HELMET

PHYSICAL GEOGRAPHY WORKBOOK

(VOLUME TWO)

BY

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ABOUT THE WORK BOOK

After every lesson or topic, information should be collected from students in order to know whether the set objectives were achieved and to determine the academic changes in a learner. This is done through the assessment and evaluation of students after a lesson or topic (Amoakohene, 2003).

HELMET PHYSICAL GEOGRAPHY WORKBOOK (VOLUME TWO) is a "*learn as you answer*" physical geography workbook which has come to serve as an aid to the appropriate physical geography textbooks and other resources by teachers to help assess learners and boost learners performance in physical geography. It is made up of over hundred (100) questions based on all the second year as well as some third year physical geography topics outlined in the Ghana Education Service and the West African Examination Council Syllabus on Geography for Senior High School. This workbook is designed for all senior high school students in West Africa. The questions in this workbook are set systematically based on each topic completed. This workbook is a good tool in enhancing proper assessment and preparation of students towards examination and this can be achieved by completing the various exercises in it and well discussing the exercises after they have been completed. Teachers can give the questions in this workbook to students as class exercises or assignments and can apportion marks to the questions based on their own discretion.

This workbook will help students to know, comprehend, apply and analyze the various topics in first year physical geography and will help teachers to know the level of performance of learners in physical geography during the first year of the learner.

ACKNOWLEDGEMENT

First and foremost, I thank the almighty God for his protection and guidance throughout these years. It is by His might that this piece of work has come to reality.

I am also grateful to the Head Master, staff and students of Mando Senior High Technical School, especially Mr. Samuel Amoah Forson (Head of Department, Social Sciences), Mr. Jerry Baine and Madam Peace Panou for their great assistance and contribution towards this work.

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My gratitude also goes to my father, mother, siblings, and all the members of my family as well as the entire church body of Christ Is Life Mission Church for their support in diverse ways.

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LAKES

1. Define a Lake

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   Fill in the space provided with the appropriate answer from the given options; ***Crustal Sagging Lake, Rift Valley Lake, Rock Basin Lake, Lava Dammed Lake***

2. ''I am a lake formed when water accumulate in a natural basin or depression when a block of the earth's crust sinks between two parallel or almost parallel faults. I am normally long, narrow and deep.'' What am I?

   ……

3. ''I am a lake formed when water collects in depressions or hollows created the through warping, bending or fracturing of the earth's crust. I am usually large and have gentle shelving shores.'' What am I?

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4. ''I am formed in volcanic areas where streams of lava may flowing across a river valley solidifies and blocks the river.'' What am I?

   .....

5. ''I am formed when valley glaciers or ice sheets scoop out hollows on the earth's surface and these hollows are filled with water.'' What am I?

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6. With the aid of diagrams, describe the following types of lakes;
   a. Crater or Caldera lake

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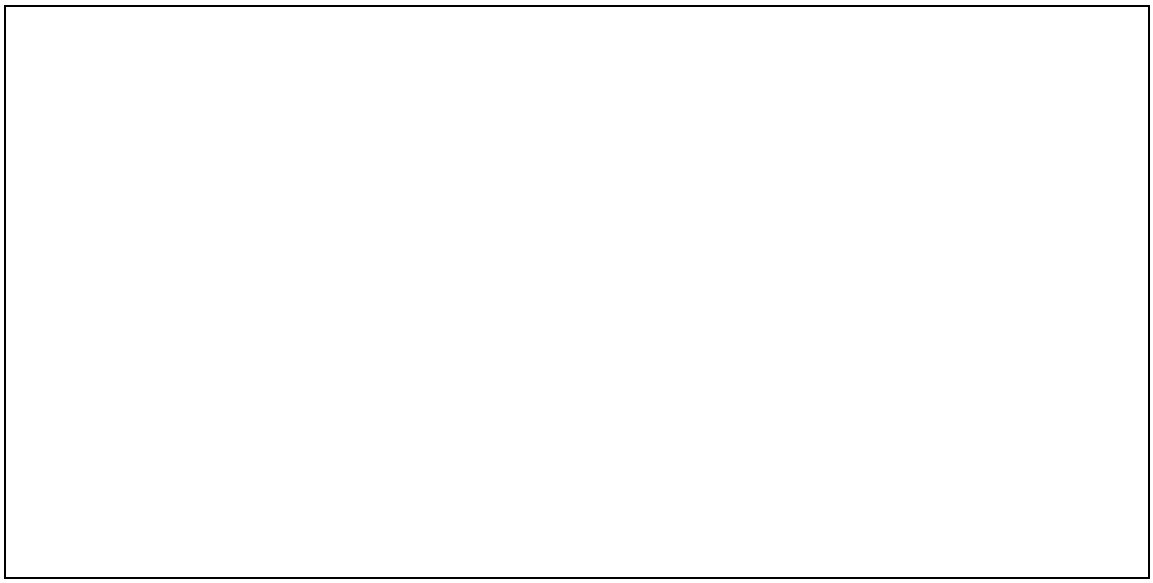
b. Wind deflated lake



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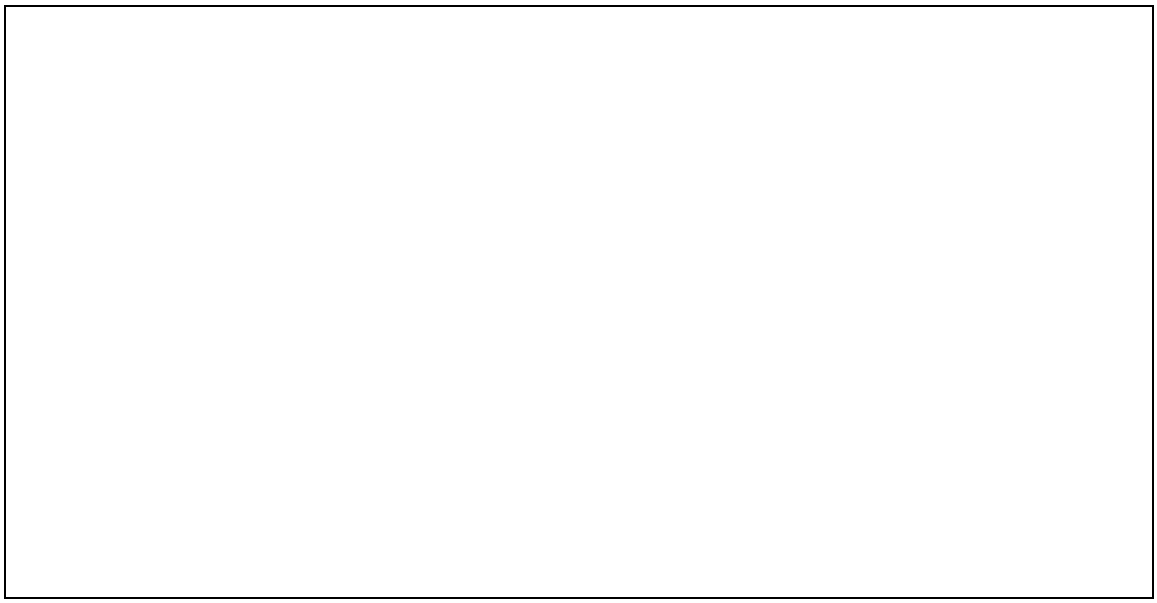
c. Cirque lake



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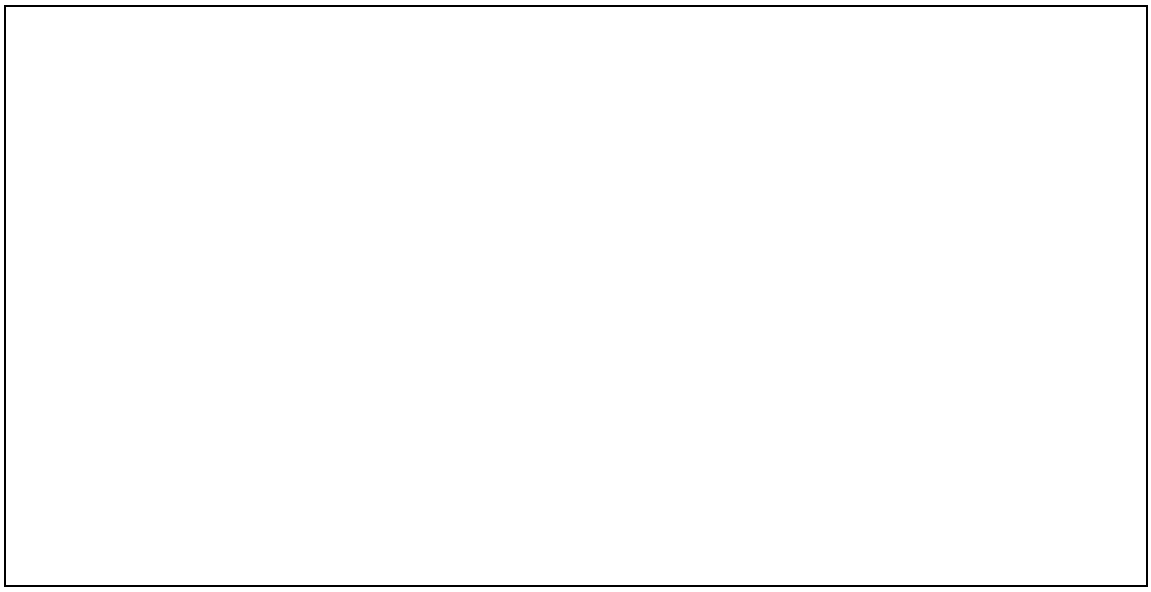
d. Oxbow lake



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7. Write short geographic notes describing the characteristics and formation of the following;
   a. Beaver lake

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b. Mining lake

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c. Kharst lake

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d. Delta lake

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e. Trough lake

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f. Man-made lake

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g. Lakes formed by Marine Deposition

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h. Lakes formed by Glacial Deposition

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i. Lakes formed due to Mass Wasting

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8. Give five (5) importances of lakes.
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GROUND WATER AND HYDROLOGICAL CYCLE

1. Water found beneath the earth's surface which involves water found in soil, subsoil and the bedrock is referred to as…….

   Fill the spaces provided with the appropriate answer from the following options; ***Meteoric Water, Magnetic Water*** and ***Connate Water***

2. ''I am an internal source of underground water that was retained in sedimentary rocks when they were being laid down.'' What am I?
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3. ''I am another internal source of underground water which is liberated during igneous activity.'' What am I?
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4. ''I am external source of underground water that comes from atmospheric precipitation or rainfall'' What am I?
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5. Differentiate between the following with appropriate examples;
   a. Porous and Pervious Rocks

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   b. Permeable and Impermeable Rocks

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6. With the aid of appropriate examples of such rocks, explain why some rocks are seen as porous but are impermeable.

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7. Describe how the water table is formed.

