

NAME _____ INDEX NO. _____

312/1
GEOGRAPHY
PAPER 1
JULY/AUGUST 2011
2 ¾ HOURS

NZAU/MUKAA FORM 4 CLUSTER EXAMS 2011
Kenya Certificate of Secondary Education
GEOGRAPHY
PAPER 1
2 ¾ HOURS

INSTRUCTIONS TO CANDIDATES

- (a) This paper has two sections A and B
- (b) Answer all the questions in section A. In section B answer question 6 and any other two questions
All answers must be written in the answer booklet/sheets provided

This paper consists of 3 printed pages

Turn Over

SECTION A

Answer all questions in this section

1. (a) Classify igneous rocks according to their chemical compositions (2mks)
(b) Identify four ways in which volcanicity has positively influenced human activities in Kenya (4mks)
2. Describe the Theory of Continental Drift (4mks)
3. (a) Explain how compressional forces can cause faulting (3mks)
(b) Using a diagram describe how a tear fault occurs (5mks)
4. (a) Give two dates in the year during which the number of hours of darkness is equal in both the north and the south poles (2mks)
(b) Why do the lengths of days and nights vary from one part of the earth to another (1mk)
5. Explain four ways in which lakes influence the natural environment (4mks)

SECTION B

Answer question 6 and any other TWO questions from this section

6. Study the map of Kericho 1:50000 provided and answer the following questions
 - (a) (i) What type of map is the Kericho sheet. (1mk)
(ii) Give the longitudinal extend of the area covered by the map (1mk)
(iii) Using the marginal information, give the magnetic variation of the area when the map extract was drawn (2mks)
(iv) Measure the distance of the dry weather road (E222) from the junction at grid reference 570643 to grid reference 529640 (2mks)
 - (b) Citing evidence from the map explain
 - (i) Three physical factors that have influenced the location of Kericho town (6mks)
 - (ii) Three factors that favour the establishment of tea estates in the area covered on the map (6mks)
 - (c) Describe the distribution of settlements in the area covered on the map (4mks)
 - (d) Identify three social amenities within Kericho municipality (3mks)
7. (a) (i) What are tectonic forces (1mk)
(ii) What are orogenic movements (2mks)
(b) Explain how earth movements are caused by the following factors
 - (i) Movement of magma within the earth's crust (2mks)
 - (ii) Gravitative pressure (3mks)
(c) Explain how convectional currents in the mantle can cause folding (6mks)
(d) Name the Fold Mountains in.
 - (i) Asia (1mk)
 - (ii) Africa (1mk)
 - (iii) South America (1mk)
 - (iv) North America (1mk)
(e) With the aid of a well labeled diagram describe how an overthrust fold is formed (7mks)

8. (a) (i) Differentiate weathering from mass wasting (2mks)
(ii) Name three factors that affect rate of weathering (3mks)
(b) (i) Describe how weathering breaks down rocks through exfoliation (6mks)
(ii) Describe the carbonation process of chemical weathering (4mks)
(c) (i) State three conditions that facilitate down wash (3mks)
(ii) Name any two forms of land slides (2mks)
(d) You intend to carry out a field study on weathering around your school
(i) Identify two methods you would use to collect the data (2mks)
(ii) State three advantages of studying weathering through field work (3mks)
9. (a) (i) Describe three ways through which wind transports its load (6mks)
(ii) State three factors that influence wind transportation in deserts (3mks)
(b) (i) Differentiate between a playa and a bajada (2mks)
(c) With the aid of a well labeled diagram describe how a Zeugen is formed (8mks)
(d) Supposing you were to carry out a field study in an arid area
(i) Identify two sampling techniques you could apply (2mks)
(ii) Why would sampling part of the area be necessary as you conduct the field study (4mks)
10. (a) Differentiate between weather and climate (2mks)
(b) Explain why temperatures decrease with increase in latitude (6mks)
(c) (i) What is green house effect (3mks)
(ii) Explain three effects of climate change on the environment (6mks)
(iii) State two ways through which climate change can result from human causes (2mks)
(d) Describe the climatic conditions experienced in the Kenya high lands (6mks)

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GEOGRAPHY
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PAPER 1
MARKING SCHEME**

1. Classify igneous rocks according to their chemical composition (2mks)
- Acidic
 - Intermediate
 - Basic
 - Ultra basic
- Any 2 x 1
- (b) Identify four ways in which volcanicity has positively influenced human activities in Kenya
- Volcanic rocks/trachytes and phonolites are used for building
 - Scenic beauty resulting from volcanic features e.g. Mt. Kenya/Longonot are tourist attractions
 - Volcanic rocks of the Kenya highlands have been weathered to produce fertile soils for agriculture
 - Steam jets at Olkaria are used for generating geothermal power
 - Gases associated with volcanic activities are mined in Kenya e.g. CO₂ at Kereita and at Esageri in Baringo. (gases used in industries for food preservation)
 - Volcanic mountains act as relief barriers to winds resulting in relief rainfall that encourage agriculture/forestry on the windward side
 - Good catchment areas which are sources of rivers that provide water for domestic and industrial use
- Any 4 x 1 4mks
2. Describe the Theory of Continental Drift 4mks
- The earth was originally one huge land mass/super continent known as pangea
 - Pangea was surrounded by a large sea/ a large super water body called panthalasa
 - Pangea split into two subcontinents to form two other land masses called laurasia and Gondwanaland
 - The two land masses were separated by a sea called Tethys
 - Further split occurred on the two land masses.
 - Laurasia broke to form the continents in the northern hemisphere
 - Gondwanaland broke to form the continents in the southern hemisphere
 - The continents gradually drifted to their present positions
- Any 4 x 1 = 4mks

