

# **REGIONAL GEOGRAPHY OF AFRICA.**

**Uganda Certificate of Education.**

**GEOGRAPHY**

**Code: 273/2, Paper 2**

**2 hours 30 minutes**

## **PART I : THE REST OF AFRICA.**

### **INSTRUCTIONS TO CANDIDATES:**

*This paper consists of **two** sections:*

***Part I** Rest of Africa.*

*Answer **two** questions from part I @ **question carry 25marks.***

*Any additional question (s) answered will **not** be marked.*

*Four questions are set and a candidate is required to answer only two questions.*

*This region covers 50% of paper 273/2.*

- 1) Download and print out a hard copy then copy this notes in a fresh book for Rest of Africa paper2.*
- 2) If You need a copy of this work organized by the teacher for Rest of Africa. Call 0775 534057 for a book of Africa and it will be delivered.*

## SIZE, SHAPE AND POSITION.

### POSITION OF AFRICA.

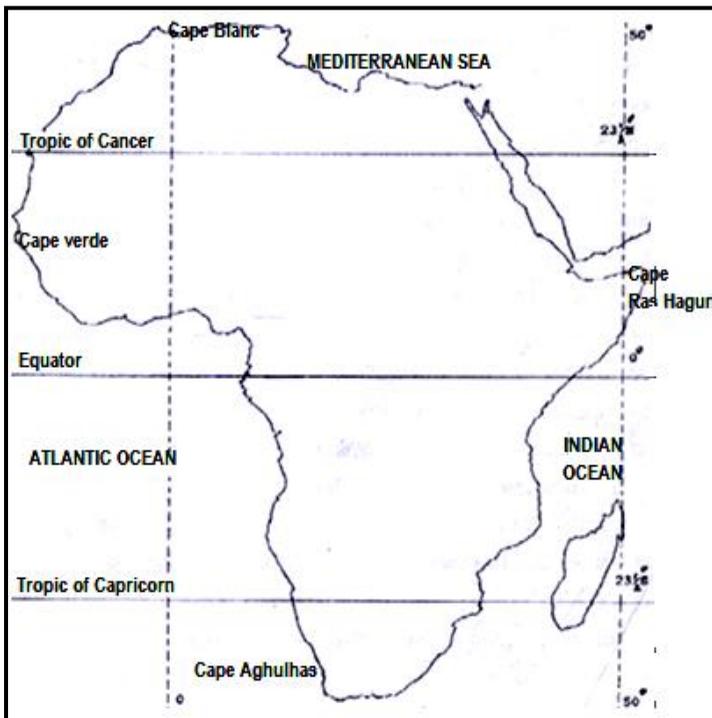
Africa is one of the largest continents of the world. It's the second to the largest landmass combined of **Eurasia** i.e. Europe and Asia continents.

### LOCATION:

**Africa lies between latitudes 37.51'N** just West of Cape Blanc in Tunisia to Cape Aghulhas at Latitude 34.51'S a distance of 8,000kms. Africa also lies between Cape Ras Hapun 51.50'E and Cape Verde 17.32'W.

**SIZE:** Africa covers land area of about 30,300,300km<sup>2</sup>.

### THE SHAPE:



Africa's shape is unbalanced; with her northern part being bulky and wide, while the southern part being thinner and narrower in appearance.

The Latitude EQUATOR divides the continent into TWO HALVES, there being approximately; 3800kms between the Cape Agulhas in the south and Equator while between Tunisia and Equator in the North is 4,100kms.

Africa is the only continent where the Latitudes; Tropic of Cancer and Capricorn cross the Landmasses. The distances of the landmasses along the tropics illustrated the clear picture of the shape between Africa's Northern and southern parts.

The equator divides Africa into two halves called **Hemispheres**. The Northern and southern hemispheres respectively.

Africa's continent is continued into beneath the sea, this submerged part of Africa is called the **Continental shelf**. The continent's landmass continues gently sloping beneath the sea/ depth of the ocean.

Many African countries have taken all legal rights of ownership of the sea, the seabed is up to 200km away from the coastline. Africa's continent is surrounded by water bodies' i.e. Atlantic Ocean at West, Indian Ocean to East, Mediterranean Sea to the North, and the Red sea at the Northeast.

**Lakes:** Africa's largest lake is Lake Victoria. Other large lakes in Africa are Lake Tanganyika, Lake Malawi, Lake Volta, and Lake Chad.

**Rivers:** The longest river in Africa is the Nile River. Other long rivers in Africa include the Congo River, the Niger River and the Zambezi River.

**Deserts:** Africa has many vast deserts, including the largest desert, Sahara. Other deserts in Africa include Kalahari Desert, Namib Desert, Libyan Desert, Nubian Desert.

**Mountains:** Atlas, Ahaggar, Tibesti, Darfur, Ethiopian highlands, Drakensburg.

**AFRICA: MAP SHOWING POLITICAL REGIONS.**



**REGION: WEST AFRICA.**

<u>COUNTRY</u>	<u>CAPITAL</u>
<u>CITY</u>	

- |                |            |
|----------------|------------|
| 1. Nigeria     | Abuja      |
| 2. Benin       | Porto Navo |
| 3. Ghana       | Accra      |
| 4. Togo        | Lome       |
| 5. Ivory coast | Ibadan     |
| 14. Mali       | Bamako     |

- |                  |              |
|------------------|--------------|
| 6. Liberia       | Monrovia     |
| 7. Guinea        | Conakry      |
| 8. Guinea Bissau | Bissau       |
| 9. Sierra Leone  | Freetown     |
| 10. Senegal      | Dakar        |
| 11. Mauretania   | Nouakchott   |
| 12. Niger        | Niamey       |
| 13. Burkina Faso | Quogadougou. |
| 15. Gambia       | Banjul.      |

**REGION: NORTH AFRICA:**

**COUNTRY    CAPITAL CITY**

1. Egypt                      Cairo
2. Libya                      Tripoli
3. Algeria                    Algiers
4. Tunisia                    Tunis
5. Western Sahara        Aaiun
6. Morocco                Rabat
7. Sudan                     Khartoum
8. South Sudan            Juba.

9. Madagascar        Antananarivo

**REGION: HORN OF AFRICA.**

**COUNTRY        CAPITAL CITY**

1. Ethiopia                Addis Ababa
2. Eritrea                 As mere
3. Somalia                Mogadishu
4. Djibouti                Djibouti

**REGION: CENTRAL AFRICA.**

**COUNTRY    CAPITAL CITY**

1. Cameroon                Yaoundé
2. Central Africa republic   Bengal
3. Congo Brazzaville        Brazzaville
4. Gabon                    Libreville
5. Equatorial Guinea        Malabo.
6. Chad                     Ndjamena
7. Angola                  Luanda
8. Zambia                    Lusaka.

**REGION: EAST AFRICA.**

**COUNTRY        CAPITAL**

1. Uganda                 Kampala
2. Kenya                Nairobi
3. Tanzania                Dar es salaam
4. Burundi                Bujumbura
5. Rwanda                Kigali

**REGION: SOUTH AFRICA.**

**COUNTRY    CAPITAL CITY**

1. South Africa            Johannesburg
2. Zimbabwe              Harare
3. Mozambique            Maputo
4. Malawi                  Lilongwe
5. Botswana                Gaborone
6. Lesotho                 Maseru
7. Swaziland              Mbabane
8. Namibia                Khindhook

Rwanda About 53 independent states and south Sudan newly born state 9<sup>th</sup> July/ 2012 make up a total of 54 African independent states so far.

These states fall under regional economic groupings which include: Preferential Trade Area (PTA), East, Central and Southern African States (COMESA), Economic Cooperation of West African States (ECOWAS), other security organs are IGAD, OAU/AU.

### **MAP OF AFRICA SHOWING POLITICAL STATES / COUNTRIES.**



# AFRICA: PHYSICAL LANDFORMS AND RELIEF REGIONS.

Africa is a geographically diverse continent situated across the equator, characterized by large deserts, mountain ranges, and coastal plains.

Relief refers to the general appearance of land surface. Relief comprises of features like mountains, plateaus, lowlands, valleys and Basins.

## Distinction of Relief features by height in meters

- Mountains** areas above 4000 meters sea level.
- Highlands** are areas of 1000 - 3800 metres above sea level.
- Plateaus** are areas above 1000 – 2000 metres above sea level.
- Lowlands** are areas above 200 - 1000 metres above sea level.
- Valleys** areas of 0-200 meters above sea level
- Basins** are depression below 0 meters at sea level.

## Mountains.

There are many types of mountains in Africa with heights of 4000m above sea level. They include;

The block mountains e.g. Ruwenzori, Usambara, etc.

**Volcanic mountains** like the Ethiopian highlands, Ahaggar, Tibesti, Adamawa, Darfur, etc.

**Fold Mountains:** include the Atlas Mountains, Drakensburg Mountains / The Cape Ranges in South Africa, etc.

## **PLATEAUS:**

Africa consists of vast plateau which is **HIGH** in East and South but gradually reduces towards the West. It ranges from 800 – 2800 meters above sea level.

MAP OF AFRICA SHOWING RELIEF REGIONS OF AFRICA.



The monotonous plateau is broken by Basins / depressions, with their river systems and many magnificent volcanoes as Divides, fold

mountains, Residual inselbergs. Sometimes the plateau surfaces are very flat and referred to as PLAINS (*extensive flat pieces of Land*).

The well-known **Plateaus** in Africa include; Hoggar Mountains, Tidewater plateau, Tibesti (Tahat) mountains in the North, Futad'jalon, Jos, Air, Cameroon mountains, in West Africa.