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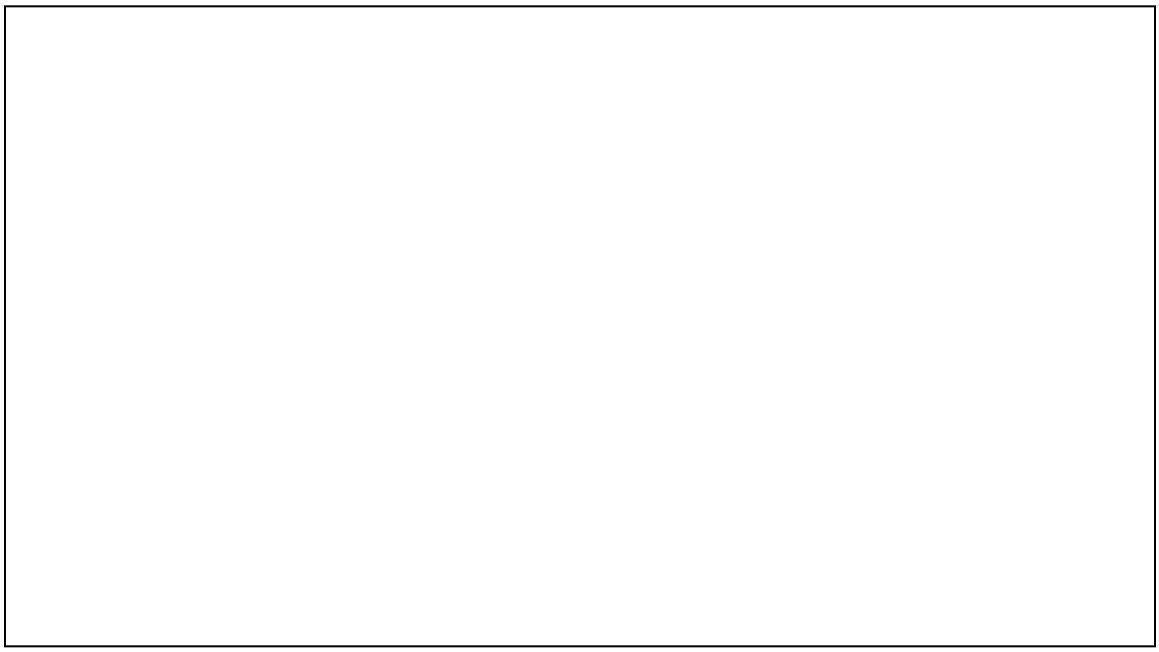
8. With the aid of appropriate diagram, describe the three water zones below the surface of the earth.



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9. What is a spring?

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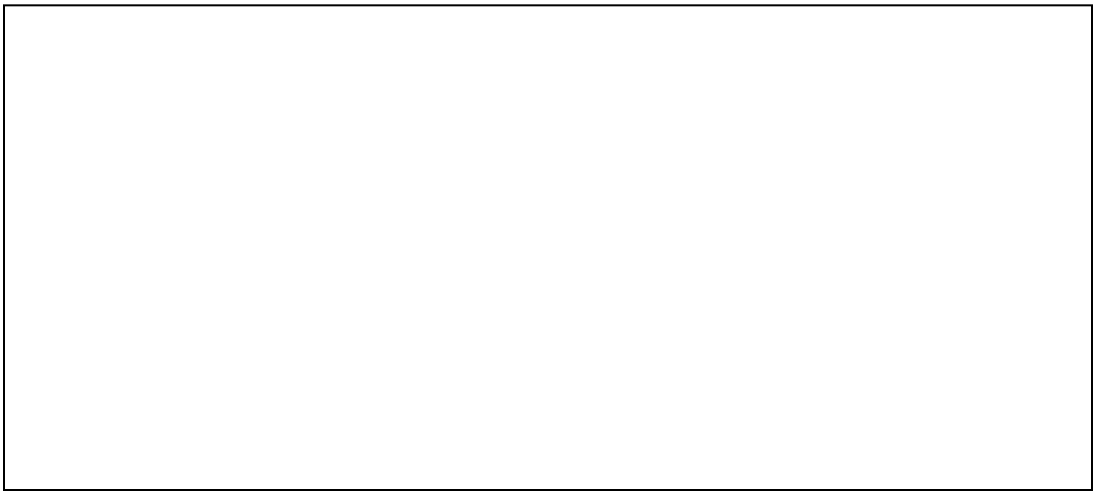
10. With the aid of appropriate diagrams, describe the following;
    a. Dyke Spring



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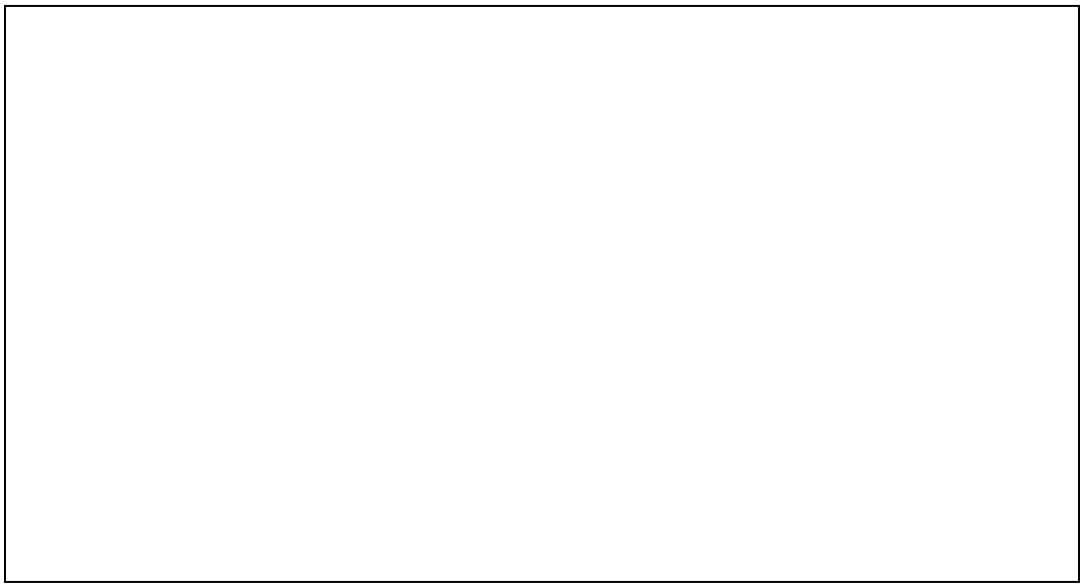
b. Fault Spring



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c. Dip Slope Spring

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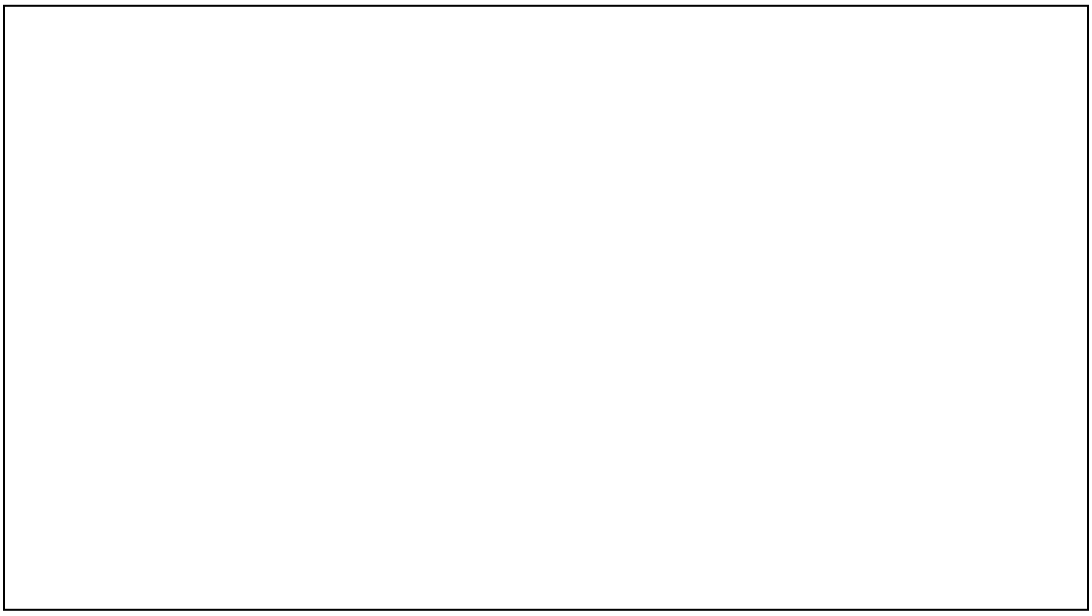
c. Scarp Spring



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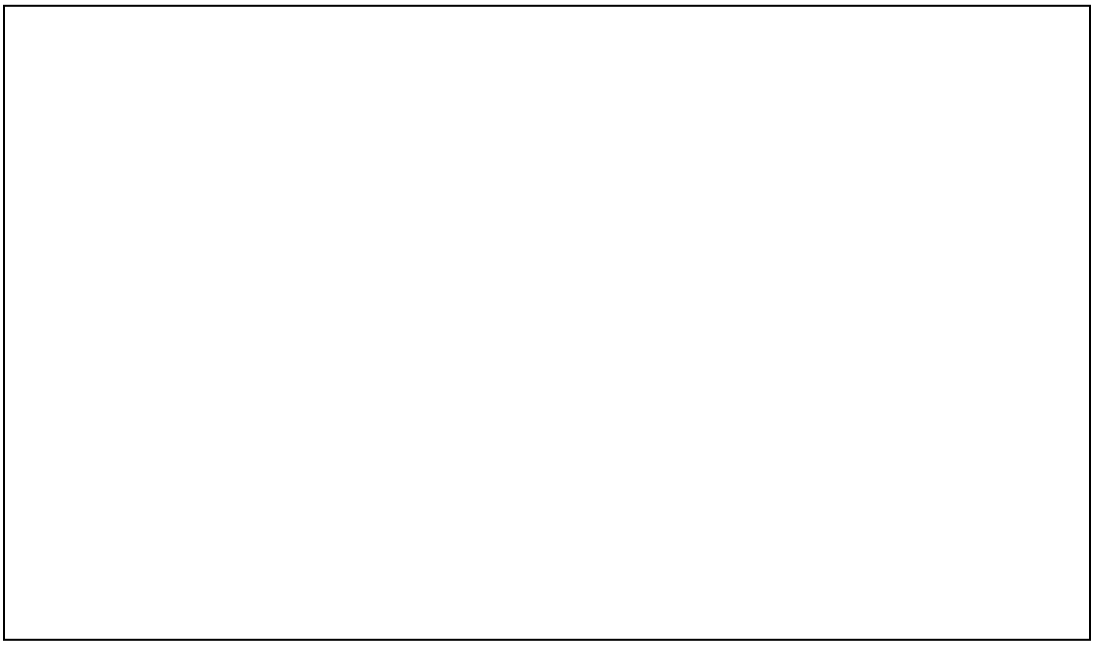
d. Vauclusian Spring



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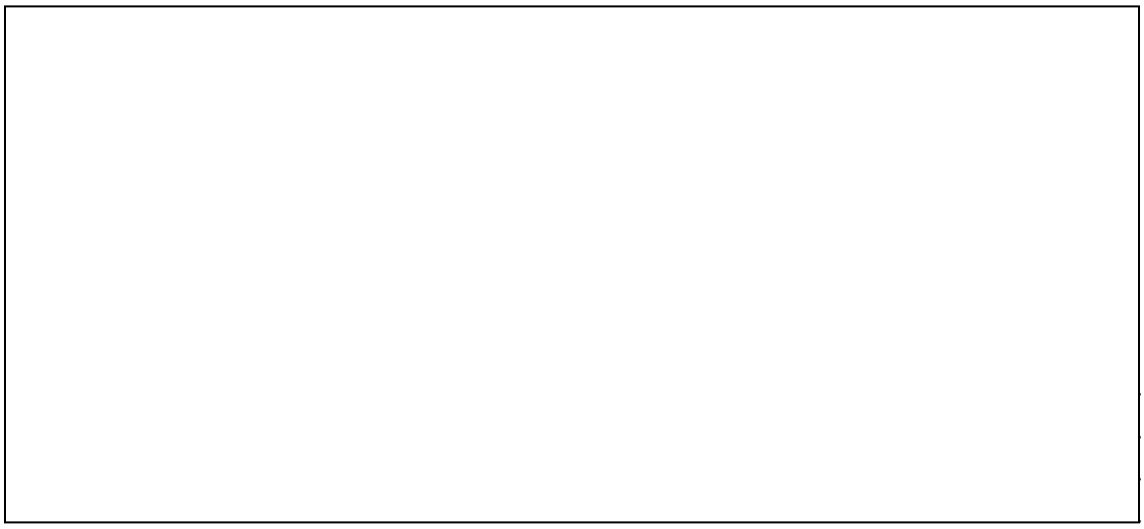
11. Water that seep out of the rock beneath when a hole is sunk into the ground to below the water table is referred to as …….
12. Write short geographic notes, supporting it with appropriate diagram, on the development of artesian well.



