

LANJET CLUSTER JOINT EVALUATION

Kenya Certificate of Secondary Education

312/1

GEOGRAPHY Paper 1

MARKING SCHEME

SECTION A

1. (a) Name **three** substances that are found in the atmosphere. (3 marks)
- *Gases/air*
 - *Water vapour*
 - *Dust particles*
 - *Smoke particles*
 - *Clouds/Water droplets/ice crystals*
- (b) Give **two** dates of the year when the hours of day and night are equal at latitude 60°N and 60°S. (2 marks)
- *21st March*
 - *23rd September*
2. (a) Name **two** fold mountains in North America? (2 marks)
- *Appalachians*
 - *Rockies/Rocky mountains*
- (b) State **three** causes of vulcanicity. (3 marks)
- *Very high temperatures in the interior of the earth.*
 - *Intense pressure which pushes materials out.*
 - *Faulting which forms lines of weakness where volcanic materials pass.*
 - *Ground water which is heated by hot rocks below to form hot springs/geysers.*
3. (a) State **two** characteristics of metamorphic rocks. (2 marks)
- *Some metamorphic rocks have valuable minerals.*
 - *Metamorphic rocks have their original equivalent.*
 - *Most metamorphic rocks are harder than their original equivalent.*
- (b) Give **three** factors that influence rock metamorphism. (3 marks)
- *The resistance of rock*
 - *Porosity of the rock*
 - *The stability of the minerals that are produced.*
 - *The grain size of the rock being changed.*
 - *The chemical action of the rock's minerals.*
 - *The solubility of the minerals forming the rock.*

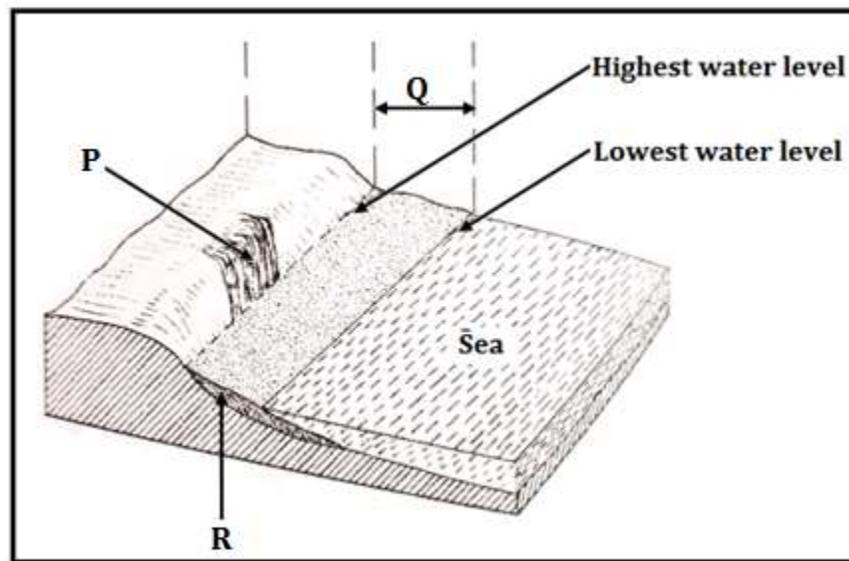
4. (a) Define the term weathering. (2 marks)

Weathering is the physical breakdown or chemical decay of rocks in situ due to their exposure at or near the surface of the earth

- (b) List **three** agents of weathering. (3 marks)

- ***Air***
- ***Heat***
- ***Water***
- ***Ice***
- ***Biological organisms***

5. The diagram below shows some features associated with a coast.



- (a) Identify the parts marked P, Q and R. (3 marks)

- ***P - Cliff***
- ***Q - Shore***
- ***R - Beach***

- (b) Outline **two** causes of coastal submergence. (2 marks)

- ***Positive change in the base level/Actual increase in the sea level.***
- ***Subsidence of coastal land.***

SECTION B

6. Study the map of Nyeri (1:50,000 sheet 120/4) provided and use it to answer the following questions

- (a) (i) What is the magnetic variation of the area covered by the map when the map was drawn? (1 mark)

1°31 west of true north

- (ii) Give the latitudinal extent of the area covered by the map. (2 marks)