Others are the highlands of East and Southern Africa like the Bihe plateau in Namibia and Angola, Katanga plateau, Matapo hills, Muchinga Mountains, Mitumba mountains.

Generally, the North and West Africa are lower than the Eastern and Southern parts.

## **BASINS**

A basin is a broad shallow saucer-like shaped feature on the earth's surface. It is commonly separated by mountains or plateaus (Divides).

### **Examples of basins in Africa include:**

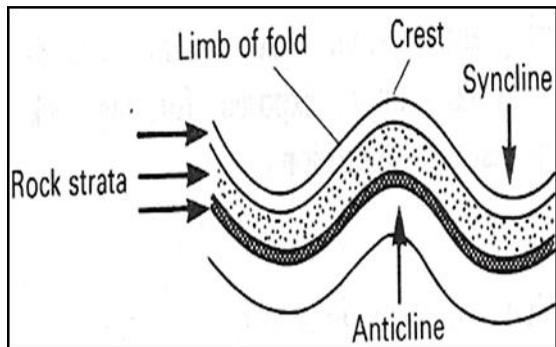
1. Victoria – Kyoga basin of East Africa.
2. Congo basin of Zaire.
3. Niger basin / El d'joul basin of Niger and Mali.
4. Chad basin.
5. Kalahari basin
6. Libyan basin
7. Sudan basin
8. Gabe's of Algeria.
9. The Nile basin and Qattara Depression of Egypt.



**Divides.** Are sharp raised features (ridges of land) that divide or border the basins. They are mainly called mountains or plateaus e.g. the Bongos, Amendi, Darfur, Bihe, Adamawa etc.

## FOLD MOUNTAINS.

### **Formation:**



This occurs when compression forces act on young and soft rocks.

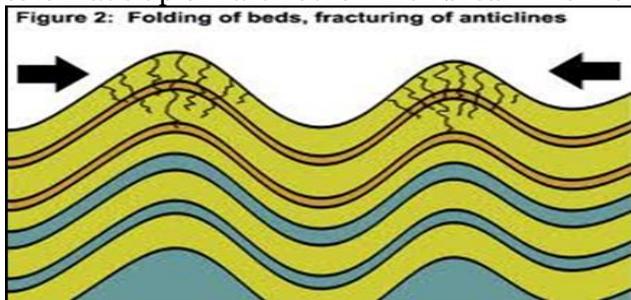
These rocks may fold upwards and downwards.

The up folded rocks form **anticlines** (mountains) while the down folded rocks form **synclines** (valleys).

Layers of rocks may be folded upwards into hills or downwards into valleys. An example of folding can be seen on the,

**Cape ranges of extreme south Africa and Atlas Mountains** were formed by Folding in Africa.

Crust is made up of hard rocks which break when folded.



***Down fold is caused by increased weight of the sediments. The sides are forced to rise as Highlands.***

**Sample question.**

***(a) Describe the process responsible for the formation of either Atlas Mountains or Cape ranges.***

***(b) Explain the influence of highlands on the surrounding areas.***

### **Formation of Cape Ranges.**

- Is a Fold Mountain.

- Formed as a result of Folding.

- This occurred as a result of accumulation of sediments (eroded materials) onto pre-existing shallow depression (Geosynclines).

- Compression forces acted on the young sedimentary rock folding it to form Synclines and Anticlines.

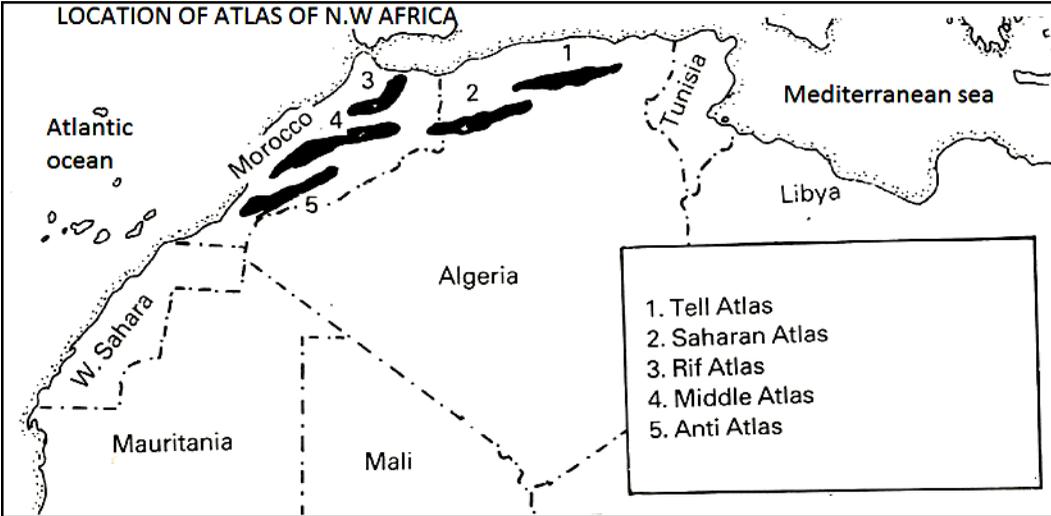
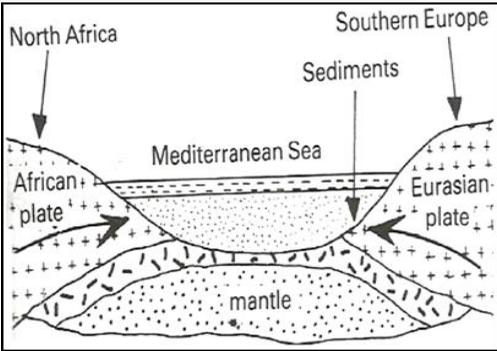
- Anticlines are the Fold Mountains like; Atlas or Drakensburg.

- The pre-existing depression had to sink further due to increased weight from deposited sediments.

## **FORMATION OF FOLD MOUNTAINS**

### **Case study: THE ATLAS AND THE ALPS**

- A great thickness of sediments accumulated in the sea between the continents of Africa and Europe.
  - The overlying weight of deposited sediments caused the sea floor to subside. Thus more sediment accumulated on top. Such a large and deep basin is known as geosynclines.
  - The Eurasian plate moved south and collided with African plate by which was advancing northwards (compression force).
  - As a result, the folding process that occurred led to formation of Alps of southern Europe and Atlas Mountains of north-west Africa.
- ***See diagrammatic representation below.***



# **VOLCANIC MOUNTAINS**

## **CASE STUDY: ETHIOPIAN HIGHLANDS**

### ***Formation.***

- Ethiopian highlands are volcanic mountains.
- Formed as a result of a process called **Volcanicity**.
- Molten rocks (magma) beneath the earth as a result of ***Radioactivity exert pressure to extrude magma*** through an opening /vent/ fault/ lines of weakness onto the earth crust.
- This occurs over successive events/ periods ***forming layers of molten material accumulate*** one after the other ***solidifying upon cooling***, in the process of ***mountain buildings occurs***.
- This has resulted into high mountains like **Ethiopian highlands**.
- These mountains sometimes have a **crater** on top or **parasitic cones** at the sides.

### **NB:**

**The Drakensberg mountains** of south Africa was formed through a process of Volcanicity. It is a lava plateau formed a million years ago. They are now limited to South East where they form the rim of the Great Escarpment. The lava is 1200m a.s.l covering most parts of Lesotho and some parts of South Africa. Erosion has destroyed much of original part of the land scape leaving a dissected plateau.

Other examples of volcanic mountains in South Africa are the Three sisters (soouth Africa).

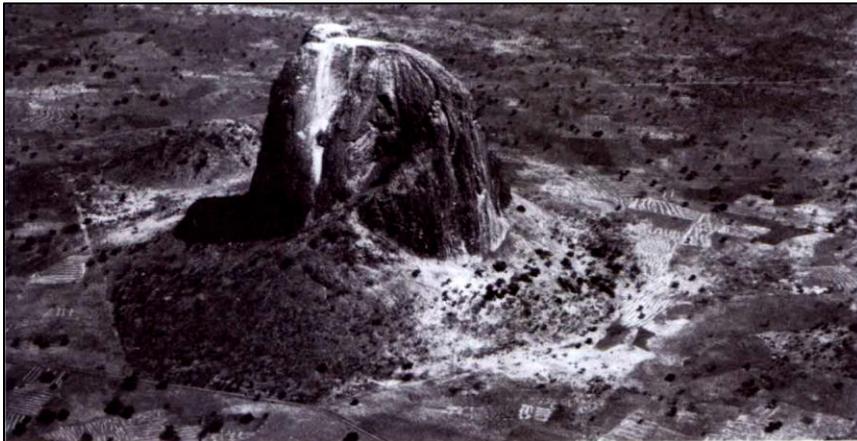


Plate 3.12 Wase Rock, an ancient volcanic neck on the floor of the Benue valley, Nigeria

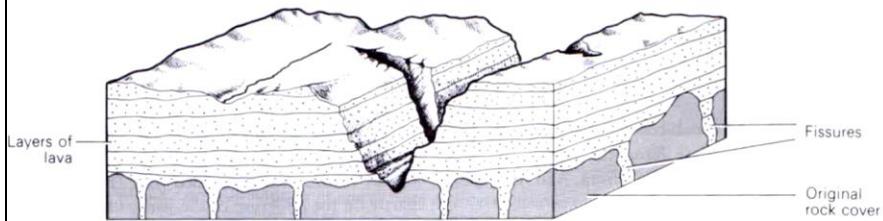


Fig. 3.16 Lava plateau dissected by a deep gorge. Note the fissures along which the lava welled up