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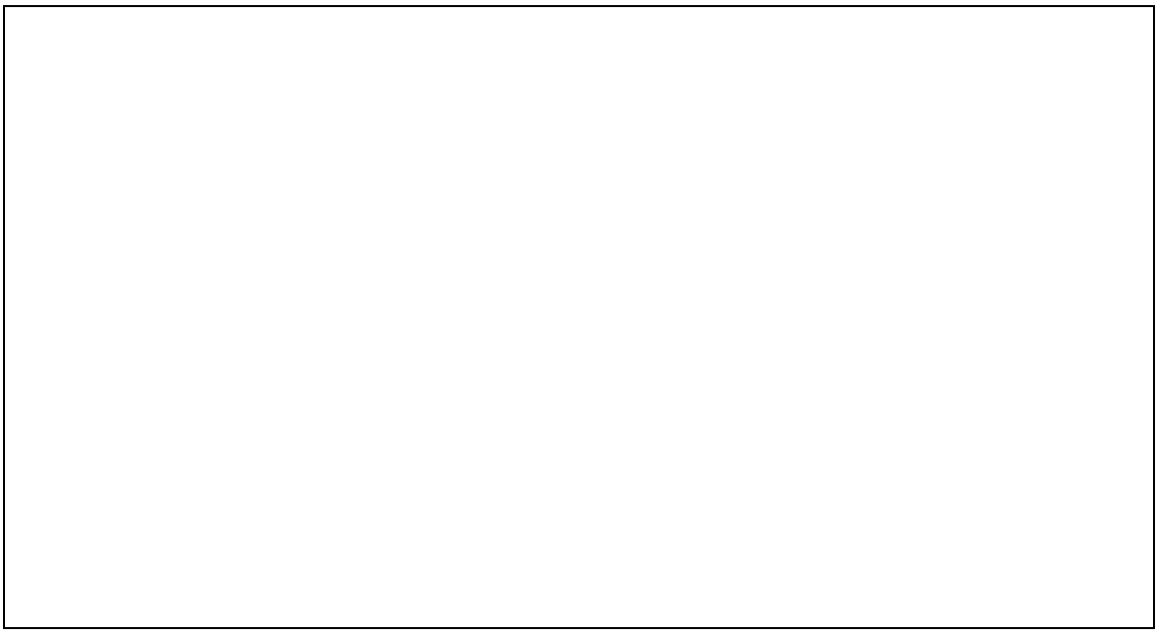
13. Using a well labeled diagram, describe the hydrological cycle.



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14. Give four (4) economic importance of underground water.
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    b. ……
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    c. ……
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    d. ……
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ISLANDS AND CORAL REEFS

1. Define Coral Reefs.

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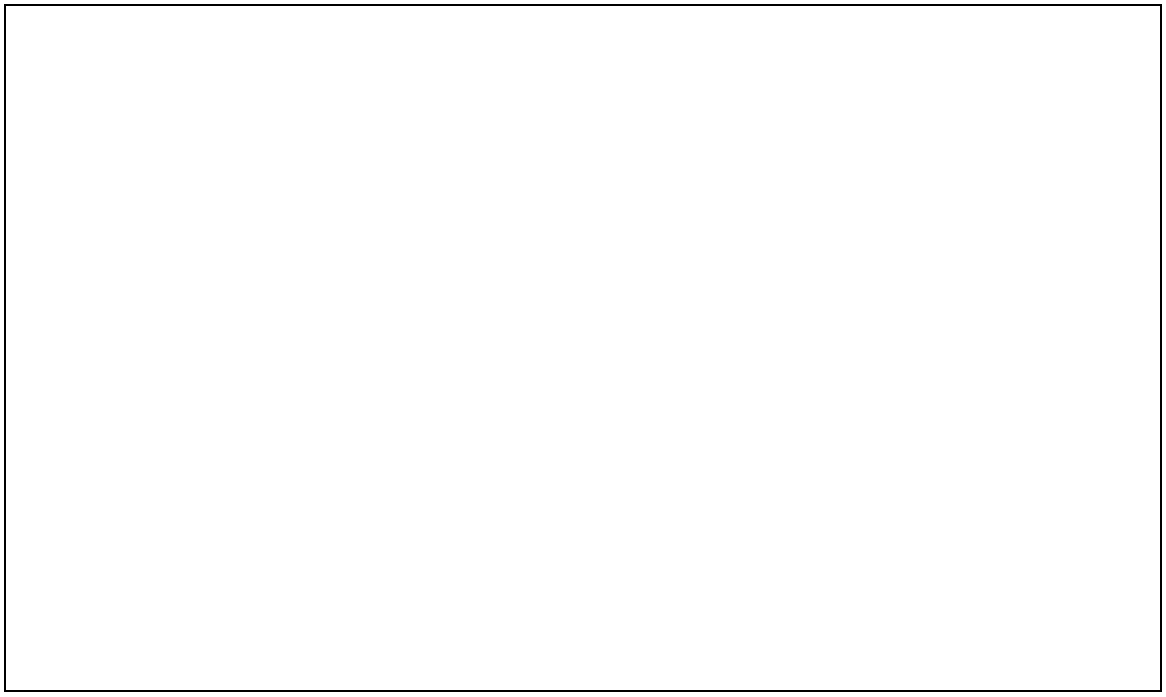
2. With the aid of appropriate diagrams, describe the following types of coral reef;
   a. Fringing reef



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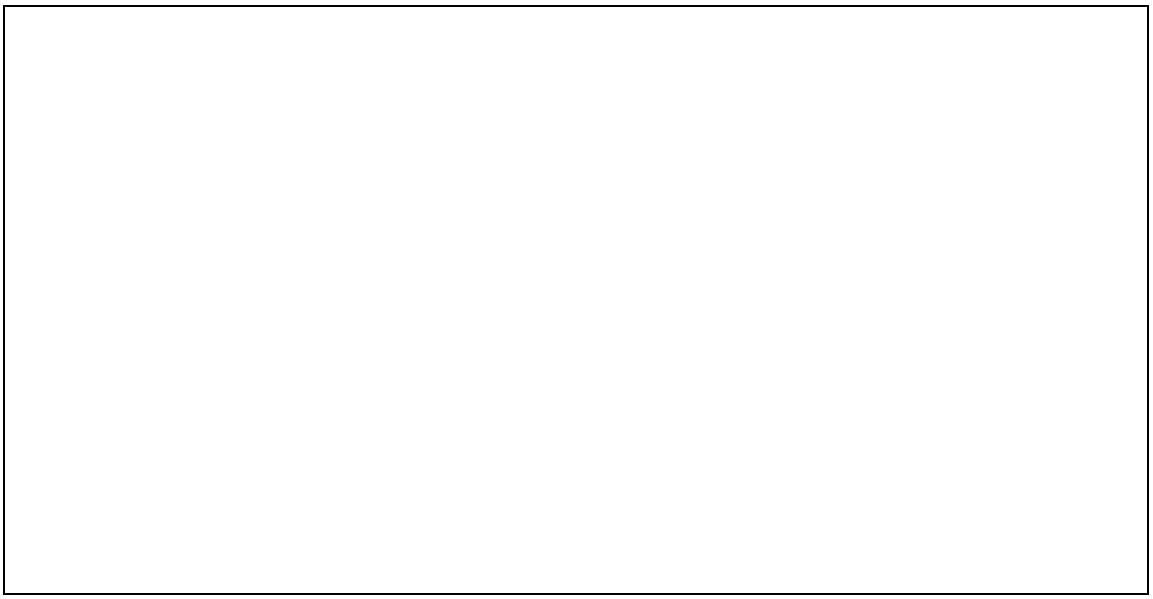
b. Barrier reef



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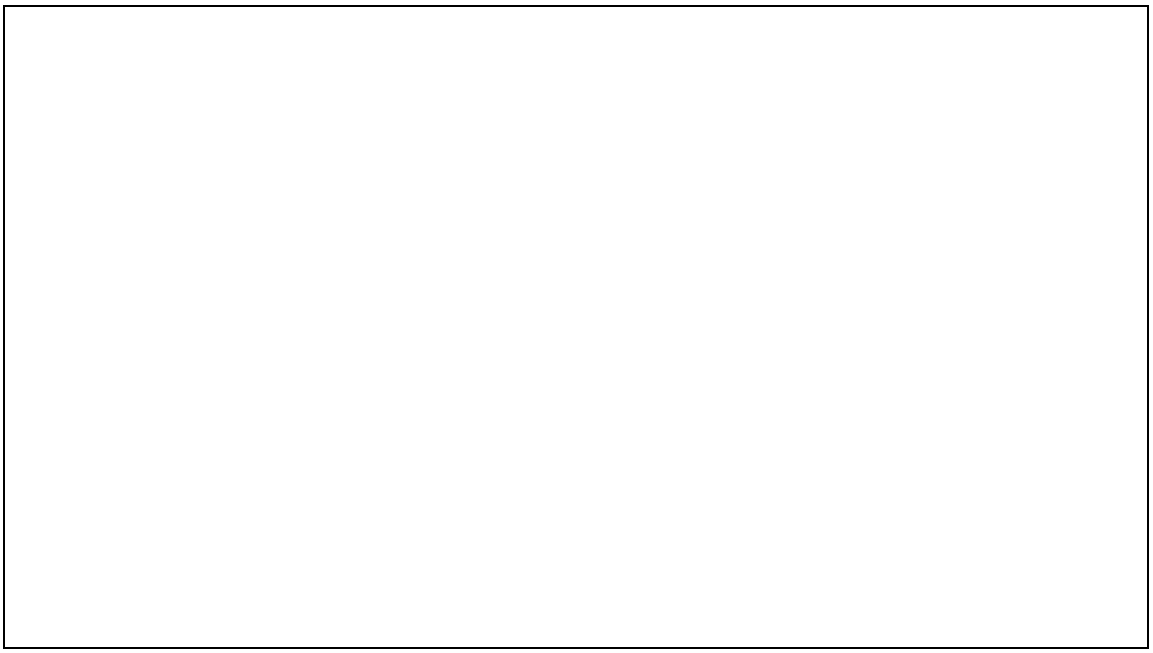
c. Atoll



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3. Give five (5) conditions necessary for the growth of corals.
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   b. ……
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   c. ……
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4. Briefly describe the formation of coral reefs.

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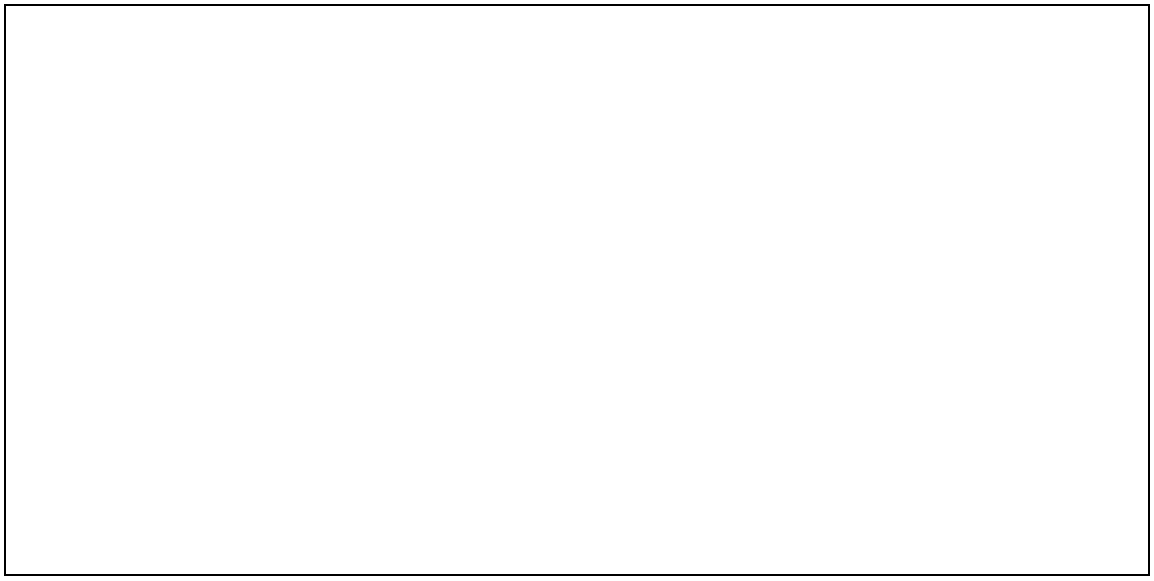
5. A piece of land surrounded on all sides by water which may occur individually or in a group in open seas or oceans is referred to as ……
6. With the aid of appropriate diagram, describe the characteristics and formation of continental islands.