From 0°19 South to 0°30 South

(iii) Identify **two** relief features at grid square 5465. (2 marks)

- ***A river valley***
- ***A spur***
- ***Interfluve***

(b) (i) Determine the direction of the Ark Lodge from the Tree tops Look out Hotel. (2 marks)

West North West

(ii) Citing evidence from the map, give **four** social services offered in the area covered by the map. (4 marks)

- ***Water supply due to presence of a water tower near Nyeri Town and pump house at grid square 6658.***
- ***Religious services due to presence of several churches and a convent.***
- ***Medical services due to the presence of dispensaries and hospitals.***
- ***Education services due to presence of schools and Kagumo College.***
- ***Security due to the presence of a police post and police stations.***

(c) Describe the drainage of the area covered by the map. (6 marks)

- ***Rivers are the main natural drainage features.***
- ***The main rivers are river Amboni(Honi), river Chanya and river Gura.***
- ***The general direction of rivers is from West to East.***
- ***Many rivers have their source at Aberdare forest.***
- ***Almost all the rivers in the area are permanent.***
- ***There is a seasonal river within Nyeri forest.***
- ***There are many rivers and streams in the area covered by the map.***
- ***Most rivers display dendritic drainage pattern.***
- ***Parallel drainage pattern is also evident especially on the eastern parts.***
- ***There is an irrigation canal near Nyeri Hill forest.***
- ***There are several dams in the area covered by the map.***
- ***There are several ditches in the area covered by the map.***
- ***Rivers Chanya and Amboni are highly meandering.***

(d) Explain **four** factors favouring crop farming in the area covered by the map. (8 marks)

- ***Presence of Aberdare forest is a likely indicator that the area receives high rainfall which favours crop growing.***
- ***Presence of settlements and labour camps/lines indicates presence of manpower required in crop production practices such as planting, weeding and harvesting.***
- ***High altitude due to contour heights between 1700 m and 2600 m which is ideal for crops such as coffee.***
- ***Presence of some dams indicates availability of water for irrigating crops in some farms East of Mweiga.***
- ***Presence of forests such as Nyeri forest are a likely indicator of deep and well drained soil in the area that supports various crops.***
- ***Presence of several settlements to the south East and Nyeri town indicates availability of market for some crops produced in the area covered by the map.***

7. (a) (i) Differentiate between weather and climate. (2 marks)

Weather is the state of the atmosphere of a given place over a short period of time whereas climate refers to the average weather conditions of a place which have been observed over a long period of time such as 30 years.

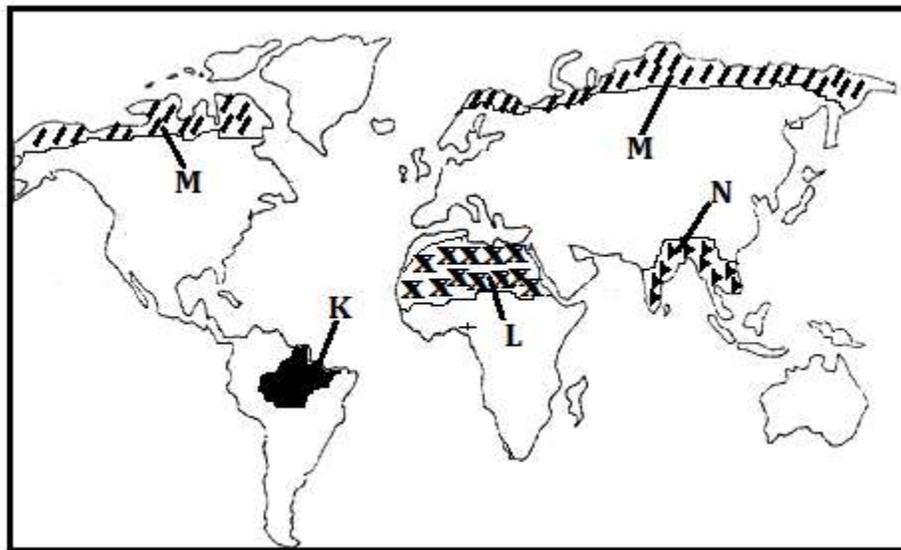
- (ii) State **four** factors to consider when choosing a suitable site for a weather station. (4 marks)