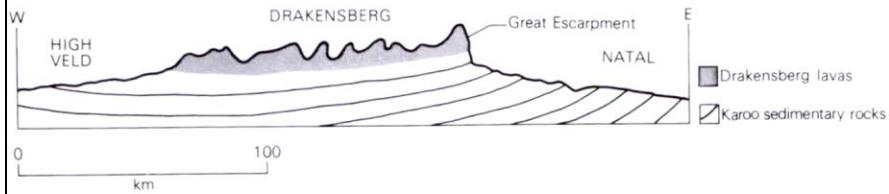
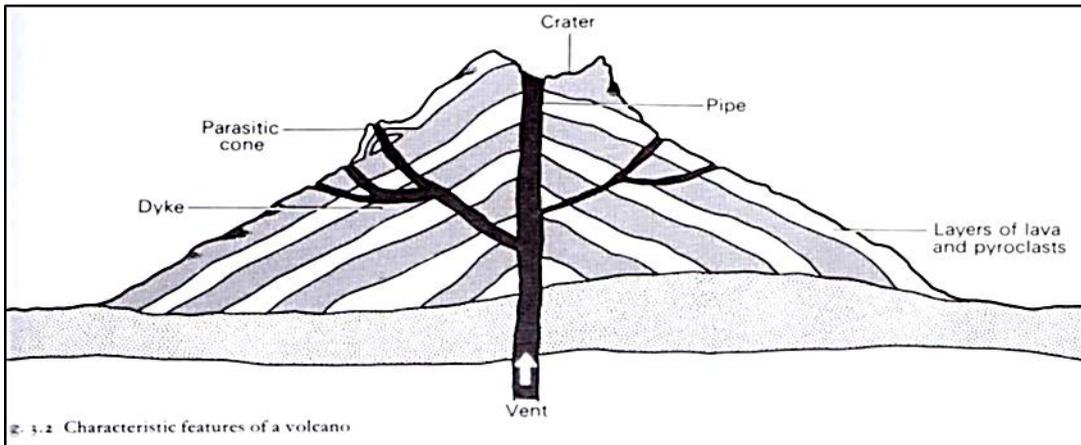


Fig. 3.17 Diagrammatic section of the Drakensberg lava plateau



**Diagram showing formation of Volcanic mountains.**

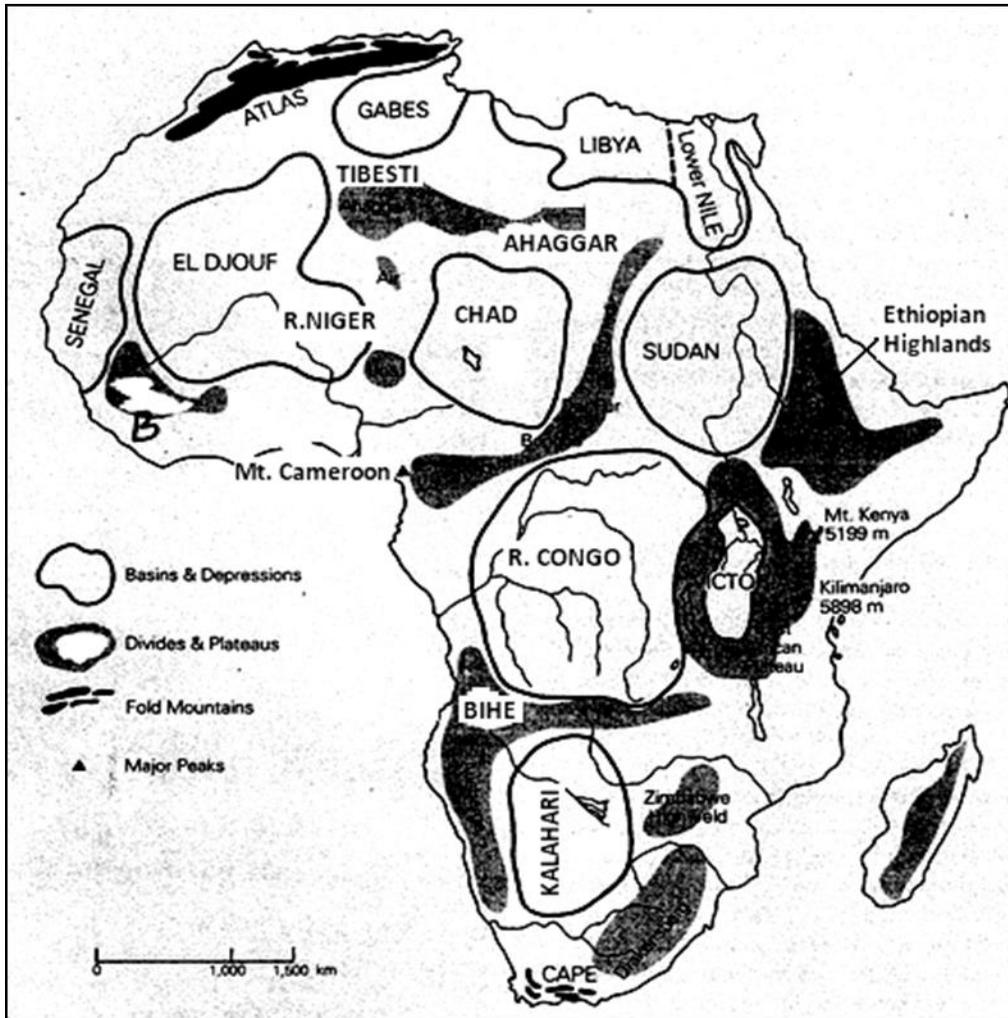
### **IMPORTANCE / CONTRIBUTIONS OF HIGHLANDS ON HUMAN ACTIVITIES.**

- Help in formation of rainfall by the windward side that act as a barrier to moving moist winds that rise to condense and form clouds that fall as Orographic rainfall. This support agriculture in the region e.g. growing of coffee in Ethiopia.
- The leeward sides of the mountain are dry and therefore support Pastoralism especially livestock.
- Catchment areas for rivers that originate from it to provide water for animals and domestic purposes, irrigation and generation of Hydro Electricity Power.
- Provide habitats for wild life conservation, for animals that live in the Montane forests on these highlands.
- There is mining of rocks / quarrying materials used for construction of roads, buildings.
- Mountains are tourist potentials that attract large sums of foreign exchange earnings to the government.
- Highland areas attract dense population settlements due to fertile soils at the foothills for farming e.g. the Ethiopian highlands, Drakensburg Mountains, etc.
- Have montane forests where lumbering is done to extract timber and poles for building and making furniture.

**EXPLAIN THE PROBLEMS FACED BY PEOPLE LIVING NEAR HIGHLAND AREAS.**

- Excessive soil erosion due to steep slopes during heavy rains on the windward sides.
- Drought conditions on the leeward side lead to famine and shortage of pasture for animals.
- Temperature inversion in the valley areas near the mountain cause chilly conditions to settlers.
- Rugged terrain and steep slopes make construction of transport routes difficult therefore restrict movements and settlements. Landslides or mass wasting is vulnerable to steep slopes of windward side cause damages to property and lives.
- Presences of dangerous wild animals living in the montane forests are a threat to man and his crops or livestock.
- Existence of pests and diseases due to humid conditions on the windward sides.
- Shortage of land for farming on the windward side as a result of high population density in the area.
- Sudden volcanic eruption and falling debris is a threat to people around highlands.

# MAP OF AFRICA SHOWING PHYSICAL FEATURES: HIGHLANDS AND BASINS



# BASINS

A basin is a shallow broad saucer like shaped feature on the earth's surface, commonly separated by mountains or plateaus (divides) examples in Africa include; El d'joug or The Niger basin, Chad basin, Namib desert, Kalahari Desert, Libyan desert, western desert, Nubian desert, Congo basin, Sudan basin, Nile basin.

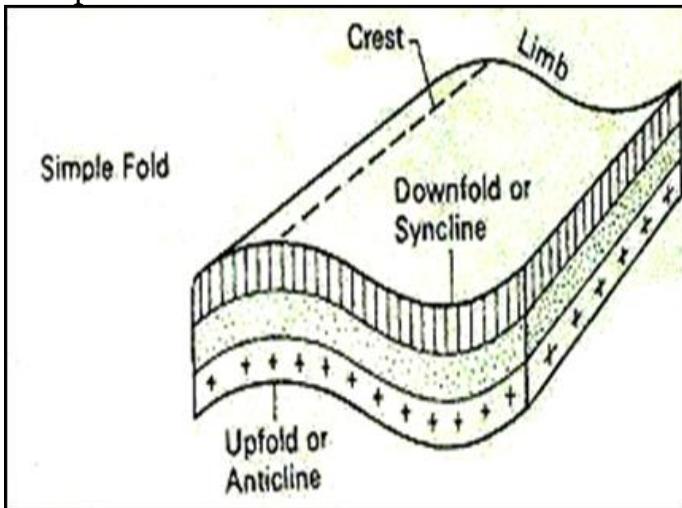
Basins are separated by divides as raised features (rims of land) that divide or boarder the basins. They are mainly mountains or plateaus e.g. Bongos, Amendi and Darfur mountains / Highlands of central Africa.

## FORMATION OF BASINS.

### *Sample question.*

### *Describe the formation of any one basin in Africa.*

- Basins are formed as a result of down warping process.
- Part of the earth surface / crust was acted upon by compression forces, forcing it to sink downwards. This led to the formation a shallow broad saucer-like depression called basins.