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7. Define and state four (4) characteristics of oceanic island.
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   b. ……
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   c. ……
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   d. ……
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8. Write short geographic notes on the following types of oceanic island;
   a. Volcanic Islands

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   b. Coral Islands

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9. Distinguish between Archipelago and Festoons.

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10. Give four (4) importance of Islands.

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b. ……
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c. ……
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d. ……
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WEATHERING

1. The physical disintegration and chemical decomposition of rocks which does not involve any movement or transporting agency is referred to as ……..
2. Distinguish between Physical and Chemical weathering.

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3. Explain the following processes through which physical weathering occurs;
   a. Frost action

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   b. Growth of crystals

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c. Pressure release

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d. Biological action

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4. Describe “exfoliation” and “block disintegration” under repeated temperature changes under physical weathering.

Fill in the blank spaces provided with the appropriate answer (Q5-Q8)

5. The chemical weathering process which involves the reaction of oxygen in air or water with the rock forming mineral and its effective in rocks containing iron compound is known as ……..

6. The chemical weathering process which occurs when weak acid formed through the dissolving of rainwater and carbon dioxide in air with limestone rock is known as
   …….
7. The chemical weathering process which involves a chemical reaction between rock forming minerals and hydrogen atoms in water is referred to as
   ……..
8. The chemical weathering process which occurs when rock forming minerals take-up water, expand and set-up stress in the rock is known as
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9. Explain the following processes in chemical weathering;
   a. Solution

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   b. Chelation

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10. Explain four (4) factors that affect the rate and character of weathering.
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b. ……
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c. ……
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11. Give four (4) effects of weathering

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b. ……
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c. ……
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MASS WASTING

1. Define Mass Wasting.

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2. State three (3) factors that influence the movement of the moving material.

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   b. ……
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   c. ……
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3. Describe the types of weathering.

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   Fill in the spaces provided with the appropriate answer from the following options; ***Rock fall, Slump, Debris Slide, Mud flow, Earth flow, Soil creep, Talus creep***

4. "I move very slowly, gradually but more or less continuous down a hill-slope. My movement affects an extensive area and occurs on a fairly gentle slope with water serving as a lubricant to facilitate my movement. Though my movement is unnoticeable, I can be

seen at the foot of slopes and behind obstaclessuch as boulders and walls. I am not destructive." What am I?.....

5. "My materials move slowly in screes down a hill-slope. I usually occur at the foot of a slope and my materials are usually produce by frost action and exfoliation. I am les destructive." What am I?.....
6. "I am made up of saturated soil which moves down slope and I mostly occur in humid climatic regions. I leave a scar behind to mark the place where my movement took place. I occur on steep slopes." What am I?.....
7. "I move when a violent rainstorm produce much water than my material can absorb. I move rapidly at the initial stage but slows down and eventually stops when my material, after mixing with water becomes very thick. I mostly occur in arid regions where vegetation is absent. I can be destructive. What am I?.....
8. "I am made up of rock fragments and boulders and I move suddenly along steep slopes such as cliff faces, railway cuttings and valley sides. I am very catastrophic. What am I?.....
9. "I move swiftly down-slope with my loose materials. I may require little or no water to enhance my movement. What am I?.....
10. "I rotate backward in my movement and I am made up of massive blocks of bedrock which breaks off from cliff on a curved up-concave slip plane. I am sometimes known as slope failure or shear sliding. What am I?.....
11. Describe the following;
    a. Rock creep

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    b. Solifluction

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c. Rock slide

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d. Debris fall

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12. Explain five (5) factors that influence mass wasting.

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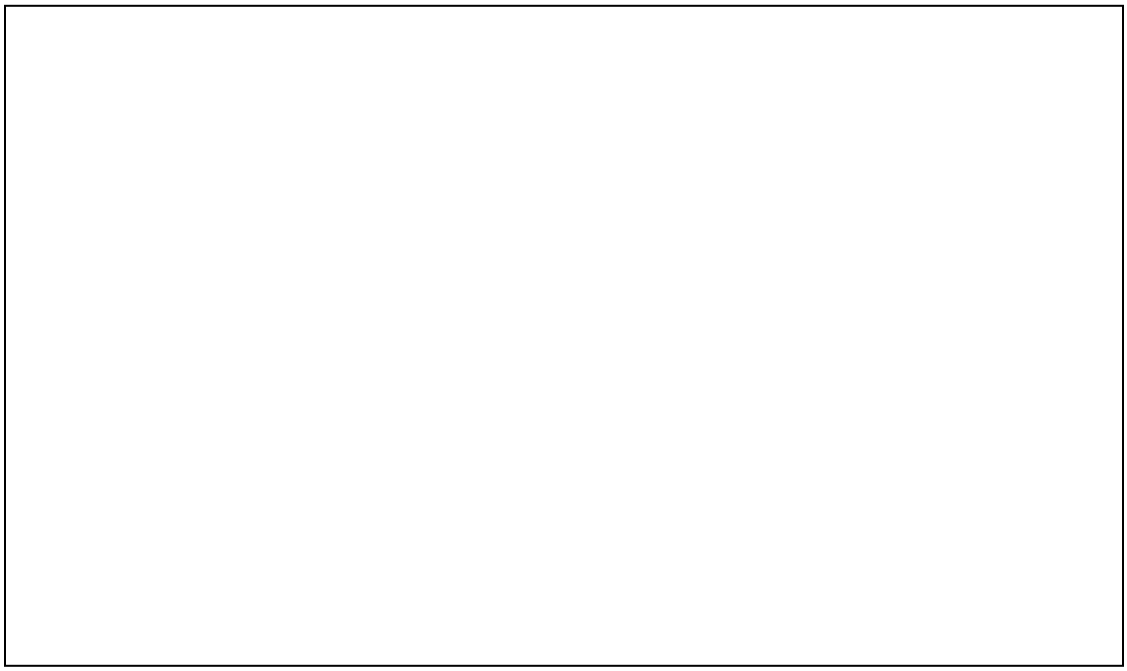
FOLDING

1. The upward and downward movement of the earth which cause the crustal rocks to fault or become uplifted, hereby producing features such as plateau, block mountains, basins and valleys is known as ……..
2. The sideways movement of the earth which usually cause the crustal rock to fold thereby resulting in the formation of features like fold mountains, valleys and basins is known as …….
3. Distinguish between Tensional and Compressional Forces with the aid of appropriate diagrams.
4. The wrinkling or crumpling of the outer crust usually along lines of weakness to produce upfolds and downfolds is referred to as ……..
5. Draw and label the nature of a fold



6. Describe the following types of fold mountains;
   a. Old fold mountain

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b. Young fold mountain

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7. Outline five(5) characteristics of fold mountains
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   b. ……
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   c. ……
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8. Using the theory of continental drift, describe the formation of fold mountains

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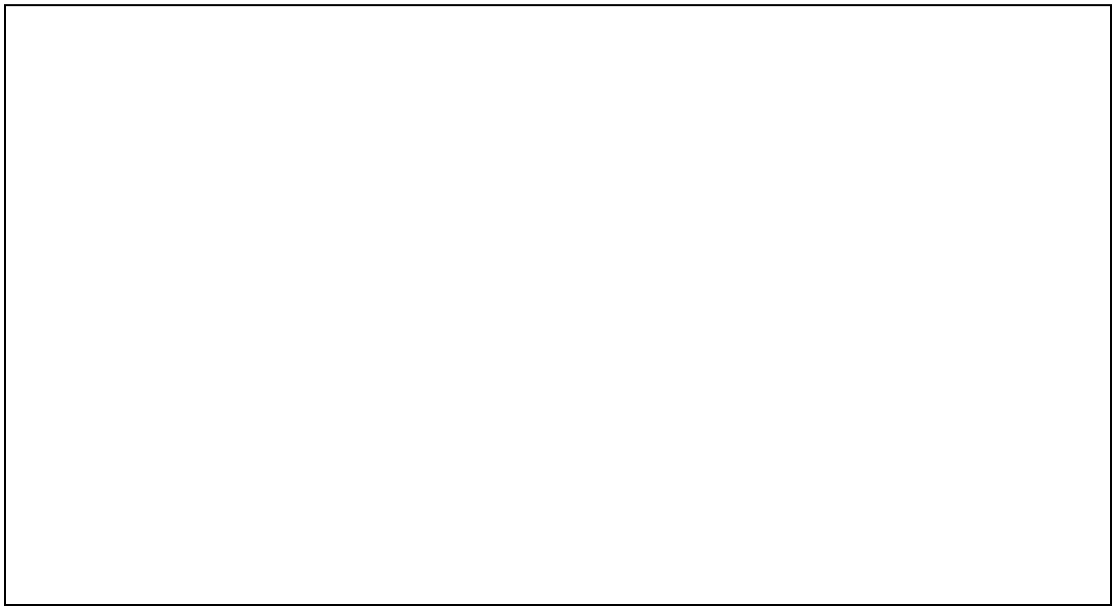
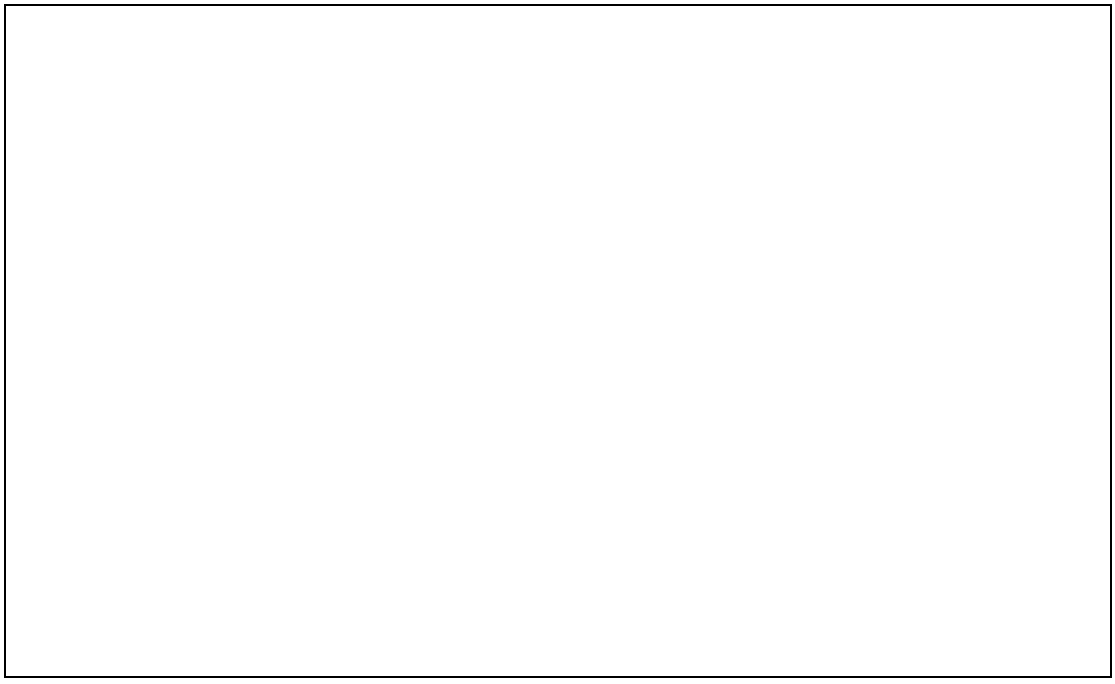
Fill in the spaces provided with the appropriate types of fold or fold structures and support your answers with the aid of appropriate diagrams.