- ***An open place where there is little obstruction of weather elements.***
- ***The place should be away from tall structures such as trees.***
- ***A fairly level or gently sloping ground.***
- ***The place should provide a wide view of the surrounding landscape and the sky.***
- ***The site should be free from flooding.***
- ***The place should have security.***

- (b) Explain how distance from the sea affects the climate of a place. (4 marks)

- ***Some regions near the coast may receive high rainfall due to the effects of moist onshore prevailing winds throughout the year.***
- ***Some regions very far in the interior receive dry winds as onshore winds lose moisture on the way thus very low rainfall.***
- ***In temperate regions, coastlands are cooler during summer than interior regions due to the effects of cool sea breeze.***
- ***During winter in temperate regions, some coastlands are warmer than interior areas due to the effects of warm onshore winds.***

- (c) The map below shows some climatic regions of the world. Use it to answer question (c)(i) and (ii).



- (i) Identify the climatic zones marked K, L, M and N. (4 marks)

- ***K - Equatorial climate***
- ***L - Tropical desert climate***
- ***M - Tundra climate***
- ***N - Tropical monsoon climate***

(ii) Describe the characteristics of the climatic zone marked L. (5 marks)

- *The climatic region marked K is tropical desert climate.*
- *High mean annual temperature of about 27°C.*
- *Large annual temperature range between 26°C and 28°C.*
- *Intense insolation due to cloudless skies*
- *Low humidity throughout the year.*
- *Large diurnal temperature range due to low temperatures at night*
- *Very low rainfall less than 120 mm annually.*
- *Sporadic rains that at times result in flash floods.*
- *Low atmospheric pressure during the hot season and high during the cool season.*

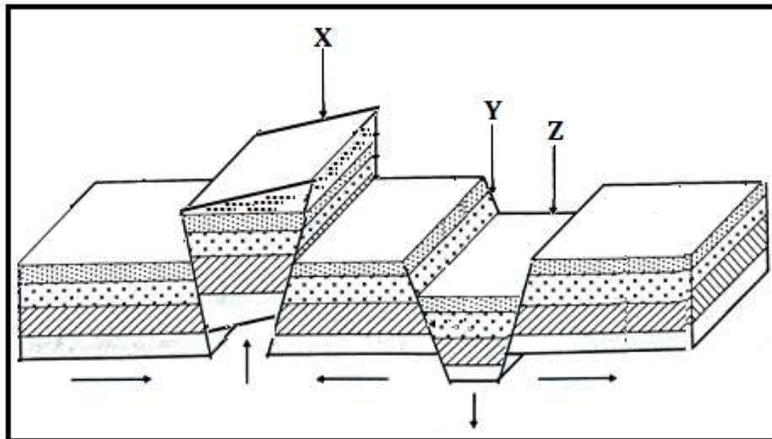
(d) Explain **three** human activities that cause climate change. (6 marks)

- *Burning fossil fuels such as coal and petroleum products increases the levels of Carbon (IV) Oxide which leads to global warming.*
- *Clearing large tracts of vegetation especially forests results in excessive buildup of Carbon (IV) Oxide.*
- *Industrialization emits chlorofluorocarbons that damage the ozone layer thus passage of deadly ultra violet radiations.*
- *Forest and grassland fires started by people add large quantities of Carbon (IV) Oxide In the atmosphere.*

8. (a) Define the term faulting. (2 marks)

Faulting is the process through which crustal rocks fracture due to tectonic forces.

(b) The diagram below represents some features formed due to faulting.



(i) Name the features marked X, Y and Z. (3 marks)

- *X - Tilt block*
- *Y - Escarpment/fault scarp*
- *Z - Rift valley*

(ii) Describe how Fold Mountains were formed. (6 marks)

- *Initially, earth movements led to the formation of an extensive depression called a geosyncline.*
- *The geosyncline was filled with water to form an extensive ocean.*
- *The surrounding continental land masses were intensely eroded.*
- *Sediments were transported by rivers and glacier and deposited into the geosyncline in layers.*
- *Over many years of deposition, thick layers developed whose weight caused the geosyncline to sink inwards.*
- *Sinking of the geosyncline triggered compressional forces that drew the surrounding continental land masses towards each other. Compression forces could have also been caused by convection currents in the mantle.*
- *The intense compressional forces squeezed the layers of sediments bending upwards to form Fold Mountains.*

