Geo II, 2008 SECTION A 55 MARKS.

Answer all the questions

1. Explain the mechanism of monsoon wind and their influence on the climate of Rwanda.

Characteristics of Monsoon

- Seasonal winds we involves Africa and Asia plus Australia.
- When the Sun is overhead the tropical of Capricon, the Northern hemisphere develops high pressure. Winds blow from Asia across the equatorial region to Australia with a more intense low pressure.
- While other wind blow from punjab region towards the equator. But by crossing the equator, these winds are diverted by the rotational Movement of the earth eastwards. They become humid on the Indian Ocean and give rains in Indonesia and the Northern parts of Australia. (2½)
- When the Sun is overhead the tropical of Cancer, the northern hemisphere is hotter than the Southern hemisphere and the Chain of Himalayas becomes warmer more quickly than the oceans.
- The continental air rises to give place to the humid Oceanic air. Winds blows from Australia across the equator towards China, Japan and S.E Asia and releases its moisture in form of rain. (2½)
- Other wind blow from the equatorial low pressure to a more intense low pressure region of punjab. It is the monsoon of Summer.

T=/05/

Consequences of monsoon winds to Rwandan Climate:

- In January and February the Comparatively dry and cold air masses enter the whole of eastern of Africa pushed by the winter Monsoon from Himalayas and Arabia preventing rainfalls in Rwanda. (2½)

- In June, July & August the Trade winds from the South east full of moisture in the Indian Ocean reach the Coast of Africa but it doesnot get indoors. It is diverted northward (It is absorbed in a way by the Monsoon of Summer which blows on to India. therefore there is rain in Rwanda when none of the monsoon fluxes is active. (2½)

Irregularity of raining season is caused by a mixture of local winds with the monsoon. T= /05/

2. Rainfall and watercourses are Unequally distributed in Rwanda.

a) Describe rain fall distribution in Rwanda.
- the distribution of rainfall largely depends on the altitude ie rainfall increases with altitude.
- Eastern plain receives low rainfall ie less than 1000mm like Umutara, Bugesera, (Bugarama west of Congo Nile). (02)
- the Central plateau receives Moderate rainfall (1000-1250mm) e.g Kigali, Byumba (02)
- North and West of Rwanda received high rainfall above 1250mm
- There are two rain seasons ie Ihumba (March-May) and Umuhindo (Sept-Dec). (02)

1x1+1+1+1+1+1T=/06/

b) Give the probable causes of great changes in rainfall experienced recently in Rwanda.
- Influence of winds (circulation of air Masses).
- Global warming
- Air pollution.
- Deforestation
- Bush burning
- Swamp reclamation

any 2x1

1x1 T=/05/

c) Explain the low rate of water flow in the Birunga region whereas it is the one of the best watered regions of Rwanda.
- High permeability of rocks - Deviation of rivers.
- steep slopes

any 2x1

- Existance of vegetation cover. 1x1 T=/02/

3.) From the end of the Precambrian Period the African block was subjected to tectonic Movements which Shook Oriental Africa especially in the Cretaceous period and Tertiary eras.

a) What was the impact of these tectonic movements on the Rwandan base rock?

- Formation of the rift valley.
- The uplift of the Congo Nile crest.
- The appearance of huge staircase of fault * which makes the peneplain uneven into two elements (the Central tray and the low Eastern lands [Lower floor]).
- Warping
- Vulcanic effusions on the field of faults in the South West of the Country.
- The volcanic activity in the North west of the Country (Birunga). any 5x1 T=/05/

b) Explain the impact of block faulting on the structure of drainage in Rwanda.

- Formation of fault lakes
- Fault guided rivers e.g Rusizi
- River Reversal e.g R. Base, R. Akagera.
- River Capture e.g. Nyabarongo captured Nyabugogo + Nyakungu
- Formation of water falls and rapids.
- * Formation of barrier lakes. any 5x1 1x1 x1 x1 x1 T=/05/

4. Pupils referring to the notion of overpopulation identify the effects of overpopulation in Rwanda.

- Shortage of arable land.
- Rural exodus (Encourage migrations)
- Housing problems
- Shortage of pasture
- Deforestation
- Unemployment
- Famine
- Pollution

- Encroachment on marginal land.
- Congestion
- Soil erosion
- High crime rate
- poverty
- prostitution
- Street kids
- Pressure on infrastructure like roads, schools, hospitals, water etc.
- Political instability.
- Brain drain
- Over exploitation of natural resources.
- Puts stress on government expenditure.

