NYANDARUA WEST CLUSTER EXAMINATIONS

FORM FOUR EXAMINATIONS 2018

JULY/AUGUST

312/1

GEOGRAPHY

PAPER 1

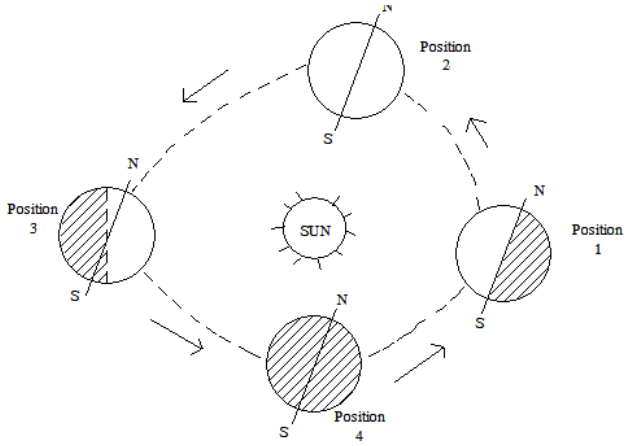
$2^{3/4}$ HOURS.

MARKING SCHEME

Section A

Answer all the questions in this section.

1. Study the diagram below and answer the questions that follow.



a) Name the type of movement of the earth represented by the above diagram.(1mk)

Revolution

b) Give **four** effects of the movement you have mentioned in (a) above. (4mks)

- It causes four seasons.
- It causes varying lengths of day and night at different times of the year.
- It causes lunar eclipse.
- It causes changes in the position of the midday sun at different times of the Year

2. (a) What is an earthquake? (2mks)

An earthquake is a sudden and rapid movement of the earth's crust

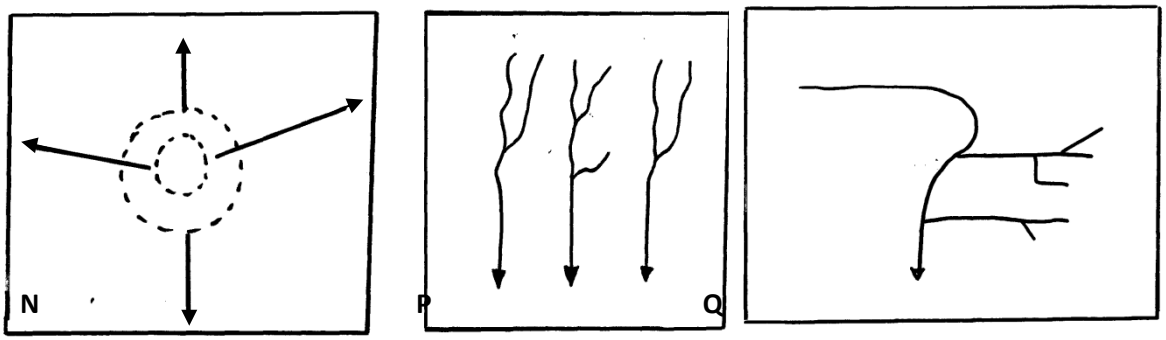
(b) List **three** natural causes of earthquakes. (3mks)

- Tectonic movements.
- Vulcanicity.
- Gravititive pressure.
- Isostatic adjustment.
- Energy release in the mantle.

3. (a)Distinguish between a river tributary and a river confluence. (2 mks)

A river tributary is a small river which flows into a bigger one while **a river confluence** is the point at which a tributary joins the main river.

(b) The diagrams below represent drainage patterns.



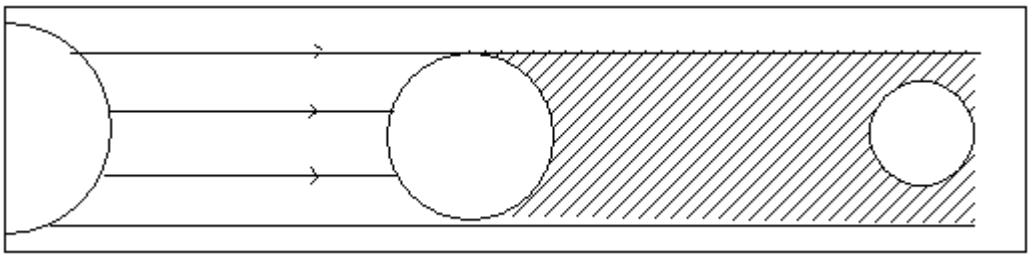
Identify the drainage patterns **N, P** and **Q**. (3 mks)

N – Radial P – Parallel Q – Fault – guided

4. a) State two days in a year when the length of day and night is equal. (2mks)

- 21st March
- 23rd September

b) Draw a well labelled diagram to show the eclipse of the moon (Lunar eclipse) (3mks)



5. Describe how humidity is measured during the field study. (5mks)

-Read the dry bulb thermometer and record the temperature
-Read the wet bulb thermometer and record the temperature
-Calculate the difference between the temperatures of two thermometers.
-Convert the difference using a conversion table at a weather station
-interpret the difference.