3. (a) Explain how compressional forces can cause faulting. 3mks
- Tectonic forces push crustal rocks towards each other
 - The crustal rocks may fold/bend
 - Continued force of push cause tension/strain to develop at the top/on some sections of the fold
 - The strained sections may develop fractures resulting in faulting

Any 3 x 1 = 3mks

(Last point must be mentioned to score max 3. Other wise max 2)

- (b) Using a diagram describe how a tear fault occurs 5mks
- Crustal rock is subjected to two opposing parallel forces
 - Stress/strain develops on the crustal rock
 - A fault develops in the region of crustal rock experiencing maximum stress/strain
 - The land tears/breaks as forces push past each other
 - The two separated blocks slide past each other

Force Crustal rock Force √ D

Diagram 2

Faultline Shear fault √ D

Text – any 3 x 1

Diagram 2

Total 5mks

4. (a) Give two dates in the year during which the number of hours of darkness is equal in both the north and the south poles

- 21st March √
- 23rd September √

2mks

- (b) Why do the lengths of days and nights vary from one part of the earth to another

- Because of revolution of the earth/because of the apparent movement of the sun within the tropics
- Because the earth is tilted on its axis

Any 1 x 1 = 1mk

5. Explain four ways in which lakes influence the natural environment
- Are reservoirs in the water cycle through evaporation
 - Support biodiversity as they form the habitat for aquatic life
 - Contributes to convectional rainfall through evaporation
 - Regulation of surface drainage for example controlling flooding
 - Lowering temperature of surrounding areas through the lake breezes

Any 4 x 1 = 4mks

SECTION B

6. Study the map of Kericho 1:50,000 provided and answer the following questions

(a) (i) What type of map is the Kericho sheet 1mk

Topographical ✓

(ii) Give the longitudinal extent of the area covered by the map 1mk

- $35^{\circ} 15' E$ to $35^{\circ} 25' E / 10'$

(iii) Using the marginal information give the magnetic variation of the area when the map extract was drawn 2mks

$2^{\circ} 31'$

(iv) Measure the distance of the dry-weather road (E222) from the junction at grid reference 570643 to grid reference 529640 2mks

Give your answer in kilometers)

4.1km (± 0.1 range 4.0 – 4.2 km)

(b) Citing evidence from the map explain

(i) Three physical factors that have influenced the location of Kericho town

- Availability of water from the nearby rivers for domestic and industrial use
- High altitude (over 2000) which makes the area experience cool climate which makes the area ideal for settlement
- The gently sloping terrain/flat land which is ideal for settlement and construction of roads as shown on the contours being widely spaced

3 x 2 = 6mks

(ii) Three factors that favour the establishment of tea estates in the area covered by the map 6mks

- The high relief as evidenced by the contour range 1900-2400 metres above sea level modifies temperature making the area suitable for the growing of tea bushes
- The relatively undulating slopes as evidenced by the relatively widely spaced contours allow proper drainage of soils making it ideal for tea farming
- Presence of forests and many permanent rivers show that the area receives high rainfall which is suitable for tea farming
- The area has dense settlements which indicates availability of labour needed in tea farming
- The area is well-served by all weather roads which are needed for transportation of tea from the farms to the factories

(c) Describe the distribution of settlements in the area covered by the map

- There are few settlement/labour lines within the tea estates
- No settlement in the forests
- To the north and west of Kericho – Lumbwa road, the settlements form a dispersed pattern
- There are nucleated settlements in the markets/shopping centres/labour lines/villages
- Some areas with steep slopes and river valleys have few or no settlements
- Kericho town is the main settlement area/forms a large cluster of settlements/has dense settlements
- There are a few settlements in the tea estates in the south west

Any 5 x 1 = 5mks

(d) Identify three social amenities within Kericho municipality

- Schools
- Hospitals
- Colleges
- Race track

Any 3 x 1 = 3mks

7. (a) (i) What are tectonic forces

1mk

- Forces that originate and operate in the interior of the earth (causing earth movements)

(ii) What are orogenic movements

2mks

These are movements of rocks within the crust caused by tectonic forces that operate along a horizontal plane within the crustal rocks