(c) Explain **four** ways in which fold mountains influences human activities. (8 marks)

- *Windward slopes of most fold mountains receive high orographic rainfall which supports crop farming.*
- *Fold mountain scenery and snowcapped slopes are important tourist attractions with some slopes favouring winter sports such as skiing and ice skating, e.g Swiss Alps.*
- *Slopes of some Fold Mountains have valuable minerals formed during regional metamorphism thus are exploited and sold.*
- *Fold Mountains are vital water catchment areas due to melting of snow and high rainfall thus giving rise to some major rivers that supply water for many economic activities.*
- *The topography of some fold mountains discourages human settlement and agriculture due to ruggedness.*
- *Fold mountain ranges act as barriers to easy construction of transport lines/routes such as roads, railways and pipelines thus difficulties in accessing some regions,*
- *Leeward slopes of most fold mountains receive dry winds leading to arid conditions that hinders crop farming*

(d) Suppose you were to carry out a field study of faulting within a section of the Great Rift Valley in Kenya:

(i) State **three** reasons why they would prepare a route map. (3 marks)

- *To show the direction to be followed during the study.*
- *To help in estimating the distance to be covered during the study.*
- *To help in preparation of a work schedule.*
- *To assist in estimating the time required for the study.*
- *To help in deciding the technique of data collection.*

- (ii) State **three** disadvantages of using observation as a method of data collection. (3 marks)

- *Old data may be unavailable for viewing.*
- *It is an expensive method due to a lot of travelling.*
- *It is limited to the visually impaired people.*
- *It is limited to direct sources of information*

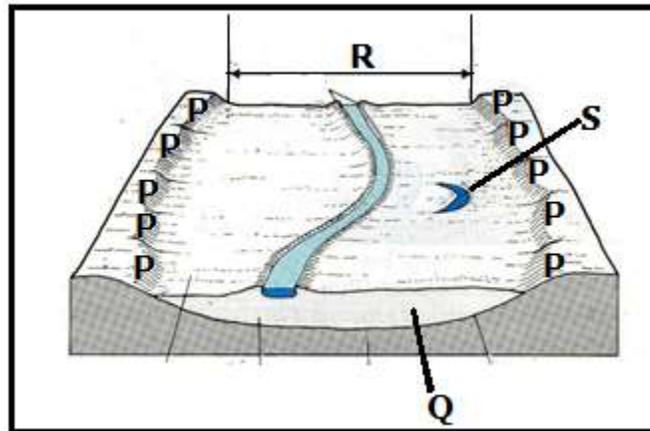
9. (a) Differentiate between a river's source and its mouth. (2 marks)

A river's mouth refers to a point where a river starts while mouth refers to a point where a river drains its water in a sea/lake/swamp.

- (b) State **five** characteristics of the upper stage of a river. (5 marks)

- *The main process is vertical erosion.*
- *The river has a deep valley with a V-shaped cross section.*
- *Head ward erosion is also evident.*
- *The river gradient is steep thus a fast velocity of flow.*
- *Potholes occur along the river bed in some parts.*
- *Waterfalls and rapids occur in some parts.*
- *Gorges occur in some places due to vertical erosion.*
- *Presence of interlocking spurs along some sections.*

- (c) The diagram below shows some features formed due to action of rivers.



- (i) Name the parts marked P, Q, R and S. (4 marks)

- *P - Bluffs*
- *Q - Alluvium*
- *R - Flood plain*
- *S - Ox bow lake*

(ii) Explain **four** causes of river deposition. (8 marks)

- **Reduction of the river gradient to very gentle reduces the river velocity causing it to drop its load.**
- **Reduction in the volume of river water which reduces its kinetic energy to transport materials.**
- **Occurrence of obstacles such as rock outcrops/rock boulders and swamp vegetation on the river bed which filters the load being transported.**
- **Widening of the river bed which spreads the water over a wide area thus reducing the capacity of the river to transport.**
- **Overloading of the river. If a river is transporting excessive load, the energy to transport such load is reduced leading to deposition.**
- **Presence of a calm water body such as a swamp, a lake or a sea immediately slows down the river flow velocity causing deposition to occur.**
- **Freezing of river water especially in temperate regions during winter causes the load to stand still till it is deposited during melting.**