Positive effects:
- Increased market due to high demand
- Increased labour force.
- Source of security for the country.
- "Source of labour force".
- High population encourages inovations and inventions
- Increased tax base. any 10x1

T = /10/

5. Study these diagrams of volcanic relief and answer the questions below.

A - Is a dyke (01) / volcanic plug / volcanic neck.
formed when magma solidifies in a vertical fissure/vent (Hence it is a vertically inclined intrusive feature). Explanation (02)
While volcanic plug and volcanic neck are formed when a dyke is exposed to the surface by erosion.

B - Batholith (01)
It is a huge granitic rock formed when mass magma solidifies deep below the earth's crust. Exp. (02)

(5)

c. Laccolith (1)

It is a mushroom-like shaped feature formed when magma solidifies in a basin like feature

1x1 x1 x1 x1 x1 T= 105

b) Explain the importance of Volcances for humankind:

- formation of fertile soil
- Encourages formation of water bodies.
- Climate modification
- Encourages development of fishing
- Modification of climate like volcanic mountains
- Sites for construction of communication boosters.
- provision of construction materials.
- Sites for scientific research.
- Source of Geo-thermal energy.
- Water catchment areas any 5x1
- Source of thermic water used as medicine.
- Act as political boundaries.

1x1 x1 x1 x1 x1 x1 T= 105

- Hinders development of infrastructure like roads.
- Hideouts for rebels
- Landslides and soil erosion
- Support aridity.
- Loss of lives and property.
- Discourages settlement.

5

6) According to the theory of Continental drift, the earth is divided into several blocks. Explain the various movements of continental blocks when they collide and the consequences of the collision.

- Plate collision is due to convergence (when Continental blocks move towards each other from

opposite directions) When it occurs, there can be:
- Subduction: The Oceanic block which is denser sinks under the continental block.
- Collision. When two blocks of the same density come into contact, there is friction of blocks on each other. None of them sinks under the other.

The consequences of these movements.
- Formation of mountains
- occurance of vulcanism
- occurance of earthquakes.
- Transformation faults occur caused by overiding
- formation of geo-synclines
- Subduction

ang 3×1

1×1×1×1×1×1 T=/05/

Section B (30 marks) ⑦

7. An earthquake occurs, its epicentre is Under the sea several hundreds of kilometres from the coast but it causes considerable damage on the coast.

(a) Tsunami
- Under-water earthquake
any 1x1

T=/01/

Damages it can cause:
- Damage of ships.
- Collapse of the sea floor.
- Changes in sea levels
- Causes erosion.
- Flooding
- Loss of life
- Destruction of fauna and flora.
- Causes diseases
- Cause trauma.
- Result into landslides.
- Destruction of infrastructure
- Destruction of property
- Displacement of people (Migration) any 5x1
- Formation of quake faults.

1x1x1x1x1x1 T=/05/

b) How would you explain the magnitude of the effects of such an earthquake?
- When the strength of the earthquake is strong, it will cause great damage.
- Nature of the rocks
- level of the sea
- level of economic activities.
- System of monitoring and reporting earthquakes.
- The strength of the earthquake.
- Distance between the epicentre and the coast.
- Size of the coast and relief any 4x1

1x1x1x1 T=/04/

7

8) Study the following diagrams showing erosion on Mountain sides and answer the questions that follow: (6)

a) Name and explain the 2 processes of erosion on Mountain sides

A) Rock fall (01) : This is a type of mass wasting (Ex. 02) which takes place when individual rocks fall along the steep slopes.

B). Mud flow / Soil flow / slumping (01) (02)
Movement of Massive soaked soil along the slope.

- Land slide : Its forms are rock slump, rock slide rock fall.

1 x 1 x 1 x 1 x 1 x 1 T = /06/

b) Describe the effects of the water flow on the mountain side.
- Erosion of soil
- Destruction of vegetation / crops
- Destruction of roads and Communication lines.
- Formation of gullies.
- Loss of life.
- Deposition of fertile soils in the valley.
- Destruction of property.
- Landslide Any 4 x 1
- soil loses fertility.

1 x 1 x 1 x 1 T = /04/

3) Explain the factors of the high population density in some regions of eastern Africa.
- Favourable climate which favour human economic activities.
- Soil fertility
- Solid political structures some societies have not disintergated
- Improved standards of living
- Migrations like 200 the Bantu, Ngoni and did

not leave the areas they migrated to.
- High birth rates due to alot of Importance attached to children.
- High level of economic activities
- Government policy
- Presence of social infrastructures.
- Security
- Improved medical care.

any 5 explained 2½

any 5 not explained 1½ max 5mks

T= 10

10) Discuss the part played by highly Industrialised Countries and that of less Industrialised Countries in polluting the (environment) atmosphere.