2mks

(b) Explain how earth movements are caused by the following factors

(i) Movement of magma within the earth's crust

2mks

- Magma which is under high pressure intrudes crustal rocks through lines of weakness such as fractures, cracks or faults
- The high pressure causes the magma to push the crustal rocks to the sides and upwards/displaces crustal rocks horizontally and vertically and occupies space within the crustal rocks

2mks

(ii) Gravitational pressure

- Magma which is under high pressure pushes/breaks crustal rock and escapes to the earth's surface
- Voids are created beneath the earth's crust
- Force of gravity pulls rocks inwards so that they occupy the void.
- Underground chambers collapse causing movement of the crustal rock/sinking

Any 3 x 1

(c) Explain how convectional currents in the mantle can cause folding

6mks

- Convectional currents in the upper mantle move in a cyclic manner towards each other
- This causes a frictional drag on the magma rocks/continental crust
- Crustal rocks move towards each other/experience compressional forces
- The young sedimentary rock within the crustal rock bends/wrinkle into folds

Any 2 x 3

(d) Name one fold mountain in

(i) Asia – Himalayas

1mk

(ii) Africa – Atlas or Cape ranges

1mk

(iii) South America – The Andes

1mk

(iv) North America – Rocky Mountains or Appalachian mountains

(e) With the aid of a well labeled diagram describe how an overthrust fold is formed

- Crustal rocks are subjected to intense compressional forces
- Intense folding results in formation of an over fold
- Continued compressional force causes the fold to bend further into a recumbent fold
- Increased pressure causes the recumbent fold to fracture along the thrust plane
- More compressional force causes the upper part of the recumbent fold to slide forward along the thrust plane over the lower part
- The resultant feature is the overthrust fold

1 Over fold or D Recumbent fold D

2 Overthrust fold D Thrust plane

Last point must be mentioned to score max 5 mks, otherwise a max 4

Text any 5 }
Dg any 2 } 7

8. (a) (i) Differentiate weathering from mass wasting

Weathering is the breaking down and decomposition of rock at or near the earth's surface through chemical or physical processes in situ while mass wasting is the down slope movement of weathered material under the influence of gravity. ✓✓

2mks

(ii) Name three factors that affect rate of weathering

- Nature of rock
- Climate
- Angle of slope
- Time
- Human activities
- Plants and animals

Any 3 x 1

(b) (i) Describe how weathering breaks down rocks through exfoliation

Exfoliation occurs in hot climates

- During the day the rock surface is heated rapidly, (only little heat is transferred to the inner layer as rock is a poor conductor of heat)
- The outer layer of the rock expands more than the inner layer
- At night the outer layer cools and contracts
- A repeat of the differential expansion and contraction causes strain between the two layers
- After some time the outer shell bulges /curves outwards
- With time the outer shell develops cracks and shells/peels off leaving behind a rounded rock mass called an exfoliation dome

6mks

- (ii) Describe the carbonation process of chemical weathering
- Rain water dissolves carbon dioxide to form a weak carbonic acid
 - The acid rain falls on a well jointed limestone rock/dolomite rock
 - This rain water dissolves calcium/magnesium from the limestone rock (along the joints)
 - The soluble calcium hydrogen carbonate is removed from the limestone rock and only a thin insoluble residue is left behind

Any 4 x 1

- (c) (i) State three conditions that facilitate downwash

- Presence of heavy rainfall
- Presence of bare surface
- Presence of a sloping land
- Presence of a deep weathered rock material

Any 3 x 1

- (ii) Name any TWO forms of landslides

- Debris slide
- Slump
- Rockslide
- Rock fall
- Debris fall
- Avalanche

Any 2 x 1

- (d) You intend to carry out a field study on weathering around your school

- (i) Identify two methods you would use to collect the data

- Observation
- Collecting samples
- Taking photographs
- Interviewing
- Carrying out experiments

Any 2 x 1

- (ii) State three advantages of studying weathering through field work

- Enables one to get first hand information
- Promotes application of acquired knowledge
- Promotes application of practical skills
- Creates awareness of one's environment
- Enhances memory
- Makes learning weathering more real and interesting
- One is able to develop skills of data analysis

Any 3 x 1

9. (a) (i) Describe three ways through which wind transports its load

Suspension. The fine and light materials are lifted off the ground and are carried air borne/in the wind currents.

Saltation. Medium size and large fragments are lifted off the ground by wind eddies but they fallback/bounce back on the ground and are lifted again.

Surface creep. Heavy materials like small stones and pebbles are pushed by wind currents along the ground – rolled on the ground.