(d) Explain **three** negative effects of rivers to people. (6 marks)

- **Some rivers cause massive flooding which destroys a lot of property and also may lead to loss of lives.**
- **Some rivers are very wide thus forming a barrier between communities due to inaccessibility.**
- **River water at times is a medium of spreading water borne diseases such as typhoid, cholera and amoebiosis.**
- **Some rivers are habitats to deadly creatures such as hippos and crocodiles which kill or injure people.**

10. (a) (i) What is glaciation? (2 marks)

Glaciation is the process through which moving ice erodes, transports and deposits materials on the earth's surface.

(ii) Give three types of glacier. (3 marks)

- **Cirque glacier.**
- **Valley glacier.**
- **Piedmont glacier.**

(b) Describe how ice moves under the following mechanisms:

(i) Basal slip (2 marks)

- **Weight of the ice makes ice layers beneath to melt slightly.**
- **This creates water which acts as lubricant between the ice and the rock surfaces.**
- **The force of gravity then causes the ice to slip and slide over the underlying rocks.**

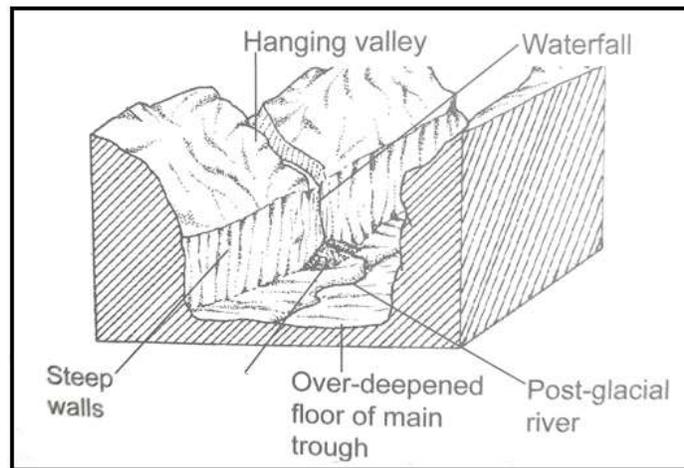
(ii) Extrusion flow (4 marks)

- **Ice accumulates in lowlands with very low gradient.**
- **Ice moving from upslope accumulates in lowland and builds to great thickness at the centre.**
- **This results in great pressure build up at the centre**
- **The resultant weight compresses the layers of ice beneath.**
- **This causes the ice to spread outwards to where there is low pressure thus resulting in extrusion flow**

(c) With the aid of a labelled diagram, describe how a glacial trough. (6 marks)

- ***Initially, there existed a river valley in a mountainous region.***
- ***The river valley had well developed interlocking spurs.***
- ***The entire river valley was covered with ice during the period of glaciation.***
- ***The river valley was eroded through plucking and abrasion.***

- ***The former interlocking spurs were trimmed through plucking and abrasion forming truncated spurs.***
- ***Plucking process straightened and widened the river valley while abrasion greatly it.***
- ***The eroded materials were deposited in lowlands.***
- ***When ice melted, a wide, flat bottomed valley with steep sides called a glacial trough was formed.***



(d) Explain **four** economic importance of glaciated upland features to human activities.

(8 marks)

- ***Waterfalls which form at hanging valleys have been harnessed for the generation of hydro – electric power.***
- ***Some cirque lakes/tarns offer suitable areas for trout fish farming example on the slopes of mount Kenya***
- ***Features such as cirques, tarns and waterfalls from hanging valleys provide unique sites that attract tourists who bring foreign exchange or income to an area.***
- ***Glaciated uplands discourage settlement and agriculture thus favouring the growth of softwood trees in some countries which promotes lumbering.***
- ***Some fiords form deep and well sheltered natural harbours and are also excellent fishing grounds.***
- ***Glaciated mountainous regions offer excellent sites for winter sports such as skiing and ice skating.***
- ***Alluvial fans within some glacial troughs are good sites for Agriculture because of fertile.***
- ***Some U-shaped valleys form channels for development of transport routes such as roads and railways thus enabling accessibility to some regions.***