9. ‘’I am the type of fold in which the downfold and upfold are gentle and uniform because the compressional forces that form me are equal in intensity.’’ What am I?.....

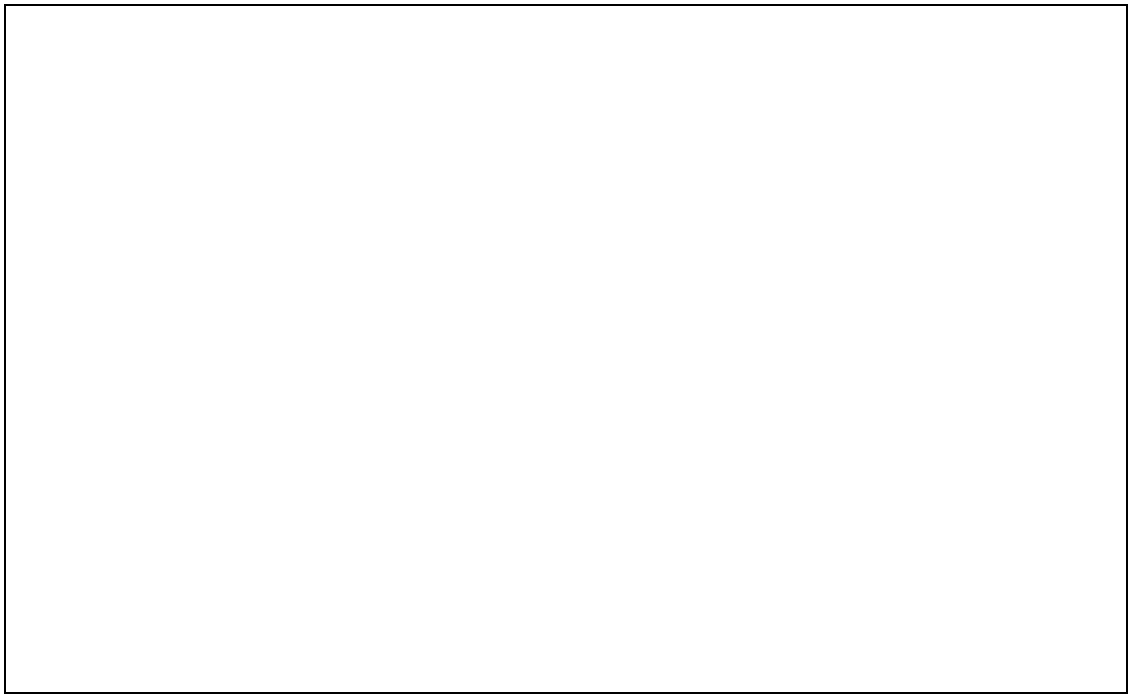
10. ‘’I am the type of fold in which one limb is steeper than the other because the compressional force from one side was much greater than the one from the other sied.’’ What am I? …….



11. ‘’I am the type of fold formed when compressional force from one side is still greater and pushes one limb over the other. I have severely inclined axis.’’ What am I? ……



12. ‘’I am the type of fold formed when compressional forces pushes the crest of an overfold still further to the extent that it is nearly horizontal. I have an axis which is almost horizontal. What am I? ……



13. ‘’I am the type of fold formed when the compressional force is exceedingly great which result in the breaking of the crest with the upper limb being pushed several kilometers over the lower limb along a near- horizontal plane.’’ What am I?
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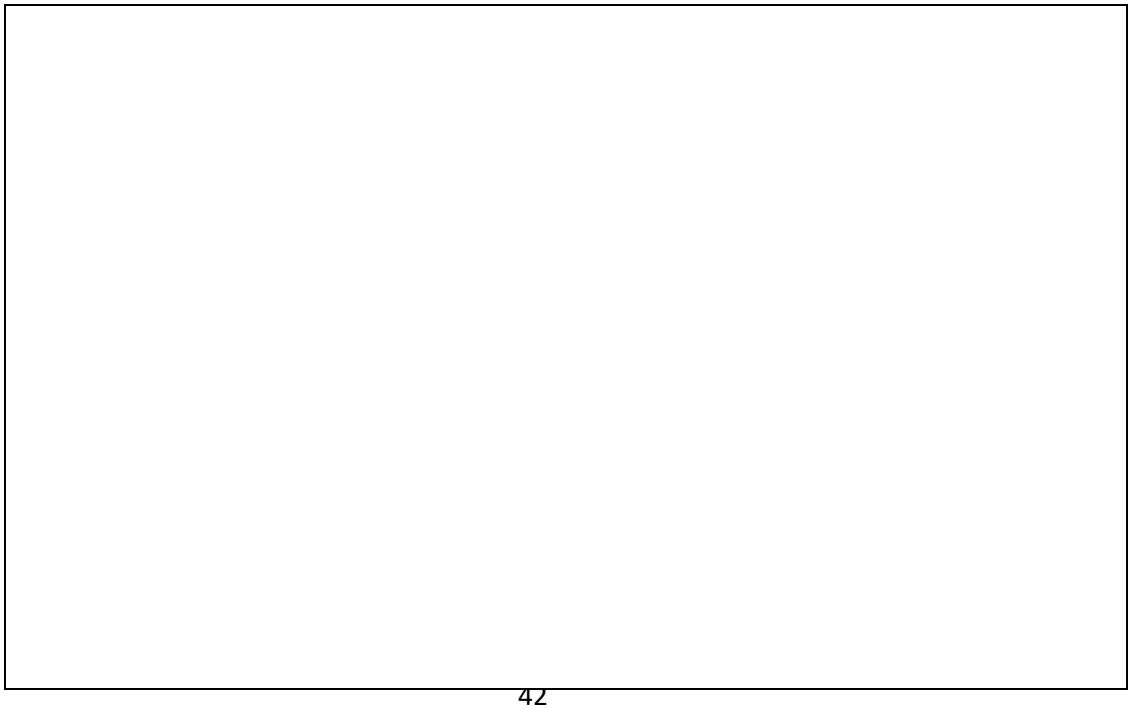
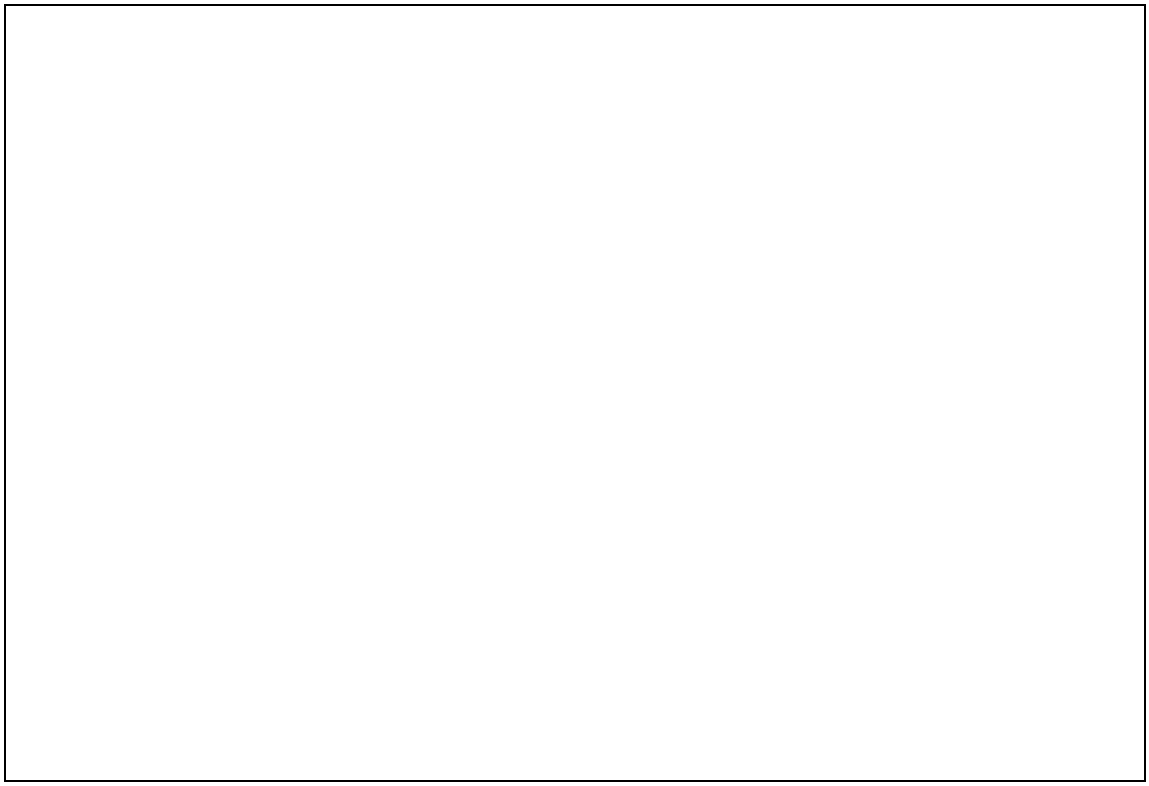


14. With the aid of appropriate diagrams, differentiate between Anticlinoria and Synclinoria.



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15. Write short geographic notes on Anticlinal Valleys.