3 x 2 = 6mks

- (ii) State three factors that influence wind transportation in deserts

- Strength and speed of the wind
- Presence or absence of obstacles in the path of the wind
- Nature of the load the wind is carrying
- Presence or absence of vegetation cover over the land
- Weather changes

any 3 x 1

(b) (i) Differentiate between a playa and a bajada

A playa is an inland drainage basin/small lake in an inland basin which is found in an arid or semi arid area while Bajada is an accumulation of alluvial material made from the coalescence of adjacent alluvial fans in a desert basin. ✓✓ 2mks

(c) With the aid of a well labeled diagram describe how a Zeugen is formed

- Formed in a desert area where there are rock outcrops made of alternating horizontal layers of hard and soft rock
- The top hard layer of rock has cracks or is well jointed/ weathering or temperature changes cause cracks on the top hard rock
- Weathering process opens up the joints
- Opened up joints/cracks provide room for abrasion which widen and deepen the cracks till the soft underlying rock is reached
- Wind deflation blows away the loose broken material
- Wind abrasion and deflation vigorously erode the soft rock layer to form furrows which undercut the top resistant layer
- The hard resistant rock forms ridges separated by furrows
- The ridge is the Zeugen

Diagram 1

Joints/cracks ✓½ Hard rock ✓½ Soft rock

Diagram 2

Soft rock (less resistant) Furrow ✓½ Zeugens ✓½ Hard rock (resistant)

Zeugens

Text any 6 x 1 = 6 }
Diagram 2 2 } 8

Last point must be mentioned to score max 6 otherwise 5

(d) Supposing you were to carry out a field study in an arid area

(i) Identify two sampling techniques you could apply

- Random
- Systematic
- Stratified

Any 2 x 1 = 2mks

(ii) Why would sampling part of the area be necessary as you conduct the field study

- Be able to do a detailed research
- Reduce the cost of the study
- Save time
- Its less tiring
- Reduce chances of biasness
- The area would be too large to cover in a study

Any 4 x 1 = 4mks

10. (a) Differentiate between weather and climate

Weather is the atmospheric condition of a place observed over a short period of time while

Climate is the average weather condition of a place observed over a long period of time usually 30 to 35 years.

(b) Explain why temperatures decrease with increase in latitude

- Temperatures decrease from the equator towards the poles because the equatorial region sun's rays hit the ground at almost right angle throughout the year. This causes high concentration of insolation per unit area of land.
- In the high latitudes, the rays strike the ground at a low angle. The insolation is spread out over a wide area and thus heat generated per unit area.
- Rays pass over a shorter distance at the equator and a much longer distance at the higher latitudes
- At the Equator the shorter distance exposes the rays to less interference by obstacles and (absorption, scattering reflection) so more solar energy reaches the earth
- At the poles the solar energy covers a longer distance and is therefore exposed to more obstacles and consequently very little of the insolation reaches the ground

Any 3 x 2 = 6mks

(c) (i) What is green house effect

This is increase in temperature in the lower parts of the atmosphere caused by increase in carbon dioxide in the earth.√

The carbon dioxide forms a carbon cloud which allow the short wave radiation from the sun to pass√ but block the long wave radiation from passing to the higher parts of the atmosphere√

This results in rise in temperature in the lower parts of the atmosphere as the heat energy is blocked√ in

any 3 x 1

(ii) Explain three effects of climate change on the physical environment

1. Global warming/increased temperature will lead to

- Increased rainfall/melting of ice caps/glaciers
- Rise in sea level
- High evaporation
- Abnormal growth of plants

2. Change in rainfall pattern will lead to

- Flooding
- Rise in sea level
- Drought
- Soil erosion by water

3. Change in seasonal pattern

- Severe winters/short summers
- Flooding
- Drought
- Shifting of vegetation zones/some plants and animals may get extinct

4. Change in wind / air mass patterns

- Some winds like cyclones become move frequent
- High sea waves
- Flooding
- Wind erosion

Both change and effect must be mentioned for it to score

Any 3 x 2 = 6mks

(iii) State two ways through which climate change can result from human causes

- Burning fossil fuels
- Forest and grassland fires/Deforestation
- Industrial emissions

Any 2 x 1

(d) Describe the climatic conditions experienced in the Kenya highlands

- Temperature range between 17 and 24⁰C
- Small annual temperature range 3⁰C – 5⁰C
- Days are warm while nights are cool (sometimes chilly)
- June to August are the coolest months while the rest of the year is generally warm
- Receives relief rainfall caused by S.E trade winds
- Rainfall higher on the windward side than the leeward slope of the highland
- Double maxima rainfall in highlands East of the rift valley and a single maxima in highlands to the west of the rift valley
- Long rains fall in the months March to may and short rains fall between September and December in the highlands to the east./Peak between may and August in the highlands to the west of the rift valley
- It rains through out the year

Any 6 x 1 = 6mks

NAME _____ INDEX NO. _____

312/2
GEOGRAPHY
PAPER 2
JULY/AUGUST 2011
2 ¾ HOURS

NZAU/MUKAA FORM 4 CLUSTER EXAMINATIONS 2011
Kenya Certificate of Secondary Education
GEOGRAPHY
PAPER 2
2 ¾ HOURS

INSTRUCTIONS TO CANDIDATES

This paper has two sections A and B
Answer all the questions in section A.
In section B answer question 6 and any other two questions.
Write all your answers in the booklet provided