## **Benefits / Contributions / Importance of Basins to Economic Development of Man**

- Basins are sometimes occupied by lakes and rivers; therefore, provide water for both domestic and industrial uses.
- Basins contain lakes and rivers which are used for fishing; fish as human diet.
- Some basins have rivers which are used for navigation or river transport to promote economic development in trade and provision of services to people.
- Basins with rivers that have waterfalls can help to generate hydroelectricity power e.g. the Congo basin with R. Congo has Inga falls for HEP, the Nile Valley with Aswan High Dam etc. for industrial and domestic uses.
- Some basins contain fertile soils which are useful for cultivation of crops e.g. growing rice, etc. for provision of food to man.
- Basins are tourist attractions for development of the tourist industry, to contribute foreign exchange earnings for the economy's development.
- Basins are wetlands which help to act as catchment areas for rivers and flood control points.
- Basins help to modify the climate by recharging the dry winds with moisture that help in the formation of rainfall e.g. convectional rainfall.
- Basins are habitats for aquatic life e.g. crocodiles, hippopotamus, fish etc.
- Some basins are source of minerals e.g. sand, gold, etc leading to the development of the mining industry.
- Provide raw materials for art and craft industry e.g. clay for pottery, papyrus etc.

## **PROBLEMS FACED BY PEOPLE LIVING NEAR BASINS:**

- Under developed transport and communication because of difficulty in construction of roads through wetlands and river valleys.
- Basins are commonly affected by flooding from over flown rivers leading to loss of life and property.
- Basins harbor disease vectors like snails, mosquitoes and associated diseases from contaminated water like cholera, dysentery etc.
- Some basins do have thick forests which discourage human settlements hence sparse population and low labour force for development e.g. Congo basin with rainforests.
- Basins have thick vegetation that act as hideouts for rebels causing insecurity like in the Congo basins.
- Accidents may occur due to drowning in rivers found in basins.
- Basins may harbor dangerous wild animals like hippos, crocodiles etc.
- Basins are usually polluted environments since they are used as dumping grounds for wastes, garbage etc.

## **AFRICA: RIVERS.**

A river is a drowned valley occupied by running water in a definite channel from its source down slope to the mouth.

The source of the river can be a spring well, a swamp, a glacier melt water, highland with forests or snow.

A river's mouth can be another river, a lake or a swamp or even a sea. The development of a river channel takes place as a result of erosion i.e. gradual Erosional processes.

These processes include;

- 1) **Attrition,**
- 2) **Abrasion,**
- 3) **Corrosion,**
- 4) **Hydrolysis**
- 5) **Chemical action.**

## **Definitions:**

***Attrition*** is when a river moves down stream with rock particles are worn away by colliding against each other.

***Abrasion*** is where a river wears away its channel /bed / floor by grinding action of materials it is carrying.

***Corrosion*** occurs when the bottom of the river bed or its sides are won away by action of load.

***Hydrolysis*** is the mechanical action of river erosion where a river forcefully breaks the rock by sides with help of pressure/ force it exerts on it to cause erosion.

### ***Chemical action***

Is a process whereby soluble rock minerals are dissolved in the river water and transported in solution form.

## **RIVERS TRANSPPORT**

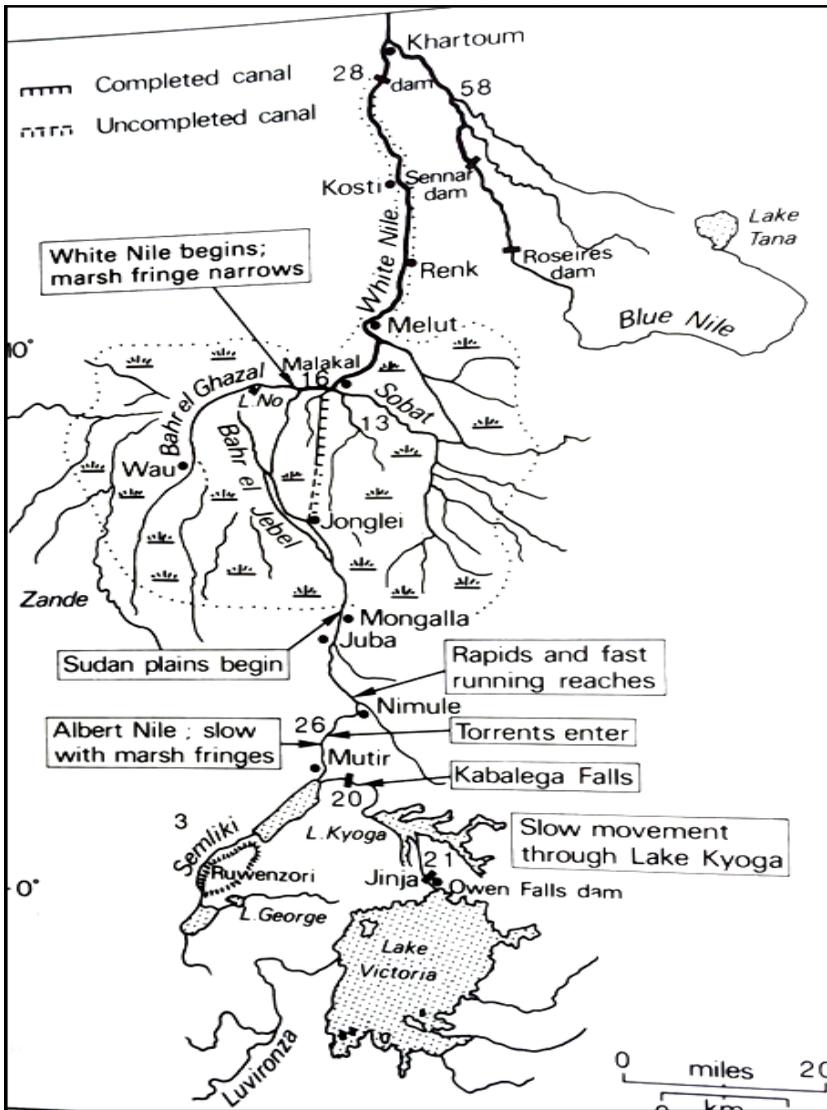
Rivers do transport load (materials) that it erodes from different parts along its channel. The ability of a river to move materials depends on its energy and the volume of water carried in the valley.

**RIVER DEPOSITION** Rivers deposit materials / load as the amount of load carried increases to overcome the volume of water in the valley leads to reduced energy and gradient. This results into depositing materials on the valley / floor/channel as it continues its journey to the mouth.

## **RIVER PROFILE.**

Is the organization or layout of the river from its source to the mouth.

## THE NILE RIVER FROM SOURCE TO MOUTH.



Along the profile of the river there are sections of development from the source to the mouth i.e.

1. *The youthful stage/upper section.*
2. *The mature stage is also called the (middle valley).*

### 3. *The old stage also called the (senile stage)*

## **THE YOUTHFULL STAGE OF RIVER DEVELOPMENT.**

### **Characteristics;**

- Vertical erosion of a river channel is a dominant process.
- The river moves along a steep slope / gradient.
- The river moves at a very increased speed / fast speed.
- A river has very active headward erosion.
- Lateral erosion is at minimum because of low amount of river load. In the valley.

**The main features formed are;**

- a) *Shaped valley / profile and interlocking spurs;***
- b) *Pot holes and plunge pool;***

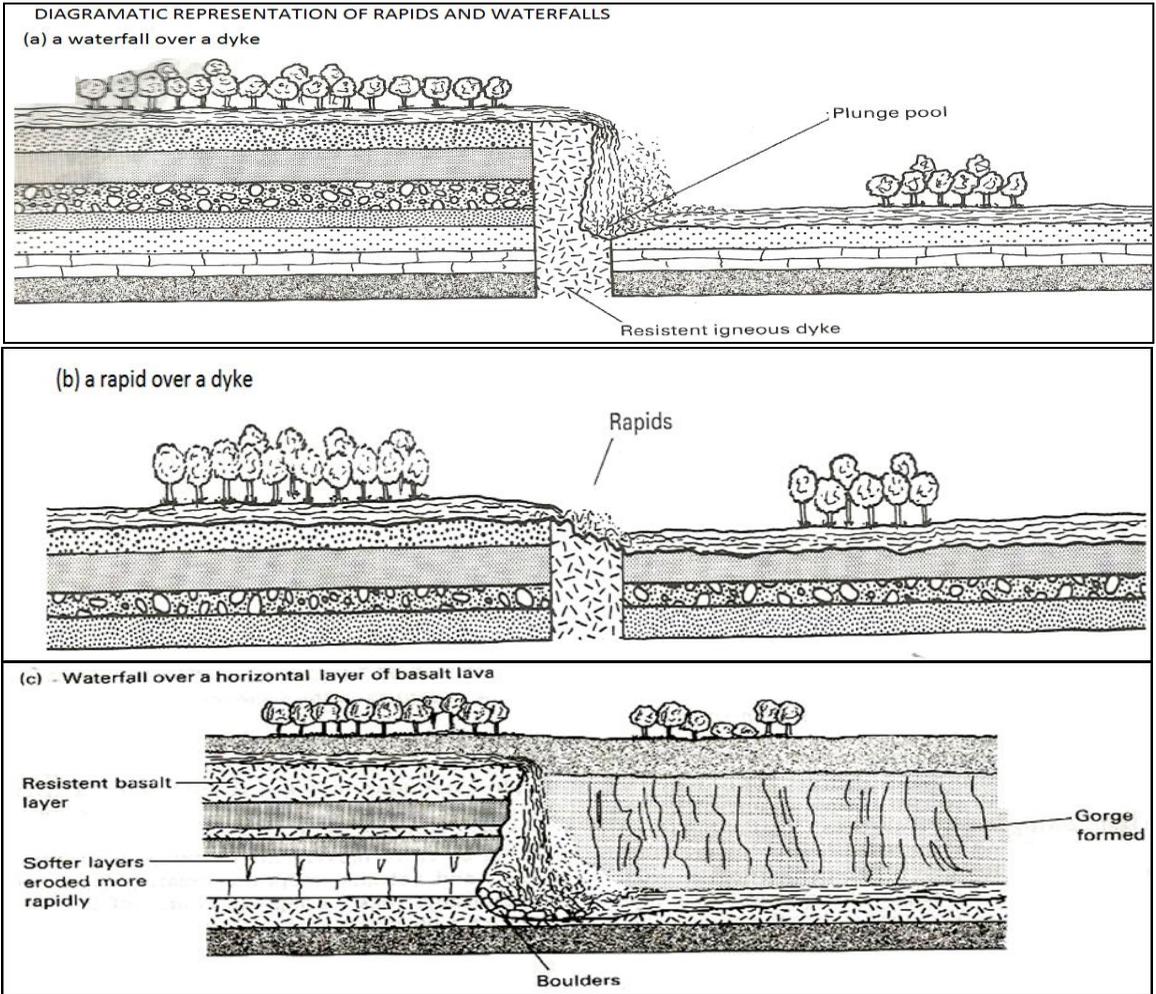
***Gorges, Rapids and waterfalls or knick points (broken river bed)***

## **RAPIDS.**

Is a section of river's course where the bed is suddenly steepened causing the water the flow swiftly.