Section B

Answer question 6 and any other two questions.

6. Study the map of Oyugis 1:50000 sheet 75/3 provide and answer the following questions.

a) i) Name **two** physical features found in grid square 8728. (2mks)

-river

-river valley

-hill/steep slope

ii) Give the six figure grid reference of trigonometrical station▽ 130 S 34681. (2mks)

-703302

iii) Give the location of Sango School using latitudes and longitudes. (2mks)

Latitude $0^0$33.3'S/$0^0$33'S

Longitude $34^0$33.71'E/$34^0$34' E

NB. Student must start with latitude first followed by Longitude in order to score.

b) i) Measure the length of road D216 from Somro market to the junction at Ndiru Dispensary along road E212 in kilometres. (2mks)

8.9±0.1km

ii) Calculate the area to the north east enclosed by all-weather road bound surface A1 and north of the District boundary. (2mks)

Full Squares 4,

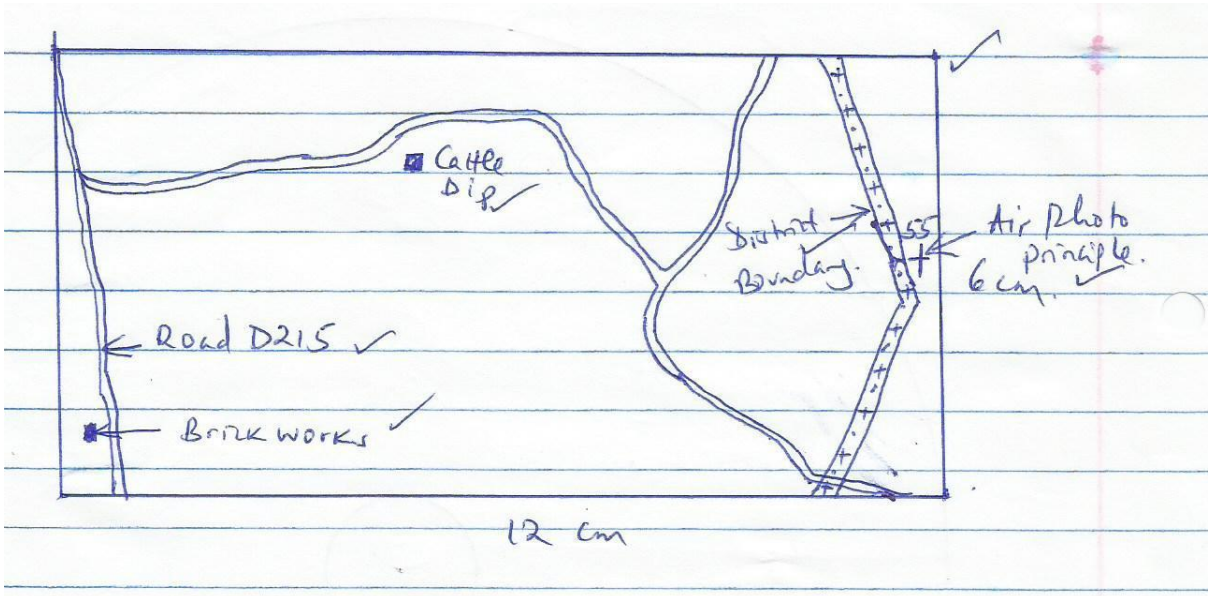
Half Squares 16/2,

Area=4+16/2 = 12km^2

c) Draw a rectangle measuring 12cm by 6 cm. (1mk)

On the rectangle drawn, mark and name the features enclosed by eastings 77 and 83 and northings 21 and 24:

- Road D215 (1mk)
- Cattle Dip (1mk)
- District Boundary (1mk)
- Air photo Principal +55 (1mk)
- Brick Works (1mk)



d) Describe the drainage of the area covered by the map. (5mks)

-The main drainage features are rivers

-The main rivers are Riana and Awach Tende

- There are many permanent rivers e.g river Awach

-There is an indefinite /seasonal river

-Most rivers form dendritic drainage patterns

-Most rivers have tributaries

-Most rivers radiate from/form radial drainage from Kebuye Range

-Most rivers originate from Kebuye Range

-There is a seasonal swamp near river Iyabe

-There are waterholes, dams

- Mark specific direction of rivers

e) Citing evidence from the map, give **two** social services. (4mks)

-Health/Medical Care-hospitals/dispensaries

-Education-schools,

-Transport- many roads

-Religious services-church

-Administration- Chiefs office

-Recreation- rest house

-Communication- post offices

-Social welfare- mission centre

N/B. Mark Service and evidence

7. a) What is weathering? (2mks)

Weathering is breakdown/disintegration and decomposition of rocks in situ (without movement)

b) Name **three** physical weathering processes caused by changes in atmospheric temperatures. (3mks)

- Exfoliation
- Block disintegration
- Granular disintegration
- Freezing and thawing

c) Explain any **four** chemical weathering processes. (8mks)

Solution – Rain water dissolves soluble minerals in the rocks leaving small holes on ground.