This paper consists of 4 printed pages

Turn Over

SECTION A
Answer all the questions in this section

1. (a) State two handicaps facing beef farmers in Kenya (2mks)
(b) Explain three geographical conditions favouring beef production in Argentina (3mks)
2. (a) State the three major classifications of industries (3mks)
(b) State measures taken by the government of Kenya to encourage industrialization (3mks)
3. (a) What is urbanization (2mks)
(b) State three factors that have led to development of Mombasa as a major sea port in the region (3mks)
4. (a) Name two conditions that are necessary for the formation of petroleum (2mks)
(b) List two ways in which open cast mining affects the environment (2mks)
5. (a) What has hindered development of solar energy in Kenya (2mks)
(b) Give three environmental impacts of developing Geothermal energy in Kenya (3mks)

SECTION B
Answer question 6 and any other two questions from this section

6. The table below shows the number of passengers that used railway transport in selected countries in 1966 and 1977.
Use it to answer questions (a) and (b)

COUNTRY	PASSENGERS IN MILLION	
	1966	1977
Canada	4,200	3,000
U.S.A	27,700	16,600
Argentina	14,100	12,000
India	96,800	163,800
Japan	258,400	311,900

- (a) (i) Using a scale of 1cm to represent 20,000 million passengers, draw comparative bar graphs based on the data above (9mks)
(ii) State two advantages of using bar graphs in presenting data (2mks)
- (b) Calculate the percentage decline in railway passenger transport in Canada between 1966 and 1977 (2mks)
- (c) Explain why there are few railway links among African countries (6mks)
- (d) Explain three ways through which Kenya has benefited from her international airports (6mks)
7. (a) (i) identify three types of natural forests (3mks)
(ii) List three factors that have influenced the distribution and types of natural forests (3mks)
(b) Explain three problems that face forestry in Canada (6mks)
(c) State four factors that favour the development of softwoods in Kenya (4mks)

- (d) (i) Give five reasons why afforestation is encouraged in Kenya (5mks)
(ii) Explain the importance of forest management and conservation (4mks)
8. (a) Draw a sketch map of Ghana. On the sketch map (1mk)
(i) Shade the cocoa growing area (1mk)
(ii) Mark and name Kumasi town (1mk)
- (b) (i) Outline the stages involved in the processing of cocoa from harvesting to the time it is ready for export (6mks)
(ii) List four problems experienced by cocoa farmers in Ghana (4mks)
- (c) Describe four physical conditions necessary for growing of oil palm (8mks)
- (d) List four uses of oil palm (4mks)
9. Study the two population pyramids and answer the questions that follow

- (a) (i) Name the part labeled X and Y in figure 'F'. (2mks)
(ii) Citing specific reasons, identify the population pyramid above representing a developed country (6mks)
- (b) State five physical factors that influence the distribution of population in East Africa (5mks)
- (c) Explain four negative effects of rapid population growth in Kenya (8mks)
- (d) Apart from tribal clashes, state four causes of internal migrations in Kenya (4mks)
10. (a) (i) Apart from water and air pollution name two other types of pollution (2mks)
(ii) Identify three ways through which water is polluted (3mks)
(iii) Explain three effects of air pollution on the environment (6mks)
- (b) (i) Explain three factors that lead to frequent flooding in the lake region of Kenya (6mks)
(ii) Explain two ways through which floods are controlled in the lake region of Kenya (4mks)
- (c) State four effects of wind as an environmental hazard in Kenya (4mks)

312/2
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MARKING SCHEME

1. (a) Handcaps facing beef farmers in Kenya
- Poor quality breeds √resulting to poor prices.
 - Limited local market √in the ranching areas with low purchasing power
 - Lack of enough capital √to invest properly in the industry
 - Poor infrastructural √facilities in ranching zones
 - Shortage of water √and pasture during dry season
 - Attack from various diseases √ such as rinderpest, east coast fever, foot and mouth disease, Rift valley fever etc.
- 2 x 1 = 2mks
- (b) Three geographical conditions favouring beef farming in Argentina
- Extensive rolling grasslands √at the foot of the Andes montains allow free grazing.
 - The pamps in Argentina receive moderate rainfall √ which ensures pasture supply and water
 - Moderate temperatures √ ensure continuous growth of pasture through out the year.
 - Fertile soils √ from the slopes of Andes mountains give rise to healthy natural grass for feeding animals
- 3 x 1 = 3mks
2. (a) Major classification of industries
- Primary industries √/extracting industries – concerned with exploitation and utilization of natural resources
 - Secondary industries √/manufacturing industries – turn or convert raw materials into manufactured goods
 - Tertiary industries √ / service industries – offer services to people
- 1 x 3 = 3
- (b) Measures taken by the government to encourage industrialization
- Establish industrial finance institutions to offer loans √
 - Provision of training facilities √ at all levels
 - Establish Kenya Industrial Estate (KIE) to promote small scale industries √
 - Setting up export processing zones √
 - Supply all the necessary infrastructure √
 - Establish Kenya bureau of standards to control quality for goods √
 - Encourage and promote foreign investment in industries √
- Any 3 x 1 = 3

