

**UNIT-3**  
**PETROLOGY**

**TWO MARKS QUESTIONS AND ANSWERS**

**1. What is mean by Rock?**

It is defined as “natural solid massive aggregates of minerals forming the crust of the earth”

**2. Define Petrology?**

The branch of geology dealing with various aspects of rocks such as their formation, classification and occurrence is called petrology.

**3. Give the various types of rocks?**

1. Igneous rock
2. sedimentary rock
3. Metamorphic rock

**4. What is a sedimentary rock?**

A sedimentary rock is one formed by the deposition of solid material which are the products of weathering and erosion and deposited by agencies of transport.

**5. What is meant by magma?**

The hot molten material occurring naturally below the surface of the earth is called magma.

**6. What are lavas?**

Lavas are extensive forms of molten magma which have been poured out on the surface of the earth.

**5. Define igneous rock?**

All rocks that have formed from an originally hot molten material through the process of cooling and crystallization may be defined as igneous rocks.

**6. Give the various types of igneous rock?**

1. Volcanic rock
2. Plutonic rock
3. hypabyssal rock

**7. Distinguish between monomineralic rock and polymineralic rock with example?****Monomineralic rock:**

Rocks composed by a single mineral (e.g.) pyroxenite which is composed at pyroxene only.

**Polymineralic:**

Rocks composed at more than one mineral and polymineralized rock. (e.g.) Granite.

**8. Differentiate: Plutonic rock and volcanic rock?**

Igneous rocks which have formed at a depth are known as plutonic igneous rock. (E.g. granite) and those formed from lava and formed mainly at the surface are known as volcanic igneous rock (e.g. Basalt)

**11. Define Texture of Igneous rock:**

The term texture is defined as the mutual relationship of different mineralogical constituents Q is a rock. It is determined by the size, shape and arrangement of these constituents within the body of the rock.

**12. Give the categories of Texture:**

1. Equigranular texture
2. In Equigranular texture
3. Directive texture
4. Inter growth texture
5. Intergranular texture

**13. Define the structure of igneous rock?**

These rocks are developed on a large scale in the body of an extrusion or intrusion, giving rise to conspicuous shapes or forms are included under the term structure.

**14. What are the various types at structure in igneous rock?**

The structures are:

1. Flow structure
2. Pillow structure
- 3.ropy and blocky lava
4. Spherulitic structure
5. Orbicular structure

**15. Describe an extrusive igneous rock.**

Extrusive igneous rocks are those formed from lava erupted to the surface. Because of the escape of the included gases vesicularity and cindery surfaces are produced, especially in the upper parts of the flows. Due to rapid cooling, grains are fine and glass may also be present.

**15. How will you distinguish the three kinds of rocks?**

- The igneous rocks are characterized by its hard, compact, massive, interlocking and strong structure.
- The sedimentary rocks are characterized by its bedded or layered structure.
- The metamorphic rocks are characterized by its banded or foliated structure.

**16. Define Granite**

It may be defined as plutonic light colored igneous rocks. These are among the most common igneous rocks. The word granite is derived from Latin word granum meaning a grain and obviously refers to the Equigranular texture of the rock.

**17. What are the various types of sedimentary structure?**

Mechanical structure:

- i. Stratification or bedding
- ii. Lamination and cross bedding
- iii. Ripple marks
- iv. Rain marks
- v. Joints and cracks

Chemical structure:

- i. Concretionary structure
- ii. Oolitic structure
- iii. Geode structure

Organic structure

- i. Foot print of animals
- ii. Leaf impression of plants
- iii. Markings of insects

**18. What is meant by facies? And types of facies**

The concept of formation of a sedimentary rock in a particular type of environment is explained by the term facies.

Three kinds of facies

1. Continental facies
2. Transitional facies
3. Marine facies

**19. What are the factors allowed in texture of sedimentary rocks?**

The factors are:

- i. Origins of Grains
- ii. Size of grains
- iii. Shape of grains
- iv. Packing of grains
- v. Fabric of grains
- vi. Crystallization trend

**20. Define the following term:**

- i. Rudites
- ii. Arenites
- iii. Lutites

**Rudites:**

There are also called rudaceous and include all coarse grained rocks of heterogeneous composition. Rudites are made up of boulders, cobbles and pebbles collectively known as gravels.

**Arenites:**

These are also called arenaceous rocks. These are made up of sediments of sand grade (2 mm - / 16 mm )

**Lutites:**

These are also called argillaceous rocks. It may be defined as sedimentary rocks of the finest grain size.

**21. Define conglomerates:**

These are sedimentary rocks of clastic nature and also belong to the rudaceous group. They consist mostly of rounded fragments of various sizes but generally above 2mm. Cemented together are clays or mixed matrix.