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FAULTING

1. Define Faulting.
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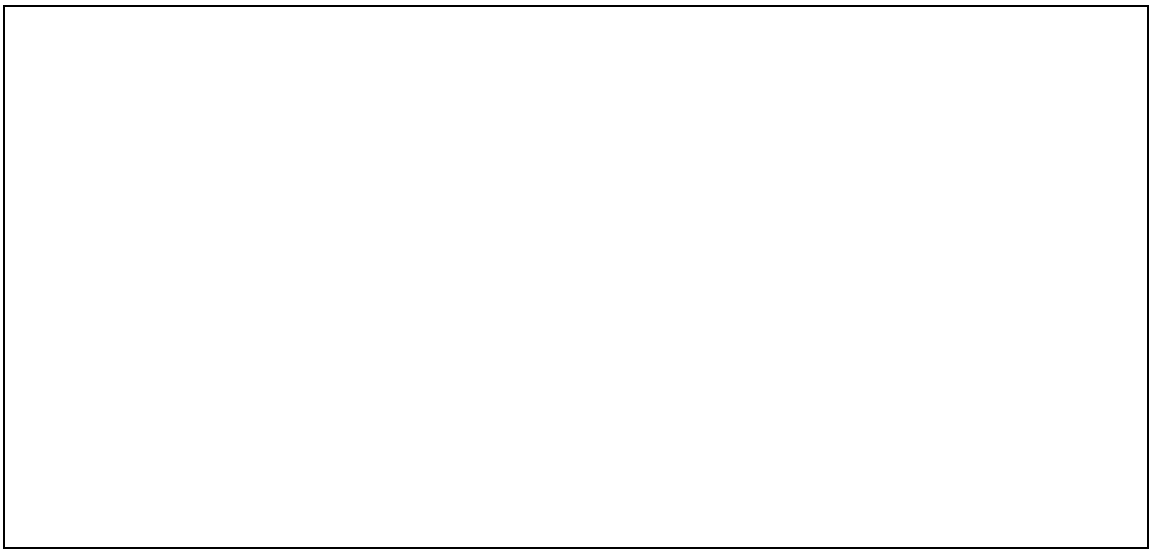
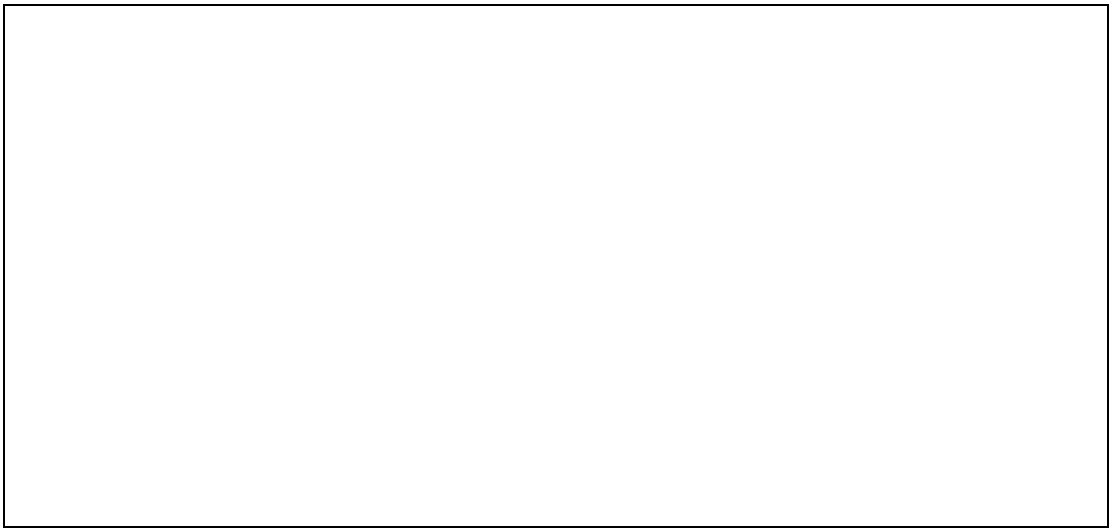
2. This is caused by tensional forces which result in a block on one side of the fault plane moving up or down, with the upper block forming the up-throw while the lower block forms the down-throw. This type of fault is known as
   ……. (support with diagram)



3. This is caused by compressional forces which results in one block over-ridding the other or moving upward along the surface of the other, with the upper block forming the up-throw block and the lower block forming the down-throw block. This type of fault is known as …… (support with diagram)



4. This type of fault occurs when one moves horizontally or both blocks move horizontally relative to each other. It is usually associated with earth quakes. What type of fault is this? …….. (support with diagram)

5. With the aid of appropriate diagrams, describe the characteristics and formation of the following landforms associated with faulting;
   a. Rift valley

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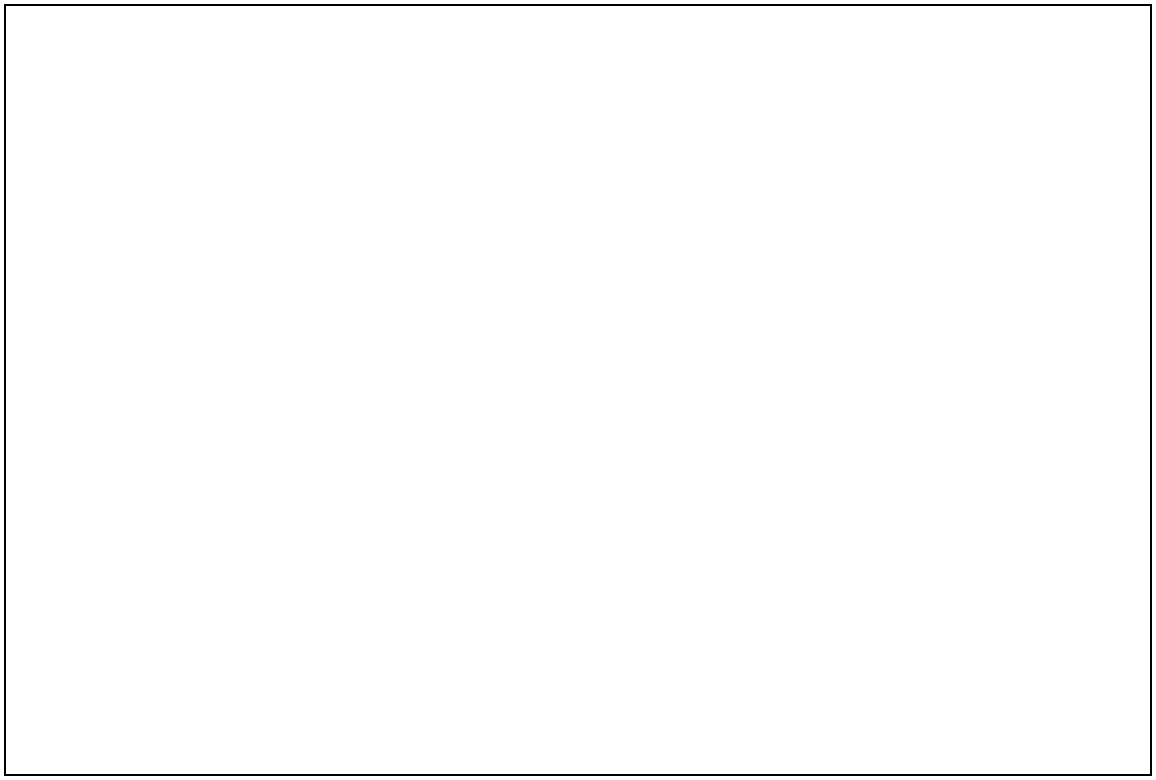
b. Block mountain



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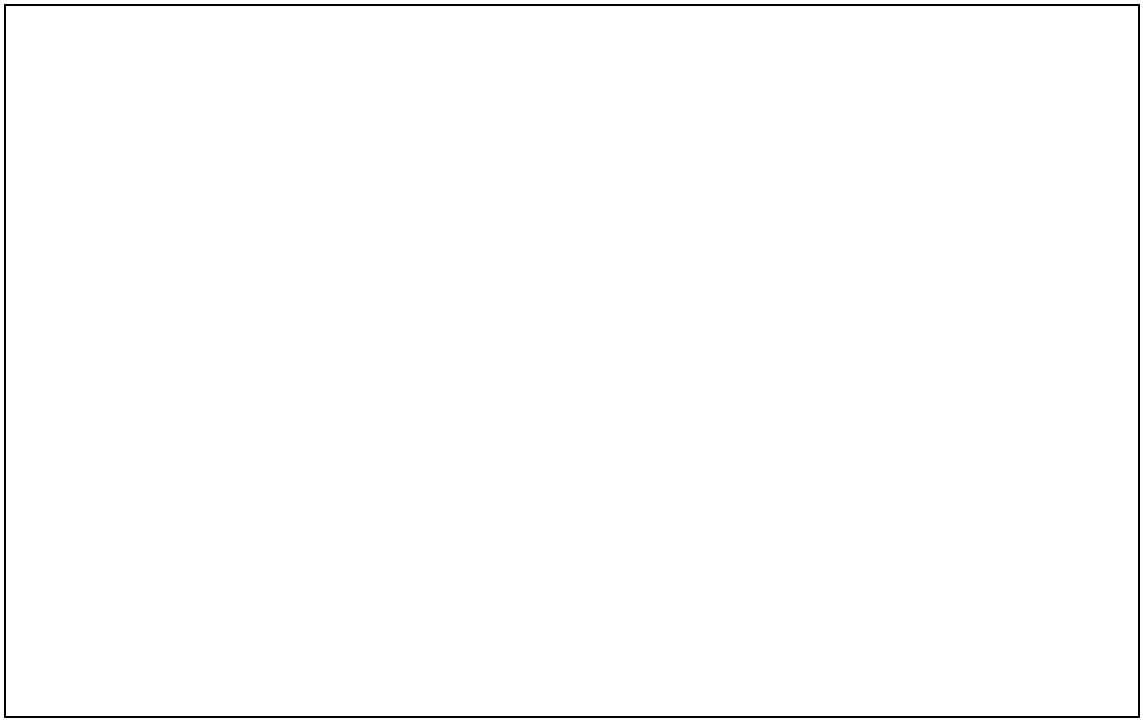
c. Fault scarp



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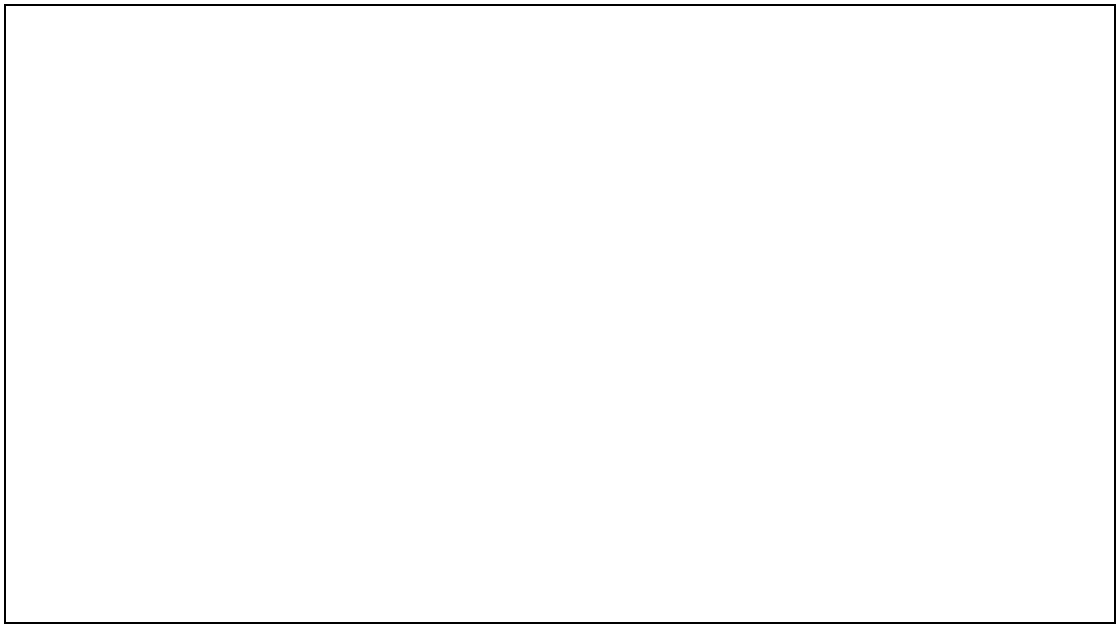
d. Fault-line scarp



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6. Write short geographic notes on the theory of Isostasy.