This paper consists of 9 printed pages

Turn Over

3. (a) Urbanization
- A process where an increasing population in a country settles in towns√√
 - A process by which population is transferred from rural based life styles√√
 - Growth of town in number and size√√
- Any 1 x 2 = 2
- (b) Factor that led to development of Mombasa as a major sea port
- Deep sheltered harbour√
 - Fine weather throughout √the year
 - Large hinterland√
 - Large volume of water√
 - It is located at a straight point on the east√
 - Well linked by road, rail and air√
 - Early settlement by Arabs√

Any 3 x 1 = 3

4. (a) Conditions necessary for the formation of petroleum
- Presence of organic remains√/fossils
 - Presence of pressure√ to compress the organic remains
 - Presence of sedimentary√ rocks
 - Presence of non-porous rocks√/cap rock

2 x 1 = 2mks

- (b) Ways in which open –cast affects the environment

- It leaves behind ugly√ land/dereliction
- It leads to soil erosion√
- Water collects in craters forming breeding ground for mosquitoes√/pests
- Land losses productivity√
- Accidents may occur √e.g. falling into pits
- Destruction of biodiversity√ (plants and animals)
- Dumping of heaps or rock waste litters the surface√
- It causes water, air and noise pollution√

3 x 1 = 3mks

5. (a) Hindrance to development of solar energy in Kenya
- It is expensive to install√, requires panels and batteries
 - It is hard to store the energy for long due to inadequate technology√
 - Amount of energy produced in a day is very unpredictable√ and undependable
 - It has limited use√/cannot run heavy machinery

Any 2 x 1 = 2mks

- (b) Environmental impact of developing geothermal energy in Kenya

- Gases release (sulphur dioxide) leads to air pollution√
- It can lead to land subsidence where wells have been sunk√
- A lot of noise pollution as steam comes out of the ground√

3 x 1 = 3

6.

Country	Passenger in millions	
	1996	1997
Canada	4,200	3,000
U.S.A	27,700	16,600
Argentina	14,100	12,000
India	96,800	163,800
Japan	258,400	311,900

(a) (i) Using a scale of 1cm represents 20,000 million passengers, draw comparative bar graphs based on the data above

PASSENGER TRANSPORT BY RAILWAY IN SELECTED COUNTRIES

Passengers in '000s COUNTRIES CANADA USA ARGENTINA INDIA JAPAN

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320

Pass/km 1966 Pass/km 1977 Title 1mk X – axis 1mk Y – axis – 1mk Key 1mk Each country 1mk

(ii) Advantages of using bar graphs to represent data

- They are easy to construct✓
- They are easy to compare✓
- They depict data more accurately✓
- They give clear visual impression✓
- They are easy to interpret✓
- They are easy to read✓

Any 2 x 1 = 2

(b) Percentage decline in railway passenger transport between 1966 and 1977 in Canada

$$\begin{array}{r} 4,200 \\ - 3,000 \\ \hline 1,200 \end{array} \quad \frac{1,200}{4,200} \times 100 = 28.57 \% \quad \checkmark \text{ or } 28 \frac{4}{7} \%$$

2 x 1 = 2

© Reasons why there are few railway links among African Countries

- African countries were administered by different colonial government who constructed rail lines only within the areas of their jurisdiction✓✓
- Many African countries have political differences ✓✓which lead to mistrust and hostility. This works against an effort to undertake railway construction jointly
- African countries have railways of different gauges which makes it difficult for them to be connected✓✓
- There is little intertrade among African countries✓✓. This does not warrant construction of railways to transport bulky goods
- African countries lack sufficient capital to establish railways✓✓ which rely mainly on imported goods and raw materials
- Mountainous landscape/swampy terrain have hindered the development of rails to link ✓✓the countries

Any 3 x 2 = 6mks

(d) Ways through which Kenya has benefited from her international airports

- Establishment of airports has created employment opportunities✓✓ thus solving the problem of unemployment/improving the living standards of the employees
- It has promoted tourism by providing direct links with the tourists countries✓✓ of origin
- It has promoted horticultural products by providing efficient means of transport✓✓ to the foreign markets
- It helps to generate revenues through taxation of goods and passengers✓✓ at the airport as well as foreign exchange earning
- It has promoted international understanding by enabling Kenyans to interact with people from other ✓✓parts of the world
- It has promoted international trade by enabling business people to travel to and from Kenya easily.✓✓

Any 3 x 2 = 6mks

7. (a) (i) Three types of natural forests

- Tropical hardwood✓ forests
- Temperate hardwood✓ forests
- Coniferous forests✓

3 x 1 = 3mks

(ii) Factors that influence the distribution and type of natural forests

- Climate✓
- Soils✓
- Altitude✓
- Human activities✓

Any 3 x 1 = 3

(b) Three problems that face forestry in Canada

- Accidental fires that destroy large tracts and reducing the area under forests√√
- The cold climate leads to trees taking long periods to mature which delays the harvesting period√√
- The rugged landscape especially in the mountainous areas hinders smooth exploitation of forests√√
- The Northern part is inaccessible in winter due to very cold climatic conditions√√