**22. What do you understand by metamorphism?**

It may be defined as the response in solid rocks to pronounced changes of temperature, pressure and chemical environment. In other cases metamorphism means the partial or complete crystallization of a rock and the production of new structures.

**23. What are the three kinds of metamorphism?**

1. Thermal metamorphism
2. Dynamic metamorphism
3. Dynamothermal metamorphism

**24. What is mean by metasomatism?**

It may define as metamorphic process involving essentially formation of new minerals by the mechanism of chemical replacement of pre-existing minerals under the influence of chemically active fluids.

**25. Define metamorphic rocks:**

Metamorphic rocks are defined as these rocks which have formed through the operation of various types of metamorphic process on the pre existing igneous and sedimentary rocks involving changes in texture, structure and mineralogical composition.

**26. How do we classify igneous rocks?**

Igneous rocks are classified based on chemistry of the rocks (CIPW norm), mineralogy, relative proportions of felsic and mafic minerals, geologic occurrence and texture. A combination of these in the form of a table gives the tabular classification.

**27. What is meant by the texture of a rock?**

Texture is the intimate mutual relationship of the mineral constituents and glassy matter in a rock

**28. What is a holocrystalline rock?**

A rock composed entirely of crystals is said to be holocrystalline.

**29. Explain porphyritic texture.**

In a porphyritic texture, the large crystals, or phenocrysts, are enveloped in a groundmass which may be micro granular. E.g.: Granite, porphyry.

**30. Describe poikilitic texture.**

Poikilitic texture is the converse of porphyritic. Smaller crystals are enclosed in the larger ones without any orientation. Rock like syenite show this texture.

**31. What is ophitic structure?**

The ophitic texture is a special case of poikilitic texture. In this crystals of augite enclose numerous thin laths of plagioclase. This commonly occurs in acid volcanic or hypabyssal rocks.

**32. What is Spherulitic structure?**

A type of structure seen in igneous rocks. It is a fibrous radiating structure with the arrangement about a common centre. They commonly occur in acid volcanic or hypabyssal rocks.

**33. Describe basalt.**

It is a volcanic igneous rock with fine grained nature contains augite, plagioclase, and occasionally olivine. Plagioclase feldspar and mafic minerals occur in approximately equal amounts. They show sub ophitic texture and vesicular structure.

**34. Describe sandstone**

It is a clastic sedimentary rock. Sand when cemented becomes sandstone. The cementing materials may be calcareous, siliceous, argillaceous, or ferruginous. Sometimes some partly weathered feldspar grains may also be present.

**35. Explain limestone**

It is a non clastic sedimentary rock. Calcite is the dominant mineral. Organic lime stones are mainly due to biochemical process and others are formed by biochemical process.

**36. Describe shale**

Clay deposits when compressed, gradually consolidate and with varying degrees of cementation it is converted into shale. They possess fissility. This is called lamination.

**37. Describe quartzite**

The metamorphic equivalent of sandstone and silt stone is quartzite. Those when affected by a sufficient degree of heat, are merely recrystallised into granoblastic aggregate, with the complete obliteration of their original characters.

**38. Give an account of slate**

The dynamic metamorphism on argillaceous rocks produces slate. The rock splits or cleaves readily along smooth, flat, closely spaced surfaces of weak cohesion. Slates are mainly composed of finely – divided micaceous minerals. All minerals are flattened and elongated in the plane of the cleavage.

**39. Describe schist**

Schistose structure is due to the predominance in a metamorphic rock of flaty, lamellas, tabular and highly cleavable minerals, such as mica, chlorite, tale and amphiboles, under the dominant influence of directed pressure, form layers or folia arranged in more or less parallel bands. This is called foliation. When the foliation is closely spaced throughout the body of the rock, so that almost any part of it can be split into flaty sheets, the rock is called a schist.

**40. What is gneiss?**

A metamorphic rock in which alternate bands of granular minerals and micaceous and other ferromagnesian mineral are seen. The granular minerals include quartz and feldspar and the ferromagnesian minerals include biotite, hornblende and garnet. They are often granitic in composition.



**16 MARKS**

<b>S.NO</b>	<b>QUESTIONS</b>
1.	What do you understand by the terms texture is igneous rocks?
2.	Explain briefly about structure and forms of an igneous rock?
3.	Write short notes on: i) Granite ii) Diorite iii) Syerite iv) Basalt v) Gabbro
4.	Explain briefly about Formation and Texture of sedimentary rocks?
5.	Explain classification of sedimentary rocks giving suitable examples?
6.	Write short notes on i) Breccia ii) Conglomerate iii) Sand stone iv) Lime stone
7.	Explain briefly about factors and effects metamorphism?