Industrialised Countries:
- Smoke from Industries and vehicles
- High fuel Consumption such as petrol which pollutes the atmosphere with gases.
- Nuclear atomic bombs
- Urbanisation
- Heat emitted by Machines like heaters, lights, Cookers etc.
- Emission of radio-active materials.
- Wastes from Industries.
- Limited forested areas.
- Decomposition of waste Material
- Green house effect
- Use of space vehicles.

any 5×1

1×1×1×1×1×1 T=10

Less Industrialised Countries:
- Deforestation
- Bush burning
- Poor farming methods.
- Smoke from vehicles especially old ones.
- Smoke from Industries.
- Wars
- Poor garbage disposal
- High Consumption of firewood and charcoal

- Tech
- Volc

(12)

- Murram roads any 5x1

Any comparison (a T /10/

11. The origin and location of rocks vary according to their nature.

a) What is the origin of metamorphic rocks?
Metamorphic rocks result from the change of existing rocks (Sedimentary or Igneous) under the effect of high temperature and pressure plus chemicals. 3 mks

1x1x1 T=/03/

b) In what areas are conditions favourable to the formation of metamorphic rocks?
- Areas of sedimentation like beds of seas, river mouth
- Areas of subduction (boundary of converging plates.
- Areas that experience vulcanism.
- Areas that experience overiding.
- Regions of high economic activities.
- Glaciated areas, like the poles. any 2x1
- Below the earth's surface. 1x1 T=/02/

C) Give the main volcanic regions of the world and the characteristics common to these zones:
- The edge of the pacific ocean (the pacific Ocean fire) ie Ring of fire.
- The mid-Atlantic ridge
- Eastern Africa
- Western America
- Mediterranean-Himalaya any 4x1

1x1x1x1 T=/04/

Characteristeristis
- Existance of mountain ranges
- Earth quakes are common.
- faulting
- Exitance of hot Springs any 2x1/2
- They are located along plate boundaries.
- Volcanic Soils 2007 are common.

T=/01/

Section C (15 marks).

12) Study the extract from the topographical Map of ZAZA and answer the following questions:

a) Name the different types of drainage networks on the map.

- Convergent in the west (centripetal)
- Trellised
- Radial or divergent in the Center and South west.
- Dendritic.
- Parallel.

any 3×1

1+1+1 T=/03/

b) What is the man-made feature found at Cordinates 855607?

- Mis-leading cordinate. 03
- Doesnot exist

1+1+1 T=/03/

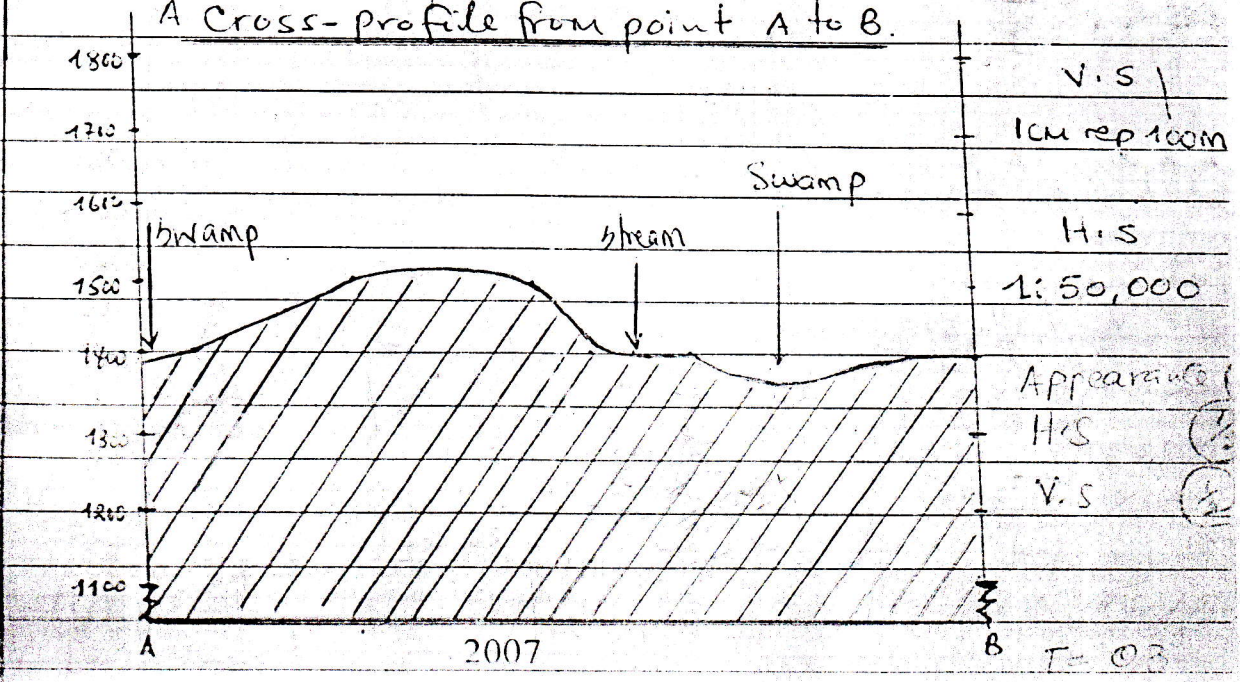
c) Give the main type of settlement on the map.