Hydrolysis - decay of igneous rocks with mineral feldspar. Hydrogen ions in water and ions in rocks react.

Oxidation – mineral compounds: rocks take up additional oxygen – takes place in rocks that contain iron.

Carbonation – takes place when weak carbonic acid reacts with calcareous rocks

Hydration – rocks absorbs water, expands and results to inner stress in the rock mass. Takes place in almost all rocks that have undergone other chemical processes

d) Why is chemical weathering least expected at the top of Mt. Kenya (1mk)

Chemical weathering takes place in humid climates where water is abundant and temperatures are high.

e) Give **four** significances of weathering to man. (4mks)

- Initial stage in the soil formation processes
- Weathering is initial breaking up of rock which are quarried and used in building and construction
- Weathered rocks offer attractive sites to tourists
- Weathered byproducts such as Bauxite are sources of raw materials for industrial uses.

f) State **four** physical factors which influence mass wasting. (4mks)

Slope
- Nature of material
- Climate
- Vegetation
- Forces within which the earth's crust
- Human activities

g) Describe how soil creep occurs (3mks)

- It is the movement of fine soil down a gentle slope
- triggered by heating and cooling of soil, burrowing animals, ploughing down hill
- evidenced by moulds or soil behind walls, tilting of walls, fence posts or bending of tree trunks

8.(a)(i) Name the vegetation zones marked XYZ (3 mks)

X – Tropical rainforest / equatorial forest / rain forest.
Y – Bamboo
Z – Heath and moorland.

(ii) State **two** reasons why the mountain top has no vegetation. (2 mks)

- High attitudes cause very low temperatures.
- Strong winds uproot vegetation.
- Thin soil support little vegetation.
- Snow cover prevents vegetation development.

(iii) Explain **three** factors that have led to the decline of natural grassland in Kenya. (6mks)

- The frequent outbreak of bush fires destroys the grass retarding its regeneration.
- The increasing of human population is encroaching into the grasslands replacing them with settlement.
- Pests such as army worms / locusts destroy grass and vegetation degenerates into a semi desert type.
- Wild / domestic animal overgraze and cause stunted growth of grass.
- Prolonged drought retard growth / destroy grass.

(b)(i) State **five** characteristics of tropical rain forest. (3mks)

- The trees are tall, straight trunks with few branches.
- The trees form canopies.
- Most trees have broad leaves.
- The trees take long to mature.
- The vegetation has little undergrowth.
- There are climbers' i.e Lianas.

(ii) What ways desert plants are adapted to the desert climatic conditions? (5 mks)

- Some plants have succulent stems to store water.
- Some plants have hardy, waxy and slimy leaves and sunken stomata to reduce rate of transpiration.
- Some plants have reduced leaves / small / thorny leaves to reduce rate of transpiration.
- Some plants have deep tap roots to reach and tap water deep from the underground.
- Some plants are drought resistant and shed off their leaves to survive the long dry season.
- Some plants are salt – tolerant and can survive in the saline soils.
- Some plants have short life cycle with dormant seeds which can only sprout during occasional rains.

(c) In which major climatic regions of the world are the following types of vegetation found

(i) **Selvas** (1mk)

- Equatorial
- Equatorial monsoon
- Tropical marine
- Tropical monsoon

(ii)**The marquis or chaparral** (1mk)

- Warm temperature western
- Margin (Mediterranean climate)

(iii)**The pambas** (1mk)

- Warm temperature continental climate

(iv)**Taiga** (1mk)