**Formation:** Rapids form when the layer of more resistant rock gently dips downstream lying across the river bed.

- a)** They may also form where waterfall goes upstream causing the height of the falls to become so small that water is no longer falling from higher elevation to the bottom.



## WATER FALLS.

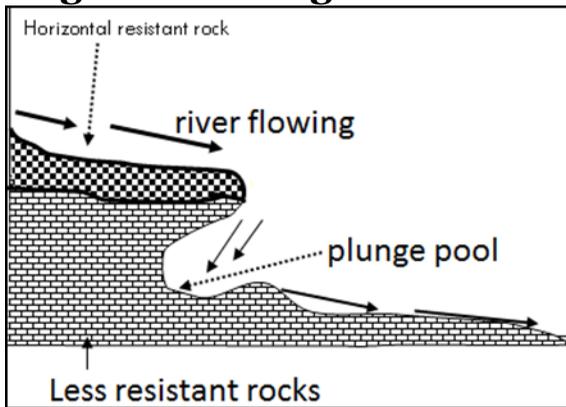
It exists in the river's course where a river's bed is sharp on its gradient making it vertical or vertically or nearly vertical. The sharp fall in the gradient makes water to drop from upper to lower level.

## **Formation of waterfalls.**

It's formed as a result of existence of rocks with different resistance i.e. (soft rocks).

- A layer of more resistant rock lies across a river's course; the less resistant rock on the downstream side is eroded faster than a more resistant upstream. The river bed is steepened after the river crosses the harder rock at the beginning of waterfall.

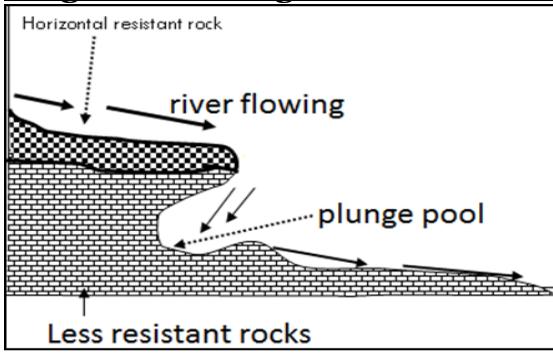
### **(a)Diagram showing the formation of waterfalls.**



**OR**

- A waterfall is a sharp break in the bed of a river channel over which a river flows.
- It usually occurs in the upper section of a river.
- It is formed where there is interruption caused by existence of a hard rock lying across the river horizontally / vertically formed during faulting / a sharp edge of a plateau.
- Water plunges falls from upper level to lower leading to formation of a plunge pool.
- Waterfalls erode backwards to form a gorge.

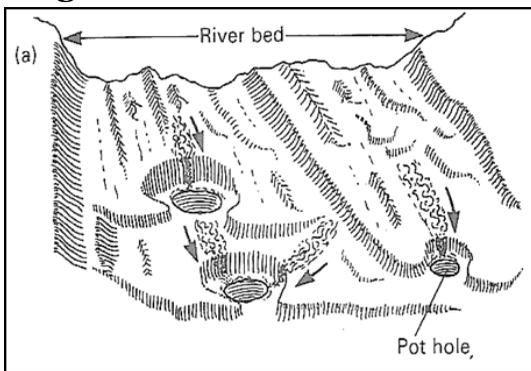
## **Diagram showing the formation of waterfall.**

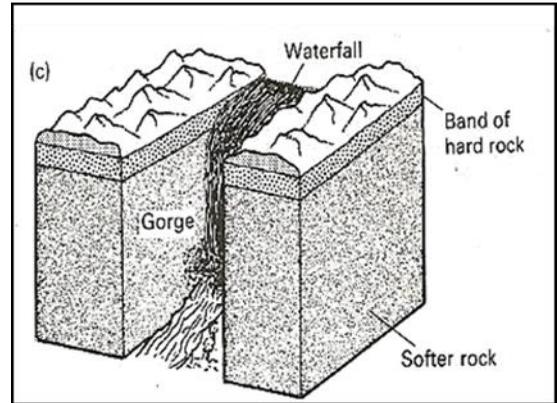
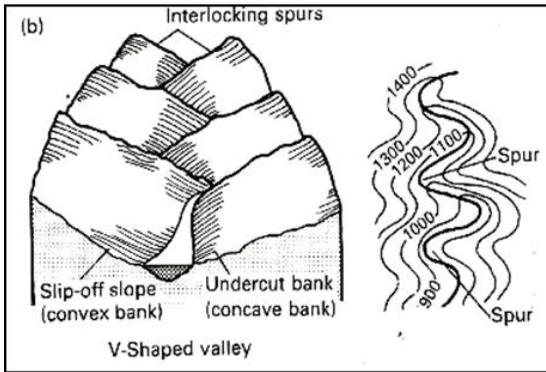


## **Conditions for formation of waterfalls.**

- a) Forms where a river passes over an area of rock of different hardness / rock resistance onto which the river profile is cutting through.
- b) Waterfall can be a result of increased river erosion caused by earth movements, like; (faulting, landslides, uplift and volcanic eruption) making its bed to descend on a sharp edge a long its gradient i.e. rapids, dyke, sill, edge of a plateau.
- c) Where a river descends a fault scarp.
- d) Where a river descends a cliff in a sea.

## **Diagram to show features associated to River systems.**





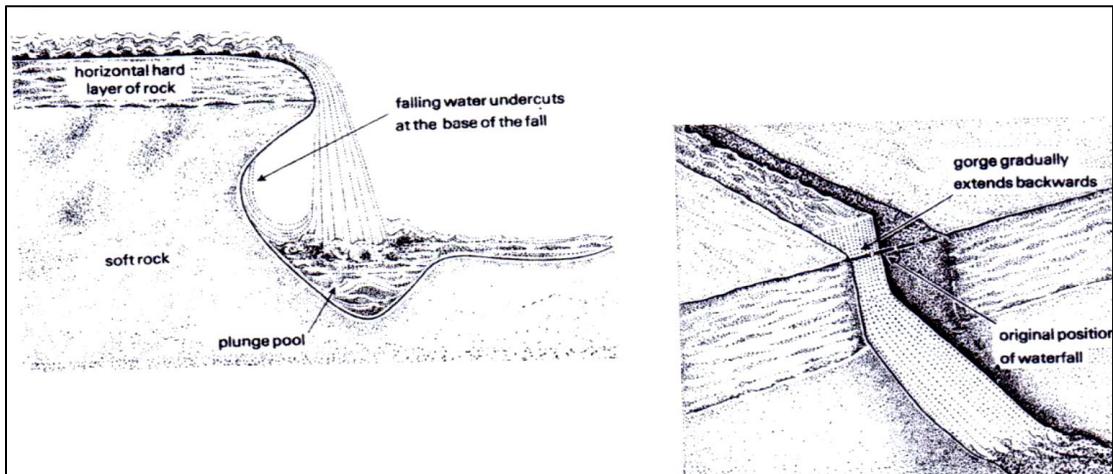
- a) **Plunge pool**; is large holes found at the base of waterfalls;
- b) **Pot holes** are cylindrical holes formed by action of pebbles swirled against the uneven bed of fast flowing river.
- c) **Interlocking spurs**; occur as a river avoids hilly obstacles, its course assumes zigzag pattern of v-shaped valley down slope.
- d) **Gorge** occurs when a river passes over an area of very soft rocks, it can carve out very deep and narrow valley.

## **Gorge:**

- Is a steep sided narrow and deep elongated valley.
- Its formed when an existing waterfall retreats upstream.
- The process of formation involves vertical erosion of the riverbed by fast flowing water over the soft underlying rock lying between hard horizontal rock strata. Examples of rivers with gorge in Africa.

E.g. R. Zambezi, R. Congo, R. Nile, R. Niger

## **Diagram to illustrate the formation of a gorge**



## **THE MATURE STAGE OF RIVER DEVELOPMENT**

In the middle course of rivers, the following features are pronounced;  
Where a river encounters a hanging valley into a glacial trough.

### **Characteristics of a river at a mature stage of development.**

- Lateral erosion becomes more pronounced although vertical erosion still continues.
- Increased volume of water compared to youthful stage.
- Has a pronounced “U”-Shaped valley and meanders begin.