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7. Describe the following types of mountains
   a. Vulcanic mountain

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   b. Residual mountain

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c. Plateaux

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8. Plateaux formed by earth's movement which cause uplift, and are usually of a considerable size with fairly uniform altitude is known as
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9. Plateaux formed from the solidification of molten magma from beneath the earth's crust that comes out usually along a crack or series of parallel cracks and spread over the surrounding area to form a successive sheets or blankets of basaltic lava is known as
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10. Plateaux with high altitude and extensive surface that has been worn down by agents of denudation which makes their surface irregular is known as
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11. Describe the following types of plains;
    a. Structural plains

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b. Depositional plains

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c. Erosional plains

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VULCANICITY

1. Define Vulcanicity.
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2. Differentiate between magma and lava.
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3. A circular hole or pipe through which magma and other materials are forced out of the crust from beneath the earth is known as ……..
4. A crack through which magma and other materials are force out of the earth's crust is referred to as ……..
5. All solid materials associated with extrusive volcanic activity are collectively known as ……

   Fill the blank spaces with the appropriate answer from the following options; ***Active, Dormant, Extinct*** (Q6-Q8)
6. I am Mountain Kilimanjaro in East Africa. I erupted years ago and still show signs of possible eruption. I can therefore be described as ……
7. My name is Mountain Cameroon and I am resident in West Africa. I frequently erupt, therefore, I can be described as ……
8. Mountain Elgon is my name and I can be found in East Africa. I have never erupted in historic times but I retain the features of a volcano. I can therefore be described as …….
9. Differentiate between Intrusive and Extrusive Vulcanicity.
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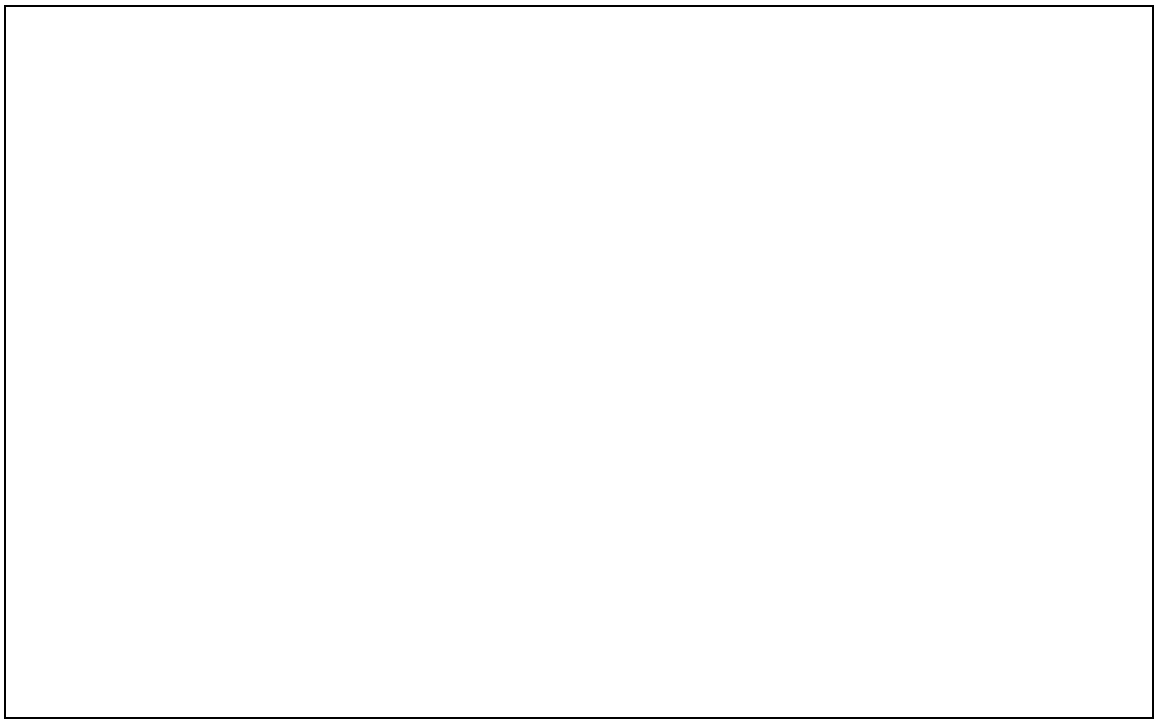
10. With the aid of appropriate diagrams, describe the characteristics and formation of the following intrusive volcanic features;
    a. Batholiths



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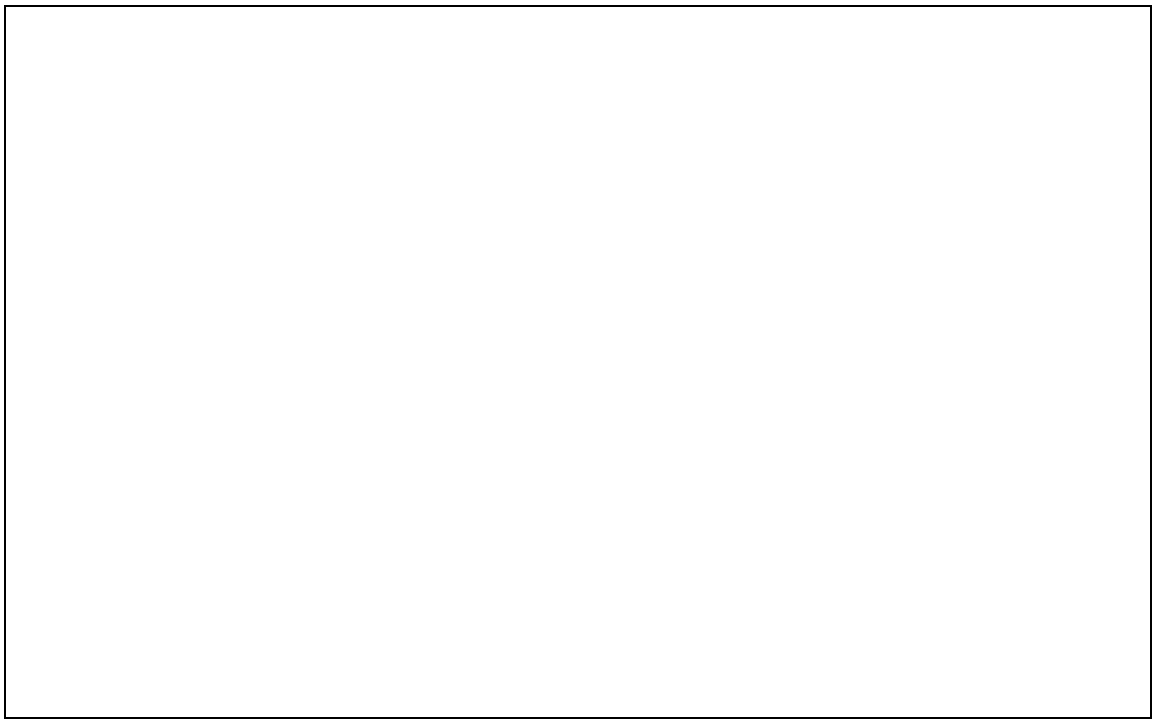
b. Laccoliths



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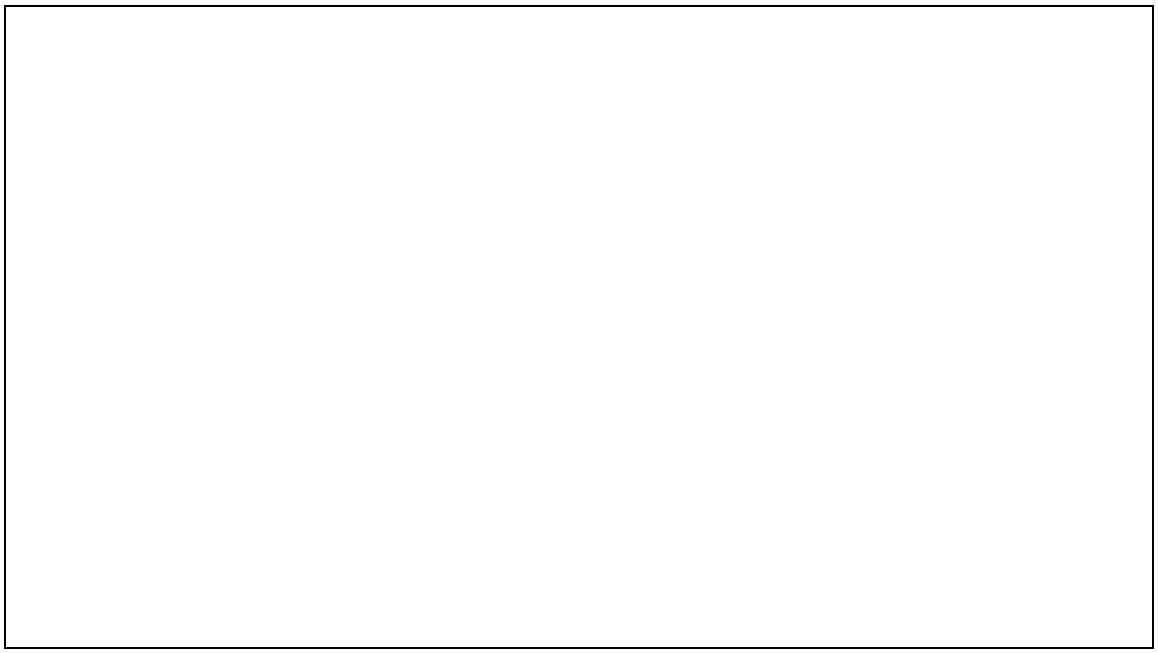
c. Dyke



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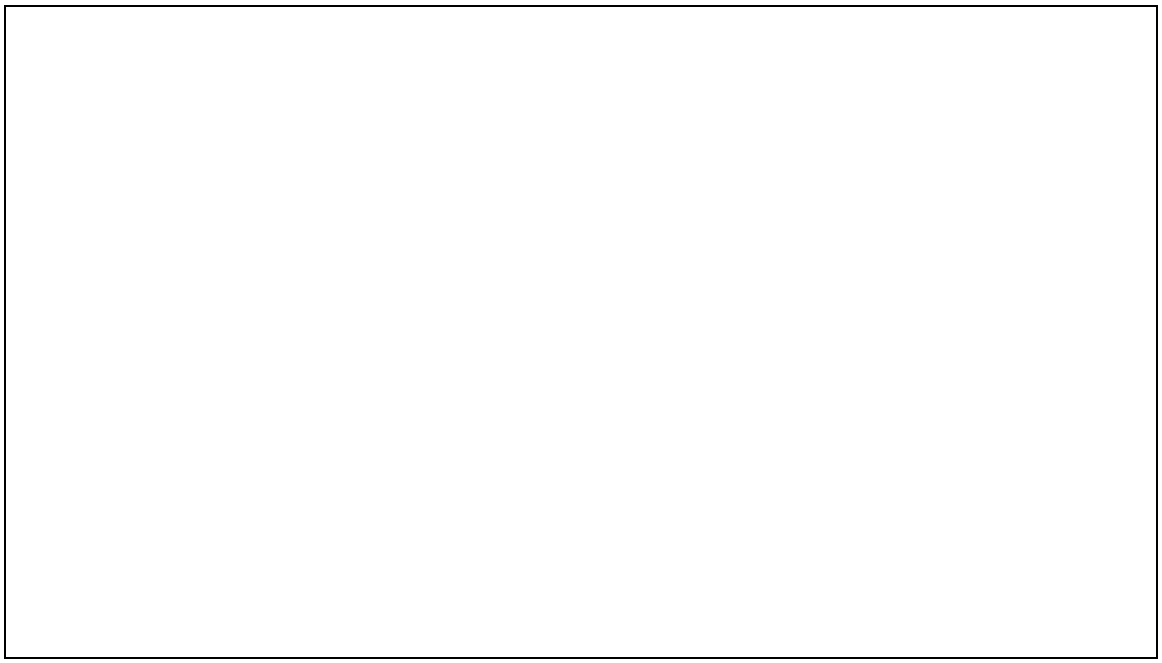
d. Sill



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11. Describe the characteristics and formation of the following extrusive volcanic features with the aid of diagram where necessary;
    a. Acid lava cone

