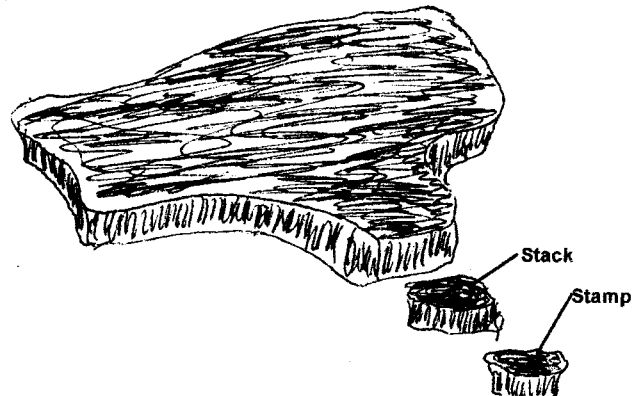
Caves develop on opposite sides and connect to form an arch.

Elongation of the cave through the headland forms an arch.



Stage III

-The roof of the arch collapses leaving part of the headland in the seaward, isolated in form of a stack



-When the stack is eroded it forms a stump which is only visible during the low tides.

(Diagram 3mks, Explanation 5mks)

(Total 8mks)

c) i) Coastal features at Kenyan coast

- beaches
- Coral reef
- Cliffs
- wave cut platform
- caves
- blowholes
- archs
- stacks
- stumps
- spits

any 3 x 1 = 3 mks

ii) Ways in which Kenya benefits from coastal features.

- They are tourists attraction e.g beaches
- Fishing grounds in shallow continental shelf and submerged coasts.
- Habitat provides environment for research/ education
- Mangrove forests provide timber for building.
- Coral limestone is a raw material in manufacture of cement
- Shells are used for ornaments purpose.

Any 5 x 1 = 5 mks