

TEXTURE OF IGNEOUS ROCKS -

The relationship between crystals and relation-ship between crystal and glassy matter is called texture of igneous rock. The Texture reveals the petrogenesis of rocks.

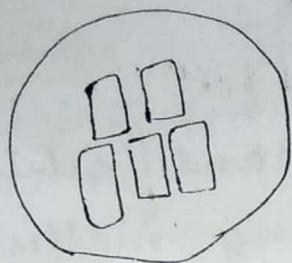
The texture is studied under following points -

- 1) Crystallinity
- 2) Granularity
- 3) Shape of crystals
- 4) Mutual Relationship of Mineral Grains.

1.) CRYSTALLINITY -

It is the degree of crystallization. The crystallinity of a rock may be defined as either -

- a) Holocrystalline - when a rock is completely crystallized or a rock composed of crystals only; then it is called Holocrystalline.
e.g. Granite, Pegmatite.
- b) Hemicrystalline - when a rock is composed of partly of crystals and partly of glass.
e.g. Basalt.
- c) Holohyaline - when a rock is composed of glassy matter only. e.g. Tachilite



Holocrystalline



Hemicrystalline



Holohyaline

2) Granularity -

It is the measure of size of grains present in an igneous rock.

It may be defined by following terms -

a) Phaneric - when individual mineral grains are visible with the naked eyes. It may be

- i) Coarse grain - more than 5 mm
- ii) Medium grain - 1-5 mm
- iii) Fine grain - less than 1 mm

b) Aphanatic - when individual grains cannot be visible by naked eyes.

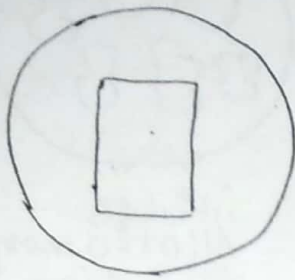
3) shape of crystals -

It is the degree of development of crystal faces.

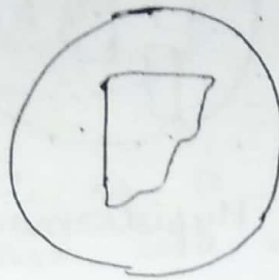
a) Euhedral - when the crystals are completely bounded by smooth faces.

b) Subhedral - partially bounded by smooth faces.

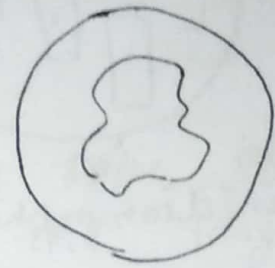
~~crystal~~ c) Anhedral - when the crystal faces are completely absent.



Euhedral



Subhedral



Anhedral.

4) Mutual Relationship of Mineral Grains -

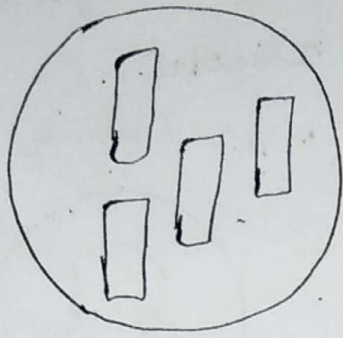
It refers to the relative size, shape and dimensions of grains and their relation to one another. It is broadly classified into 2 -

a) Equigranular - when all the mineral grains in an igneous rock are more or less of equal size. These are grouped into three

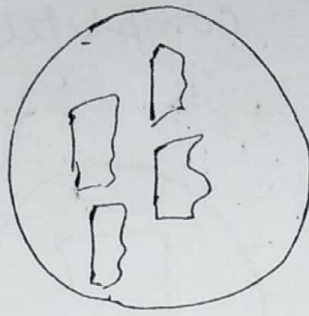
i) Panidiomorphic - when all the grains are Euhedral.

ii) Hypidiomorphic - when all the grains are sub-hedral.

iii) Allotiomorphic - when all the grains are Anhedral.



Panidiomorphic



Hypidiomorphic

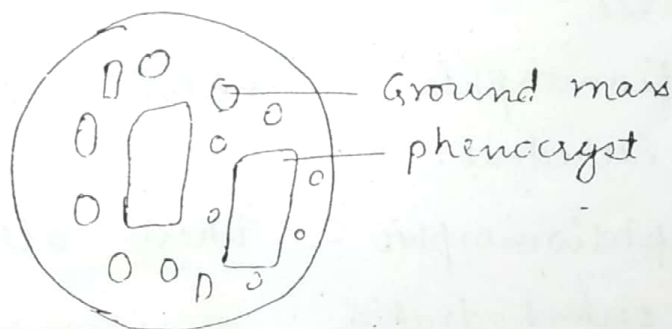


Allotriomorphic

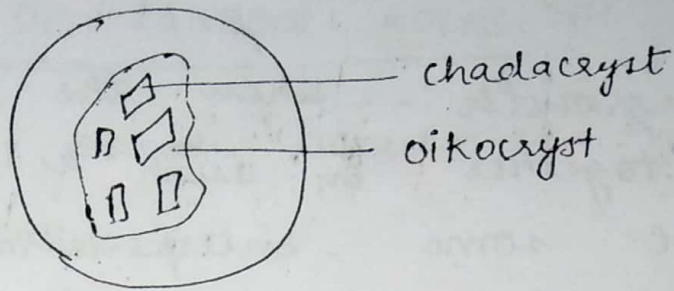
b) Inequigranular -

when all the mineral grains are ~~var~~ unequal in size. These are grouped into following types -

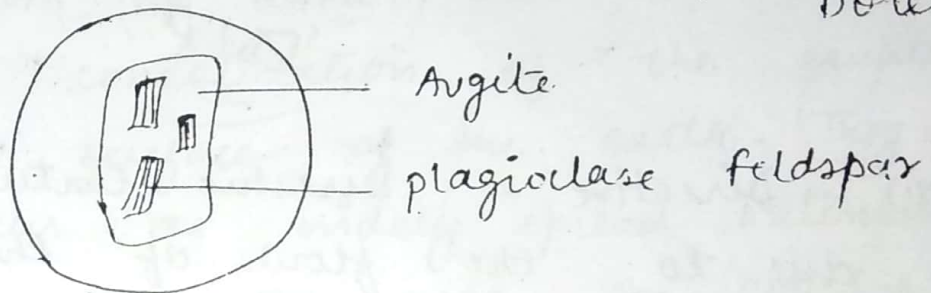
- i) Porphyritic - In this texture, larger grains called phenocrysts are surrounded by smaller grains called ground mass. The smaller grain may be glassy or crystalline. - e.g. Diorite



- ii) Poikilitic - In this texture small crystals are enclosed in a larger crystal. The small crystals are called chadacrysts while the large grain are called oikocrysts.



- iii) ophitic - it is a special type of poikilitic texture in which the larger grains are of Pyroxene (Augite) and smaller grains are of plagioclase feldspar.
e.g. Basalt
Dolerite



- iv) Intergranular - when the plagioclase crystals are arranged in triangular fashion and interspace left between them is filled with mineral grains of Pyroxene (Augite). e.g. Basalt
Dolerite
Gabbro.



- v) **Intergrowth** - When the mineral grains grow together in such a fashion as to produce some interpenetrating mutual relation, then such texture is called **Intergrowth texture**. e.g. **Graphic Granite**



- vi) **Directive** - Directive textures are produced due to the flow of the magma during the progress of the process of its crystallization. **Trachytic Texture** is a special type of texture formed when the feldspar needles which have already crystallized out orient themselves along the direction of flow of the lava. e.g. **trachyte**.