Any 3 x 2 = 6mks

(c) Factors that favour the development of softwood in Kenya

- The cold climate that enables the conifers to flourish.√ The forests are located on the Kenya highlands, Mt Kenya Mt. Elgon and Nyandarua ranges areas of cool climates
- The highlands receive high rainfall amounts of over 1000mm and the evaporation rate is low√
- Some parts of the highlands are steep and rugged which make forestry a suitable alternative√ as the terrain discourages settlement and agriculture.
- The high demand for timber and wood products encourage tree planting√
- The trees grow quite fast due to the cool or warm temperatures√
- Presence of deep fertile soils in the Kenya highlands has made the trees do well in these areas√

Any 4 x 1 = 4

(d) (i) Reasons why afforestation is encouraged in Kenya

- To ensure continued supply of wood fuel√, timber and raw materials for pulp and paper industry
- To protect water catchment areas√ as many forests are sources of rivers
- To protect soil from erosion,√ forests planted on hilly areas provide cover that protects the soil from direct rain drops and reduce speed of run off hence reducing soil erosion
- To create a microclimate.√ Forests through transpiration contribute to formation of clouds in the hydrological cycle which leads to high rainfall in forested areas
- To create scenic beauty.√ Forests improve the aesthetic value or appearance of a place with their diverse trees and other vegetation as opposed to bare land
- To expand the habitat for wildlife√/to conserve wildlife forests are home to many animals for example elephants and monkeys which are a tourist attraction that earn a country foreign exchange
- To reduce importation of forest products√ and thus save foreign exchange
- To create employment √opportunities

Any 5 x 1 = 5mks

(ii) Importance of forest management and conservation

- To protect the natural environment in such ways as to maintain the water catchment areas, control soil erosion and floods as well as protecting the natural habitats of flora and fauna√
- To ensure a continued and steady supply of wood for fuel, construction and feeds for animals√
- To ensure a continued steady supply of raw materials for the wood related industries√
- For genetic reasons. Forests form an important centre for scientific research√
- For future generations forests are not only useful to us but to √the other generations to come.

Any 4 x 1 = 4mks

8. (a) GHANA
Kumasi Cocoa growing area
Map outline – 1mk Kumasi – 1mk Cocoa growing area -1mk 3mks

(b) (i) Stages involved in the processing of cocoa from harvesting to export

- Pods are harvested using long sharp knives
- Pods are collected and piled in a central place
- Pods are split open with a sharp knife and beans scouped out by hand
- Beans are put in heaps on mats and covered with banana leaves
- Beans are allowed to ferment for 5-6 days during which the juicy pulp drains away
- Fermented beans are washed/cleaned
- Beans are spread on tables covered with mats to dry in the hot sun
- Beans are turned frequently as they dry and slowly they turn brown
- Dry beans are put in sacks and sent to the harvest buying centre
- At the centre the beans are weighed and graded ready for export

Sequence a must

6 x 1 = 6mks

(ii) Problems experienced by cocoa farmers in Ghana

- Pests and diseases which destroy the crop
- Fluctuation of world market prices which discourage farmers
- Low prices paid for the crop discourage the farmers
- The strong harmattan winds destroy the crop
- Inadequate labour during harvesting
- Poor means of transport make it difficult for the farmers to deliver the crop

Any 4 x 1 = 4mks

(c) Physical conditions necessary for growing of oil palm

- High temperatures throughout the year between 21^o-30^oC
- High rainfall/1000-2100mm evenly distributed throughout the years
- Deep, fertile well drained soils
- Low altitude of up to 700m
- Seedlings must be sheltered from strong winds
- High relative humidity

Any 4 x 2 = 8mks

(d) Uses of oil palm

- Leaves are used for roofing
- Shells and fibres are used for fuel
- Leaves are used for making baskets and brooms

- The stems are used as building poles✓
- Sap from the stem is used for making wine✓
- The fruit is used for making oil/cosmetics/cooking oil/soap/candles✓
- Animal feeds/fertilizers are made from crushed nuts✓

Any 4 x 1 = 4mks

9. (a) (i) Parts labeled X and Y in diagram F

X – is male

1mk

Y – Is age group/age cohorts

1mk

(ii) Citing specific reasons, identify the population pyramid that represents a developed country

Figure G is for the developed country. The reasons are as follows

- Birth rate is low as shown by the short bars at the base✓
- Death rate is low as the bars are becoming longer with increase in age✓
- There is low dependency ratio as the bars are longer between ages 20 and 64 years✓
- Life expectancy is high as the bars are wide at the top✓
- Population growth is low as both birth rate and death rate are low.✓

Any 6 x 1 = 6mks

(b) Five physical factors that influence the distribution of population in East Africa 5mks