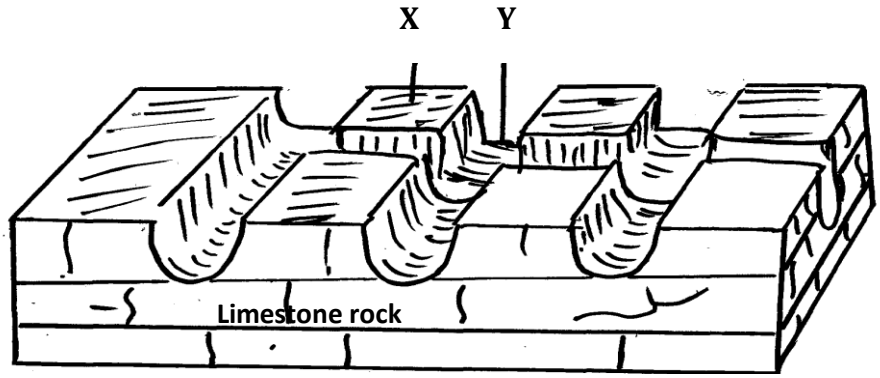
- Cold temperatures continental climate (1mks)

9. a) (i)Define the term Karst Scenery**.** (2mks)

Is any rugged landscape whose surface rocks are limestone or Dolomite and which has been acted on carbonation by rain and river water to produce features typical of limestone surfaces.

(ii) The diagram below shows some of the surface features in a Karst Scenery.

Use it to answer question (ii) below.



Name the features marked **X** and **Z.** (2mks)

X – Clint

Y – Grike

b) Describe how a stalagmite is formed. (5mks)

-Water percolates through the rocks of the roof of a limestone cave
- This water, which is a solution of sodium bicarbonate, drips slowly from the roof of the cave to the floor.
- The water spreads out and begins to evaporate.
- Tiny crystals of sodium carbonate are deposited on the floor.
- Each drop which falls on the floor spreads out and evaporates.
- More crystals form on top of the previous one.
- the accumulation of the crystals builds a structure upwards called a **stalagmite.**

c) (i)State **three** sources of underground water. (3mks)

Rain water✓
Lake/sea water✓
Melt waters✓
Magmatic water✓

(ii)Explain **two** ways through which water infiltrates into the ground

(2mks)

- Through permeable rocks –porous rocks have texture; coarse grains through which water infiltrates into the ground. ✓
- Through joints / faults –such lines of weakness in rocks allow water to pass into the ground. ✓

d) Students of a school in Machakos County intend to carry out a field study in a limestone area.

(i) Name **three** methods of data collection. (3mks)

- Observation
- Administering questionnaires
- Oral interview
- Taking photographs

(ii) List **two** problems students are likely to encounter during the field study. (2mks)

- Rugged terrain hampers movement.
- High temperature.

e) Explain **three** significance of limestone landscape on human activities. (6mks)

- The surface and underground features in limestone areas are tourist attraction earning the country foreign exchange.
- Blocks of limestone rocks area used for building houses.
- Limestone is a raw material for the manufacture of cement.
- The limestone landscape discourages settlements because its rugged nature and scarcity of surface water.

10. (i) Define the term vulcanicity. (2mks)

- Vulcanicity in the process by which gaseous, liquid and solid materials are forced out of the interior of the earth into the earth earth's crust or onto the surface of the earth.

(ii) Apart from sill and dyke name **two** intrusive volcanic features. (2mks)

- Batholith
- Laccolith
- Lapolith
- phacolith

(b) Describe the formation of a caldera under the following headings.

(i) **Subsidence**. (4mks)

- The outpouring of lava forms a volcanic cone.
- When the pressure beneath stops, a hollow is left behind.
- The weight of the overlying cone leads to collapsing of materials in the hollow.
- This leaves a wide depression at the top of the cone called a caldera.

(The last point must appear to score max score, otherwise award 3mks

(4 x 1 = 4mks)

(ii) **Explosion**. (5mks)

- The eruption of magma forms a volcanic cone.
- Some of the lava may solidify in the vent, thus sealing it.
- With time pressure builds and becomes high in the vent.
- Eventually this pressure leads to a violent eruption that blows off the top of the cone.
- This leaves behind a wide depression referred to as caldera.

(5 x 1 = 5mks)

(The last point must appear for max score).

c) Explain **three** causes of vulcanicity. (6mks)

-high pressure in the interior/mantle layer which is realeased by earth movements

-High interior temperatures cause solid rocks to melt and change into molten materials

-Underground water coming into contact with hot magma/volcanic rocks. Water is heated and change into gaseous form under pressure to form steam jets/geysers/hotsprings

-Earth movements/folding/faulting/earthquakes which cause rocks to crack forming fissures, joints and vents/pipes through which molten materials/magma comes out.

(d) Explain **three** negative effects of vulcanicity. (6mks)

- Volcanic mountains create rain shadow effect on leeward side which discourages agriculture.
- Recent volcanic lava flows have poorly developed soils which are unsuitable for agriculture.
- Some volcanic features such as volcanic mountains are barriers to constructionof transport and communication lines.
- The rugged nature of volcanic landscape makes settlement and agriculture difficult.

-The areas showing signs of eruption may produce poisonous gases which pollute the environment, thus posing danger to animal and human lives.