- Nucleated 03

1+1+1 T=/03/

d) Make a diagram outlining the general profile of the topographical area on the map between point A and point B.

A Cross-profile from point A to B.



e) Using features on the map, Suggest 3 major problems hindering economic development of the region

- Diseases due to the presence of rivers, swamps and lakes.
- Difficulties of cultivating in swamps.
- Lack of tarmac roads.
- Lack of electricity
- Lack of enough hospitals
- Flooding
- Shortage of land because of nucleated settlement.

Any 3 x 1

1 - 1 - 1

T = /03/

N'écris rien dans cette marge

Don't write in this margin

13. Study the photograph 2/18 and answer the following questions:

a) Name the crop grown in the foreground of the photograph.
- Rice. 01.

T=/01/

b) Give the importance of the crop in our Country.
- Food
- Source of income
- Mulching
- Source of animal feeds (green leaves).
- Source of energy.
- Making of animal feeds.
- Making fertilizers (decomposing remains).
- Employment
- Research
- Animal beddings
- Medicine (Rice water). any 3x1 1-1-1.

T=/03/

c) What is the method of soil protection shown on the photograph?
- Terracing
- Tree planting
- Grass planting any 1x2 1-1

T=/02/

d) Describe the relief of the region.
- Hills with flat peaks and convex slopes
- Large valleys
- Valley between hills. any 3x1 1-1-1

T=/03/

e) Identify the man-made features shown on the photograph
- Trees planted by man.
- Crops any 3x1 1-1-1
- Terraces

T=/3/

13

- Road
- Trenches / ditches

T = /03/

f) Explain the problems facing agriculture in this wetland.

- Crop diseases
- flooding
- Stealing of crops because there are no settlements
- Existance of predators.
- Water shortage during the dry season.
- shortage of labour
- They move long distances
- Mechanisation is difficult to Carryout.s

any 3 x 1

1+1+1

T = /03/

14

Vulcanism / Volcanism:

↓ Complete process

↓ Molten magma is exposed to the surface

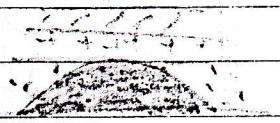
↓ Extrusive landforms

Exposed → Extrusive landforms

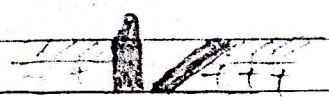
Intruded → ↓ Intrusive landforms

Intrusive landforms:

1- Batholith.

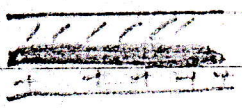


2) Dyke:



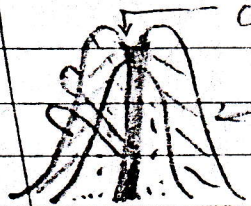
3) Laccolith:

4: Sill



Extrusive landforms:

1. Volcanic mountain (composite)

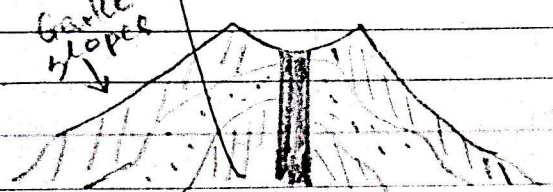


2- crater.

3. Caldera < Mt Kilimanjaro, Mt. Kenya.

4. Volcanic neck / volcanic plug.

5. Shield Volcano.



6. Cumulo dome.

Features:

- Crater lakes.
- Hot springs
- Geyser.
- Hot lava lakes