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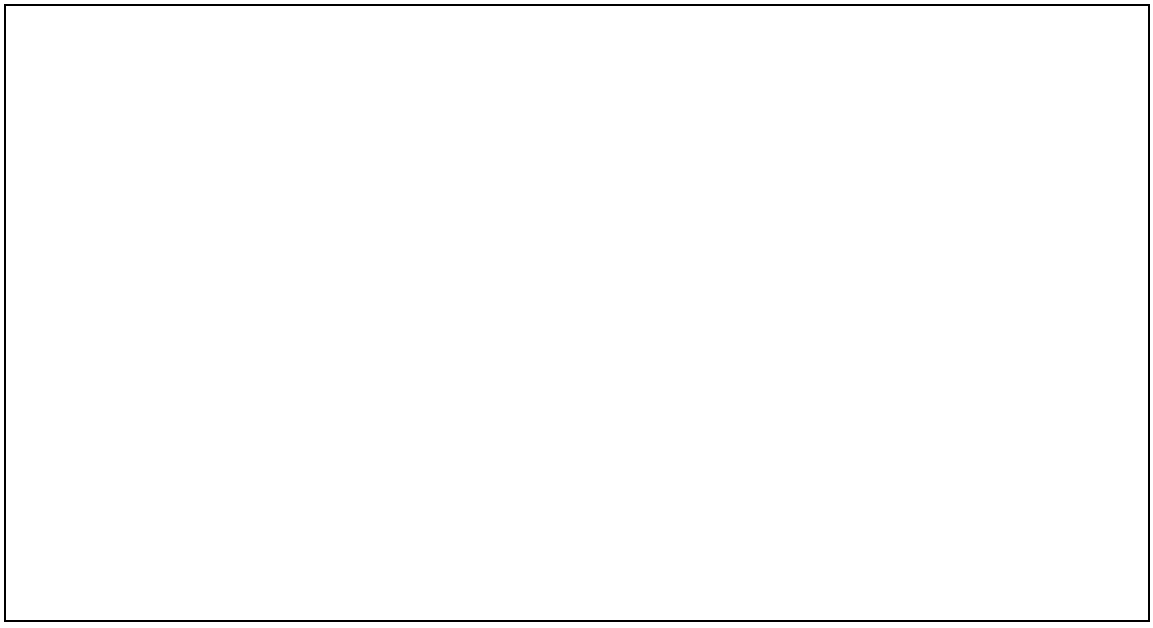

b. Basic lava cone

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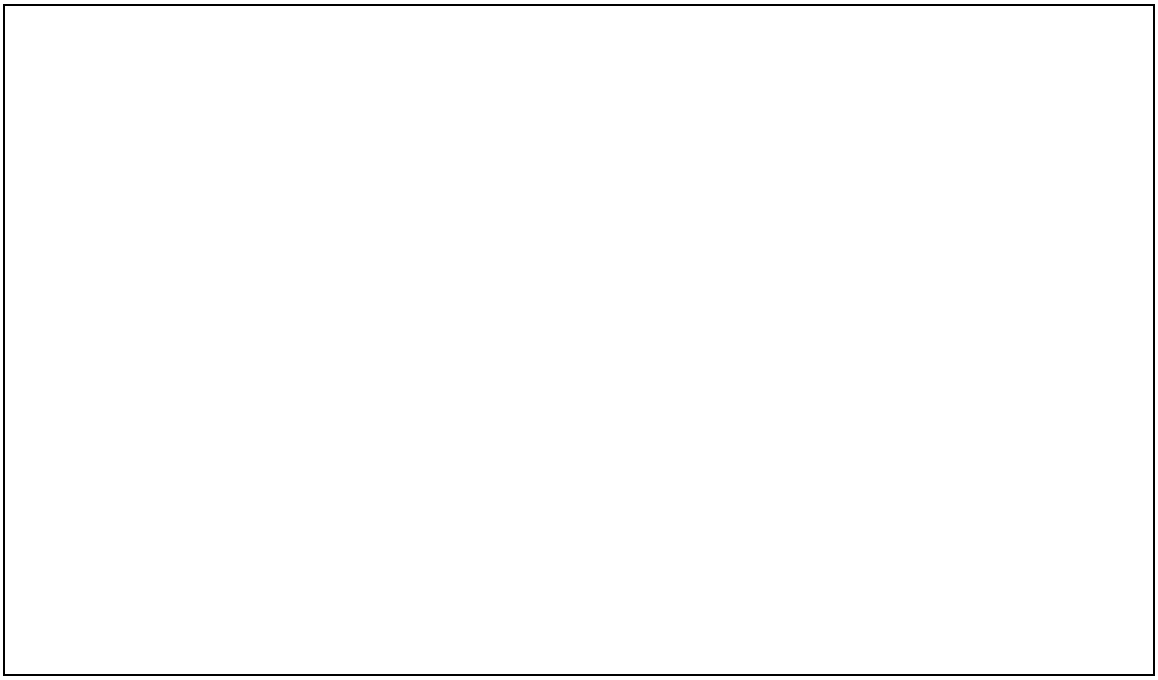

c. Ash and cinder cone

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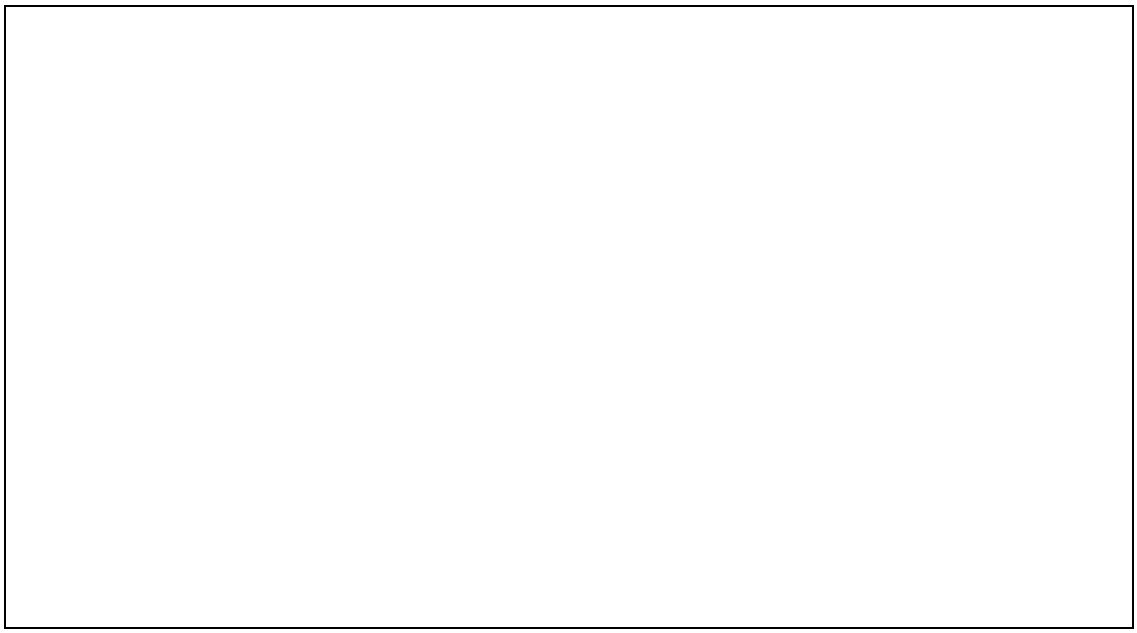

d. Composite cone

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e. Caldera and crater

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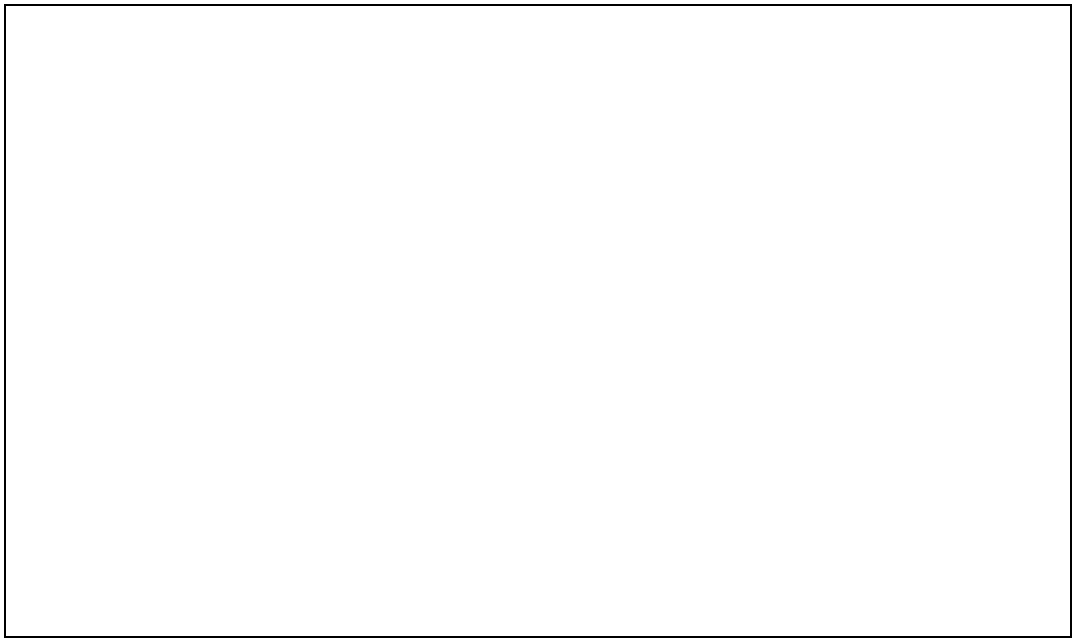

12. Give a short geographic description on the following extrusive volcanic features;
    a. Lava plateau

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    b. Geyser

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c. Hot springs

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d. Fumaroles

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e. Volcanic plug

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13. State four (4) reasons why volcanoes vary in shape.

a. ……
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b. ……
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c. ……
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d. ……
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14. Give five (5) benefits of volcanic activities to man.

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b. ……
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c. ……
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d. ……
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e. ……
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15. Outline three (3) negative effects of vulcanicity.

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b. ……
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c. ……
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EARTHQUAKE

1. What is Earthquake?
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2. The point on the earth's crust where earthquake begins is known as……
3. The point on the earth's surface directly above the point where the earthquake begins is referred to as ……..
4. The point from which shock waves are sent out rapidly through the crustal rocks to the surface, first as primary waves and later as secondary waves, thereby causing great damage is known as ……..
5. The intensity of an earthquake is measured by an instrument known as ……
6. The measure that gives readings to the instrument used to measure the intensity of an earthquake is known as……
7. Strong tidal waves that can be caused by earthquake in the ocean is referred to as ……..
8. Lines drawn on maps joining places experiencing equal intensity of earthquakes are known as ……
9. Explain three (3) causes of earthquake.
   a. ……
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   b. ……
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   c. ……
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10. Give two (2) reasons why earthquake and volcanic activities may occur at the same place.
    a. ……
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    b. ……
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11. Outline four (4) effects of earthquakes.
    a. ……
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    b. ……
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    c. ……
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    d. ……
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KHARST AND LIMESTONE REGIONS

1. The topography of any limestone area characterized by surface irregularities, including numerous sinkholes, disappearing streams, dry valleys and springs is referred to as ……

   Fill the blank spaces with the appropriate answer from the following options; ***Chalk, Limestone*** (Q2 and Q3)
2. "I am a sedimentary rock of organic origin derived from the accumulation of corals and shells in the sea. In my pure state, I am made up of calcium carbonate ($CaCO_3$) or calcite, but when magnesium is present, I am known as dolemite. What am I?.....
3. "I am a sedimentary rock of organic origin derived from the accumulation of corals and shells in the sea. I am very pure, porous, soft and fine-grained, composed almost of calcium carbonate. What am I?.....
4. The development of limestone features which heavily depends on the availability of rainfall to promote solution is known as …….
5. Describe the characteristics and formation of the following features of kharst regions;
   a. Limestone pavement

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   b. Sink-Holes

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c. Polje

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d. Limestone cavers

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e. Natural pillars

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6. A depression which is circular or elliptical in shape formed as a result of two or more wider swallow-holes which join together is known as ……
7. Several dolines joining together as a result of subsidence leads to the formation of ……
8. A valley with very steep sides and a fairly flat floor which is formed when the roof of an underground channel or cave collapse in a limestone region is referred to as ……
9. Making reference to their mode of formation, distinguish between Stalactites and Stalagmites.

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10. Write short geographic notes on the characteristics and formation of the following features of chalk topography;
    a. Dry Valleys

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    b. Chalk Cuesta

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11. Give four (4) importance of limestone regions.

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b. ……
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c. ……
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