- River deposition begins at small scale of soil, rock and other particles of different sizes transported by a river.
- They sometimes become **braided** at their middle stage.
- Has pronounced **waterfall**.
- Has tributaries joining the main river is reduced.
- Experiences a reduced speed of water flow.
- Existence of features like gorge, pot holes, etc.

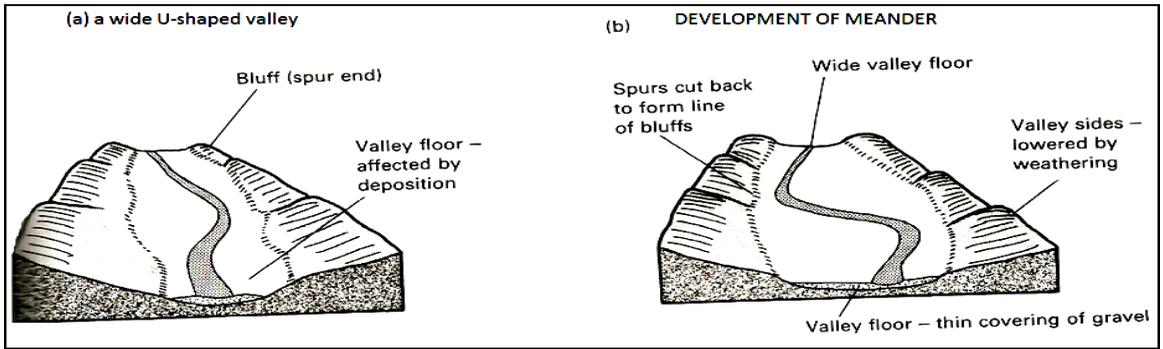
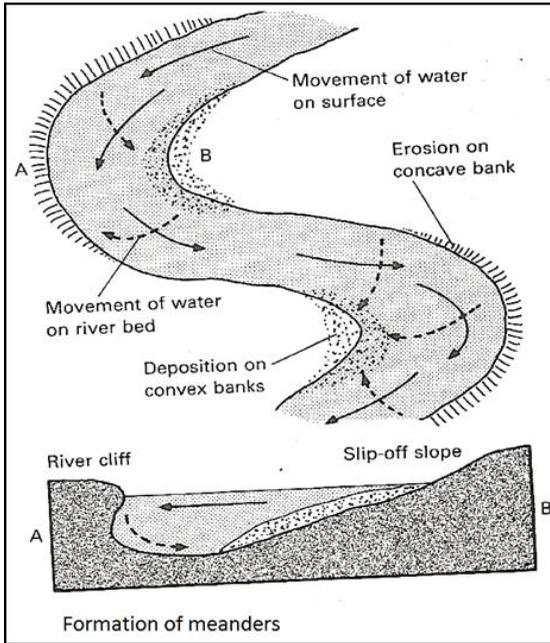
### **Formation of meanders, bluffs, slip-off slopes.**

- Meanders are formed by alternate undercutting and deposition on concave and convex slopes of the river channel.
- The undercutting process produces cliff-like features called **Bluffs**, while the convex bends are gradually built up into **Slip-offs** slopes by deposition.
- Meanders become more and more continuous downstream and forming pronounced and alternating loops.

During floods the river can overflow its channel causing the joining one loop to next one.

### **Anatomy of a Floodplain.**

A floodplain is a broad, flat section of a valley floor filled with sand, gravel, and clay. Floodplains form when a river running along the valley floods and spills out of its channel. The river then deposits sediments as it flows over portions of the floodplain.

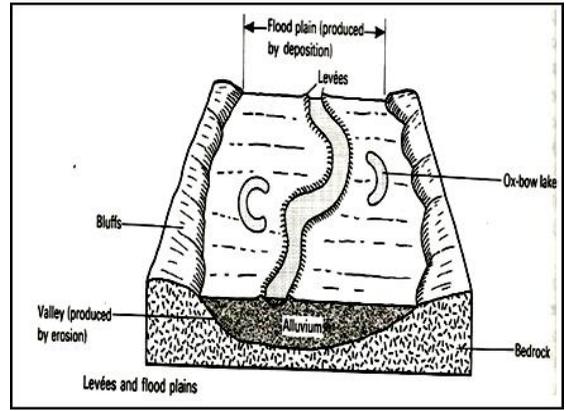


## **OLD STAGE OF RIVER DEVELOPMENT.**

### **Characteristics of a River at old stage of Development.**

- The river profile has a gentle gradient.
- Volume of water is high
- River flows at slow speed/velocity.
- Deposition takes place at river bed (*braidation*).

- Development of flood plains.
- Levees develop.
- Formation of Deltas.
- Mountains are pronounced.
- Formation of ox-bow Lake.



## **Importance of flood plains.**

1. Flood plains do contain fertile soils suitable for arable farming/ cultivation of crops.
2. They provide pasture for livestock rearing.
3. They are usually flat landscapes ideal for settlement away from the valley.
4. They are areas ideal for the construction of roads and railway lines for transport.
5. Floodplains usually contain swamp vegetation that can be harvested for art and craft, construction of buildings.
6. They are ideal areas for mining of sand and clay useful for construction and brick making respectively.
7. Contain ox bow lakes that provide fishing grounds and water for domestic use.

## **OX-BOW LAKES:**

### **Formation:**

An ox-bow lake is a horse-shoe shaped loop bend which is formed in a floodplain of a river valley.

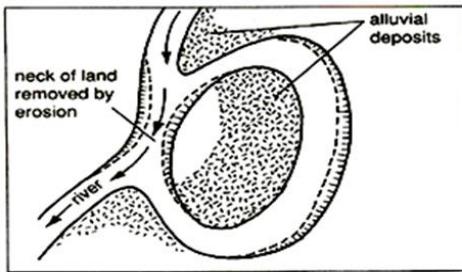
It is formed when a river bends on a floodplain (meander). Lateral erosion is intense at the river banks/ sides under cutting its outer Bluffs takes place because of force of water current being so strong at the bend.

Deposition of alluvium on the inner bank takes place especially during flooding. This is responsible for sealing of the meander loops. The cut-off is completely a result of removed meanders called ox-bow Lake.

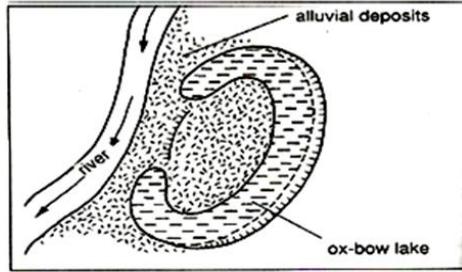
**Conditions for the formation of ox-bow lakes.**

- Formed when a narrow lake inland separates form a meander loop (bend).
- The river must be having a high volume of water strong enough to erode the river bank.
- Some rocks at the river bank should be soft to be eroded by rivers water through lateral erosion.
- Erosion occurs on a concave slope and deposition on convex slope.
- The cut-off is sealed off by deposition to form ox-bow Lake.

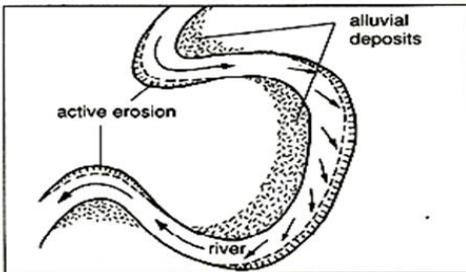
**Diagram showing stages of formation of ox-bow Lakes.**



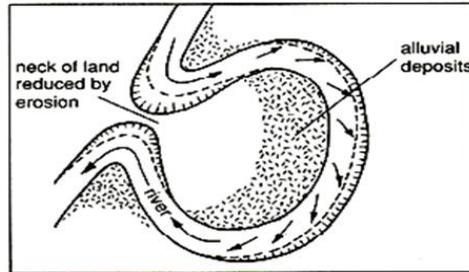
(c) River takes a shortcut



(d) Meander abandoned and forms an ox-bow lake



(a) Active erosion and deposition on the banks of a meander



(b) River banks become closer due to erosion

# DELTA.

## Formation of deltas

A delta is a low land composed of alluvium deposits mostly formed at the mouth of a river, located at the lower part of the river profile. Deltas form when a river is entering the sea or a lake.

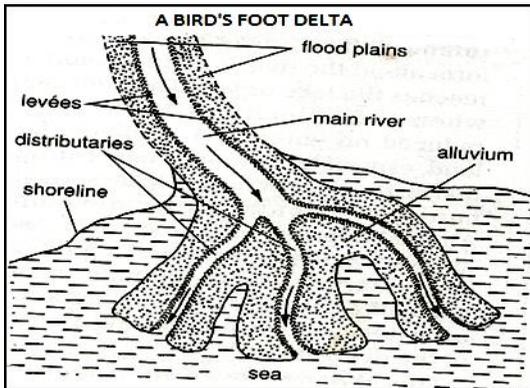
The river's speed is checked and so it drops and deposits some of the silt and mud it is carrying at the lower parts of the river/ mouth before it finds way into the sea / lake.

## TYPES OF DELTAS

The deposited material gradually builds up until the river's path is blocked and it has to divide and flow round the obstacle. In this way the river makes many distributaries at entrance.