- Places with high, well distributed and reliable rainfall have dense population than those with hostile climate✓
- Areas with extreme temperatures have nil population whereas areas with cool to warm temperatures have dense population✓
- Poorly drained/low lying plains which are prone to flooding have low population✓
- Areas with fertile soils have dense population while those areas with poor soils have sparse population✓
- Gently sloping and flat lands have dense population while rugged/steep slopes have sparse population✓
- Water sources such as lakes and rivers attract population than areas with scarce water sources✓
- Some areas are sparsely populated due to the incidence of pests (tsetse flies) and diseases that poses danger to human and animal lives✓

Any 5 x 1 = 5mks

(c) Explain four negative effects of rapid population growth in Kenya 8mks

- High dependency✓✓ ratio due to high percentage of unemployed youths
- Land fragmentation ✓✓leads to small portions which are uneconomical to farm
- Inadequate housing ✓✓in urban areas thus results to developments of slums
- Pressure on available social amenities e.g. overcrowding in schools, hospitals public transport✓✓
- Unemployment since employment opportunities do not increase at the same rate as population✓
- Environmental degradation due to demand for energy (wood fuel) and more land for settlement thus depletion of forests✓
- Inadequate food supply because small parcels of land cannot produce sufficient food to feed growing population✓
- High rate of crime due to increased unemployment for survival✓

Any 4 x 2 = 8mks

(d) Apart from tribal clashes, state four causes of internal migrations in Kenya

- Natural calamities like floods, famine or drought causes migration✓
- Unemployment forces people to migrate to areas with employment ✓opportunities
- Land inheritance to settle on a family land✓
- Population pressure on land leads to the landlessness thus migration✓
- Attractions to towns due to improved social facilities causes migration✓
- Establishment of large plantations/factories/irrigation schemes displaces people✓

4 x 1 = 4mks

10. (a) (i) Types of pollution apart from water and air pollution

- Land pollution✓/soil pollution
- Noise pollution✓/sound pollution
- Thermal pollution✓
- Radiation pollution✓

Any 3 x 1 = 3mks

(ii) Ways through which water is polluted

- Discharge of industrial waste✓ into water bodies
- Disposal of domestic waste✓ into water bodies
- Discharge of agricultural chemicals✓ into rivers/lakes by rainwater
- Abuse of water bodies by human beings✓ e.g. bathing and washing
- By natural causes e.g. soil erosion✓
- Oil spillage and dumping of nuclear waste✓

Any 3 x 1 = 3mks

(iii) Effects of air pollution in the environment in the environment

- Gases emitted from some industries contain substances which corrode roofs of houses and metallic structures✓✓
- Some gases from factories dissolve in water to form acidic rain which may kill animals or wither vegetation✓✓
- Inhalation of soot and smoke particles lead to discomfort and irritation of the respiratory system✓✓
- Gases emitted from factories may contain poisonous substances which may lead to poor health or death when inhaled✓✓
- Gases such as excess carbon dioxide increases the temperatures affecting the climate of the affected area✓✓
- Smoke and smog reduces visibility which may lead to motor accidents✓✓
- Dust particles that settle on the leaves inhibit photosynthesis✓✓

Any 3 x 2 = 6mks

(b) (i) Factors lead to frequent flooding in the lake region

- Most of the land is lowly lying which causes the rainwater to spread over a wide area✓✓
- The adjacent highlands receive torrential rainfall which releases large volumes of water resulting to rivers overflowing their banks✓✓
- Silt has filled the river beds making them shallow thus spilling their waters over banks✓✓
- The rivers are at their old stage thus they have wide flood plains which allows water to spread over large areas✓✓
- The area has black cotton soil which is non-porous which when soaks up allows water to flow and spread on the surface✓✓
- The heavy rainfall received in the area is discharged into lake Victoria making its level to rise thus flooding the adjacent lowlands✓✓

Any 3 x 2 = 6mks

(ii) Ways through which floods are controlled in the lake region

- Dams have been constructed across the rivers to check their velocity hence reducing the incidence✓✓ of flooding
- Construction of dykes/artificial levels to restrict the several rivers within their✓✓ channels
- Diversion channels have been constructed in the flood plain and water used for irrigation thus reducing the effect of the excess water✓✓

Any 2 x 2 = 4

(c) Effects of wind as an environmental hazard in Kenya

- Strong winds destroy crops and trees√
- Winds blow off roofs of houses√
- Winds cause strong sea storms and lead to boats capsizing √
- Winds cause soil erosion√
- Winds spread air-borne diseases√
- Winds spread bush fires√
- Winds cause destruction of communication and transport lines√

Any 4 x 1 = 4

**312/1
GEOGRAPHY
PAPER 1
JULY/AUGUST 2011**

**NZAU/MUKAA FORM 4 CLUSTER EXAMINATIONS 2011
Kenya Certificate of Secondary Education
GEOGRAPHY
PAPER 1**

CONFIDENTIAL Q 6 IN CASE THE KERICHO MAP IS NOT AVAILABLE

Areas to be tested

1. Location of places
2. Marginal information
3. Practical skill e.g. measure distance, bearing etc
4. Application of knowledge on factors and influence of factors on economic activities
5. Settlement distribution/patterns
6. Identifying social amenities/functions of an area (urban)