Examples of rivers with deltas in Africa are; ***R. Nile, R. Niger, R. Zambezi, etc.***

### Bird's foot delta

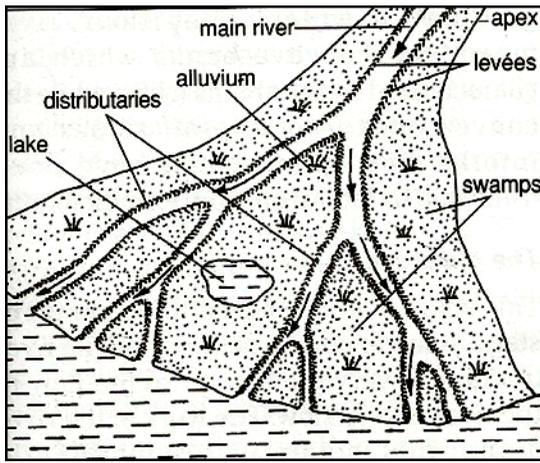


- This type of delta generally forms on rivers which carry large quantities of fine alluvium /sediments like silt and mud into water where there is low wave energy.
- Such that the river divides itself in fewer distributaries as a companioned by many meanders/ bends.
- The river has still some capacity to erode fine and light materials into the sea so it has to form tributaries to pour water into the sea.

## Arcuate Delta.

- This is a delta with a convex shoreline on the seaward end. Spreading
- It's formed as a result of strong currents from the sea which are responsible for of materials over a wide area on the seaward side.
- It is made out of gravel and sand deposited by tributaries formed by the river as it finds its way into the sea.

## Diagram showing formation of a delta.

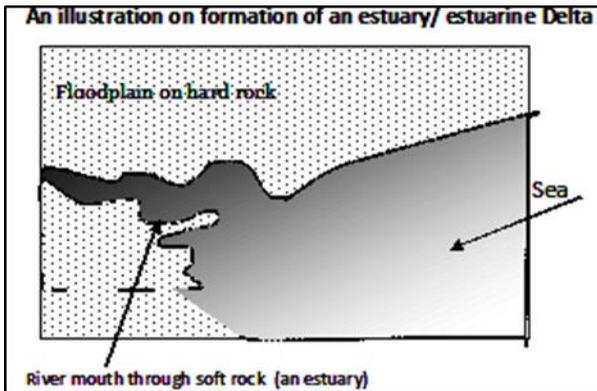


## An Estuarine Delta

Is a drowned river valley in a lowland area.

It was formed when the level of the sea rose and flooded the lower parts of the land along the river valley.

There are usually three overlapping zones in an estuary: an open connection with the sea where marine water dominates, a middle area where strong salt water and fresh water mix and a tidal river zone where fresh water dominates.



### Study question.

***a) Outline the importance of waterfalls.***

***b) Problems faced by people using rivers as waterways.***

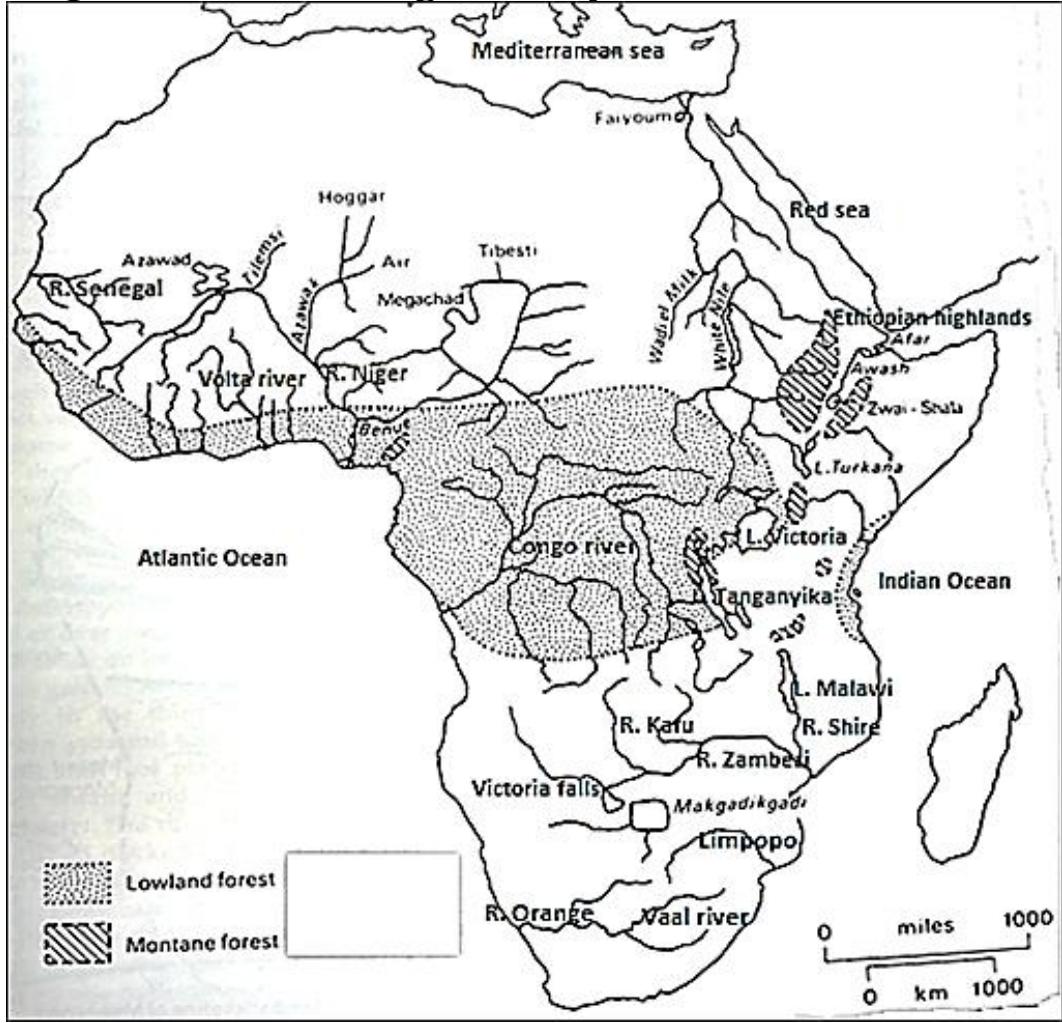
***c) Importance of drainage features and river valleys.***

### Importance of drainage features and river valleys.

- Rivers have gorges, rapids, waterfalls and deltas that act as tourist potentials that contribute foreign exchange to the country.
- Rivers contain potential sites for the construction of hydroelectricity power plants for development of industrial sector and domestic uses.
- Gorges are narrow valleys that provide ideal sites for the construction of bridges to facilitate road transport across rivers / valleys.
- Flood plains / deltas contain fertile alluvial soils ideal for farming e.g. Rice, sugar cane growing.
- Floodplains have extensive flatlands with extensive pasture for range grazing/ livestock farming.
- They are flat landscape which is ideal for human settlements.
- Floodplains are areas for construction of roads and railways for transport industry.
- Oxbow lakes do provide water both industries and domestic uses.

- Oxbow lakes provide potential sites grounds for fishing industry.
- Deltas are floodplains do have swampy vegetation like papyrus used as raw materials for art and craft industry.
- Deltas/floodplains contain sand and clay which can be mined for ceramics, bricks for building, etc.

### Map of Africa showing River systems.



## **THE GREAT RIFT VALLEY.**

The "Great Rift Valley System" stretched from the Middle East in the north around the Dead Sea to Madagascar located in the south of African continent.

The area is geologically active, and features like; hot springs, geysers, and frequent earthquakes.

Each of the rift valleys in the area is connected, but not part of a single system.

**The Jordan Rift Valley** stretches between Jordan and Israel in western Asia. The Jordan Rift Valley includes the Dead Sea, at 377meters (1,237feet) the lowest land elevation on Earth.

South of the Jordan Rift Valley is **the Red Sea Rift**. Formed millions of years ago, the Arabian Peninsula was connected to Africa. The Arabian and African plates drifted apart and the Indian Ocean flooded the rift valley, creating the Red Sea. The rift continues, and the Red Sea, rich in marine life, widens every year.

**East African Rift**, is a massive complex that lies South of the Red Sea Rift.

Throughout the East African Rift, the African plate is splitting in two. The Nubian plate carries most of the continent, while the smaller Somali plate carries Horn of Africa.

As the rift continues, the rift valley may sink enough that the Gulf of Aden will flood it. The Horn of Africa (sitting on the Somali plate) would become a continental island, like Madagascar or New Zealand.

**There are two main divisions are;**

**a) *The Gregory Rift:***

The Gregory Rift stretches from the Red Sea and Gulf of Aden as far south as Mt. Kilimanjaro, Tanzania.

b) ***The Western Rift.***

The Western Rift, also called **the Albertine Rift**, includes many of the African Great Lakes, from Lake Malawi through Lake Tanganyika, Lake Kivu, Lake Edward, and Lake Albert.

**How was the Great Rift Valley made?**

The Great Rift Valley was made by two plates:

- the African and Arabian - pulling away from each other.

As the plates pulled away the land on top stretches and the middle collapses. The rift valley is therefore made.

The Great Rift Valley was created when plates in earth's crust pulled apart.

A rift valley forms where the Earth's crust, or outermost layer, is spreading or splitting apart.

This kind of valley is often narrow, with steep sides and a flat floor.

Rift valleys differ from river valleys and glacial valleys because they are created by tectonic activity and not by the process of erosion.

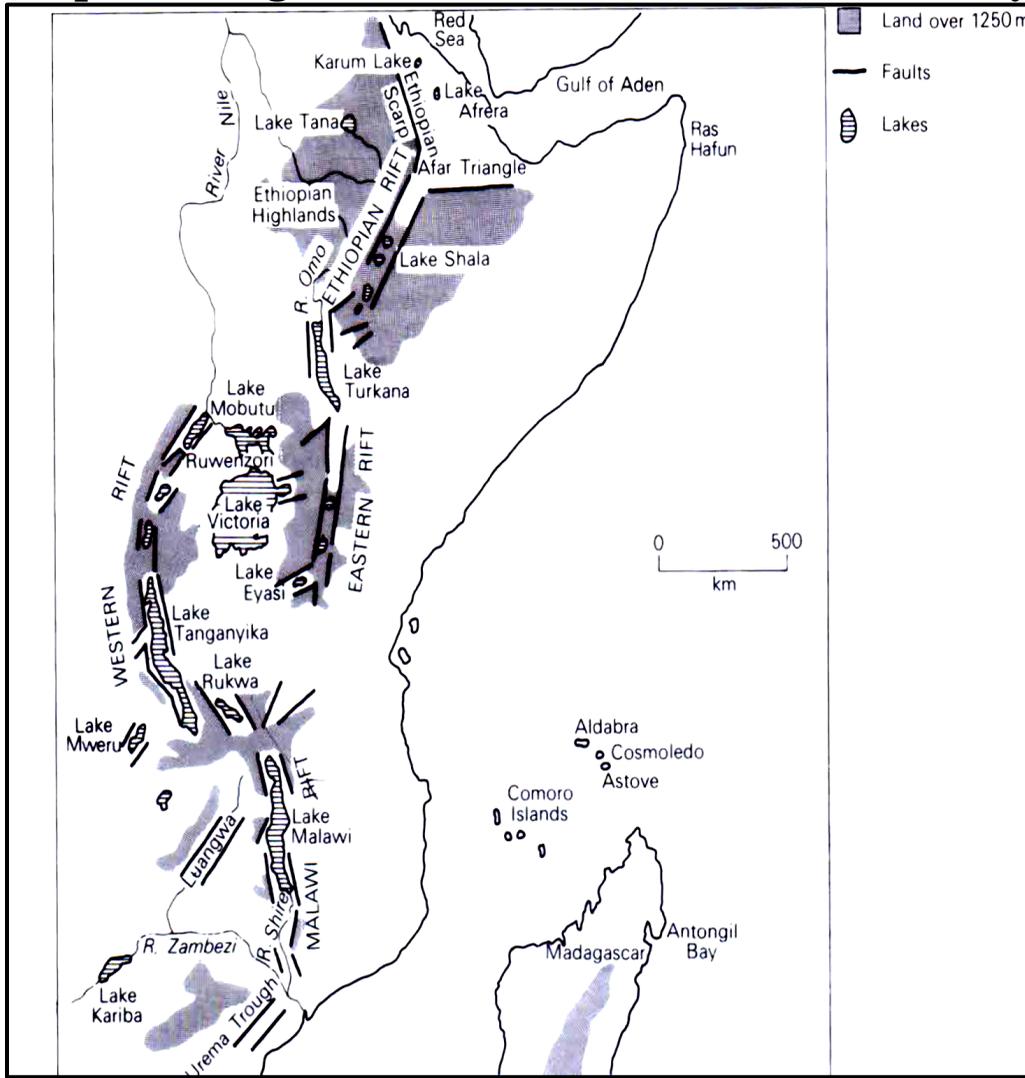
Rift valleys are created by plate tectonics. Tectonic plates are the huge rocky slabs made up of the Earth's crust and upper mantle. They are constantly in motion—shifting against each other, falling beneath one another (a process called subduction), crashing against one another.

There are only two rift valleys on Earth within continental crust, the Baikal Rift Valley and the East African Rift. Tectonic plates also tear apart from each other. Where plates move apart, the Earth's crust separates, or rifts. Tectonic activity splits continental crust. As the sides of a rift valley move farther apart, the floor sinks lower.

## **Sample question.**

- (a) Draw a sketch map of Africa and on it mark and name the:
- (i) Great Rift Valley.
  - (ii) Basins: El d'jouf, Chad and Kalahari.
  - (iii) Highlands: Atlas Mountains and Ethiopian highlands.
  - (iv) Rivers: Zambezi, Congo and Nile.
- b) Describe the process responsible for the formation of the rift valley.
- c) Explain the importance of the rift valley to economic development of man.
- d) Outline the problems faced by people living in rift valley areas.

# Map showing extent of the East Africa Rift Valley.



## SOLUTION

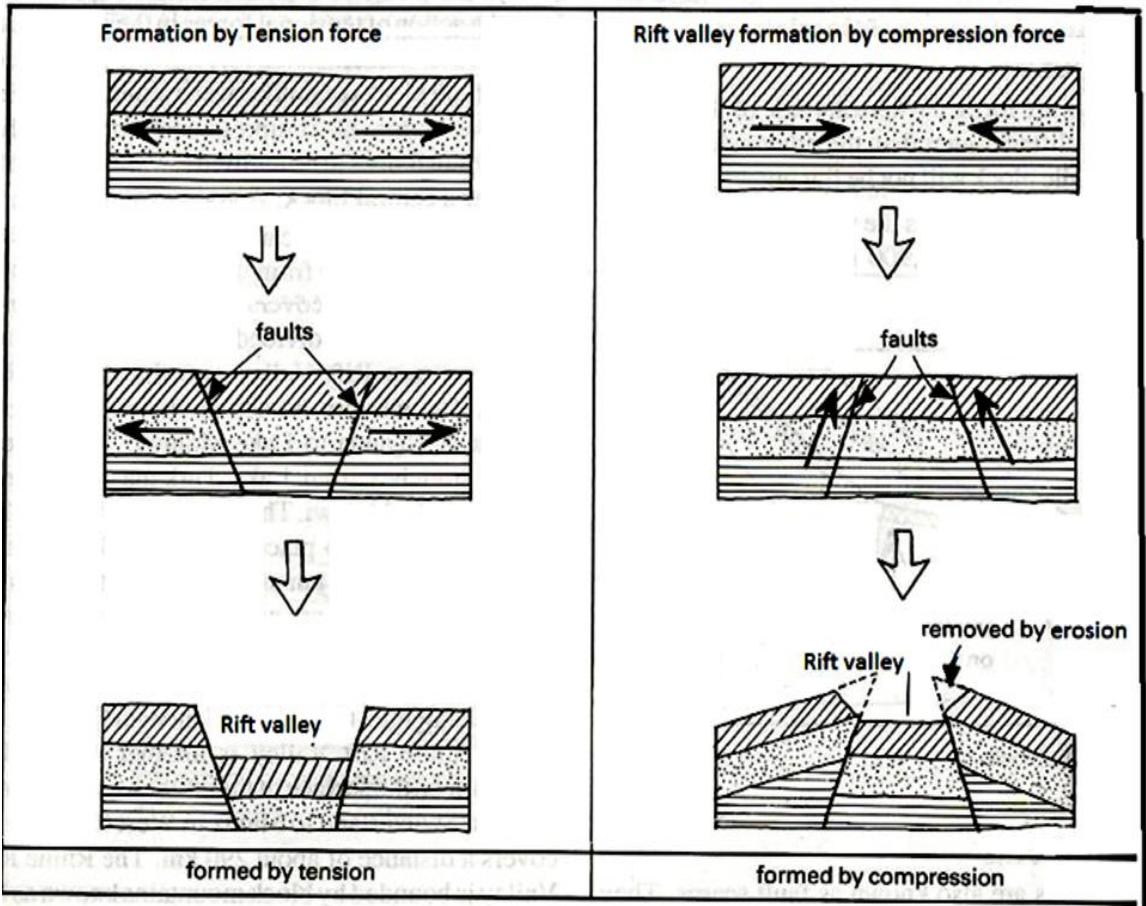
### b) Formation of a rift valley by Tension forces.

Rift valley is an elongated trough or depression which is bounded by in-facing fault scarps along more or less parallel faults.

- Rift valley is formed as a result of a process called faulting.

- Earth crust is subjected to tensional forces that pull a part side blocks / the crust then leads to development of normal faults.
- As tension force continued to operate, the central block of crust was forced to sink under own weight to form a depression called a **Rift valley**.

Formation of Rift valley by Tension force and Compression force.



### **Formation of a rift valley by compression forces.**

- Compression forces exerted on earth crust push layers of the earth from both sides and eventually lead to formation of reversed faults.
- The Continued push by forces lead to side blocks to override the middle block.

The middle block formed the rift valley floor while the side blocks from escarpments that are later modified by denudation forces of like erosion.

### **Explain the contributions of a rift valley to development of man.**

#### ***Positive importance.***

- Rift valley lakes are potential grounds for fishing e.g. L. Edward, Tanganyika, Transport has been developed along rift valley lakes to link up with railway and road transport to facilitate trade E.g. on the Red sea, L. Malawi, L. Tanganyika, L. Albert.
- Rift valley lakes are a source of water for industrial, urban, livestock and domestic uses.
- Rift valley floor is lowland has promoted farming due to presence of fertile soils deposited out of weathering of rocks of fine soil texture.
- Some areas of the rift valley have resources which support the craft industry e.g. swamps around L. Tanganyika, L. Albert, L. Edward have papyrus vegetation needed as raw materials for art and craft industry, construction etc.

### **Problems face by people living in the rift valley areas.**

- Rift valley lakes are too narrow and deep which limit their use for transport.
- Rift valley areas are associated to natural hazards e.g. earth quakes, landslides, etc. lead to destruction of property and life.
- Rift valley areas are associated with pests and diseases e.g. tsetse flies around Albertine flats cause sleeping sickness, malaria from mosquitoes in swamp vegetation, etc.
- Flooding of lowland rift valley areas during heavy rains destroy property.
- Soil erosion due to steep escarpments and fault scarps areas are heavily eroded by water.
- Dangerous wild animals live in rift valley floor national parks like Serengeti N.P, Bwindi impenetrable forest N.P, Semiliki Park, destroy property of man and lives.
- Remoteness in rift valley areas due to difficulty to construct transport routes across it.

# THE AFRICAN RIFT VALLEY AND PLATEAUX

