

**B.Sc. Geology- II Year**  
**Semester – III**  
**Paper – III - Petrology**  
**(DSC-3)**

(4 hrs/week)

Credits-4 (60 hours)

**Unit-I:**

Nature and scope of petrology – Definition of rock, classification of rocks into igneous, sedimentary and metamorphic. distinguishing features of three types of rocks.

Igneous Rocks - Classification into plutonic, hypabyssal and volcanic rocks; extrusive and intrusive igneous forms – lava flows, intrusions, sills, laccolith, dykes, ring dykes, cone sheets, volcanic necks, phacoliths and batholiths; structures – vesicular, amygdaloidal, blocky lava, ropy lava, pillow, flow, jointing and sheet structures. columnar and prismatic structures. textures - definition of texture, micro-structure, devitrification – allotrimorphic, hypidiomorphic, panidiomorphic, porphyritic, poikilitic, ophitic, intergranular, intersertal trachytic graphic and micrographic textures; reaction structures – corona, myrmekitic, orbicular, spherulitic, pelitic.

**Unit-II:**

Classification of igneous rocks based on – mineralogical, chemical, geological occurrence and texture; cipw and tyrell tabular classification.

Descriptive Study of following rock types- Granite, granodiorite, syenite, nepheline syenite, diorite porphyry, pegmatite, aplite, gabbro, anorthosite, peridotite, pyroxenite, diorite, dolerite, rhyolite, obsidian, trachyte, andesite and basalt.

Composition and constitution of magma – crystallization of magma, uni-component, bi-component, eutectic and solid solutions; origin of igneous rocks – Bowen's reaction principle, differentiation and assimilation.

**Unit-III:**

Sedimentary Rocks: Sources of sediments – mechanical and chemical weathering, modes of transportation, stratification. sedimentary structures, types of bedding, surface marks, deformed bedding solution structures.

Classification of Sedimentary Rocks: Clastic – rudaceous, arenaceous, argillaceous and non-clastic - calcareous, carbonaceous, ferruginous, phosphatic, evaporites. descriptive study of the following sedimentary rocks – conglomerate, breccia, sandstone, grit, arkose, greywacke, shale, limestone, shelly limestone.

**Unit-IV:**

Metamorphic Rocks: definition of metamorphism, agents of metamorphism, types of metamorphism, grades and zones of metamorphism. structures of metamorphic rocks – cataclastic, maculose, schistose, granulose and gneissose. textures of metamorphic rocks - crystalloblastic, palimpsest, xenoblastic, idioblastic. concept of metamorphic facies, definition of anatexis and palingenesis. descriptive study of the following metamorphic rocks. gneiss, schist, slate, phyllite, quartzite, marble, eclogite, amphibolites, migmatite, charnockite and khondalite.

**B.Sc. Geology- II Year**  
**Semester – III**  
**Paper – III - Petrology Practicals**  
**(DSC-3)**

**(3 hrs/week)**

**45 hours (credits-1)**

1. Megascopic identification of igneous rocks - granite, syenite, diorite, gabbro, dolerite, rhyolite, basalt, pegmatite.
2. Megascopic identification of sedimentary rocks - conglomerate, breccia, sandstone, grit, arkose, greywacke, shale, limestone, shelly limestone,
3. Megascopic identification of metamorphic rocks - gneiss, schist, quartzite, marble, charnockite and khondalite.
4. Microscopic identification of igneous rocks - granite, syenite, diorite, gabbro, dolerite, rhyolite, basalt, pegmatite,
5. Microscopic identification of sedimentary rocks - sandstone, limestone, grit, shale,
6. Microscopic identification of metamorphic rocks - schist, gneiss, quartzite, marble, charnockite and khondalite.

**Text book:**

1. The Principles of Petrology, G.W. Tyrrell.

**Reference books:**

1. Petrology - W.T.Huang.
2. Petrology for students - S.R.Nockolds Knox, Chinnar.
3. A Text book of Sedimentary Petrology – Verma & Prasad.
4. Metamorphic Petrology – Turner Verhoogen.

**Practical Model Paper**

**FACULTY OF SCIENCE**  
**B.Sc. (CBCS) - II Year Practical Examination**  
**GEOLOGY**  
**Semester-III : Paper III**  
**(Petrology)**  
**(DSC-3)**

**Time: 2 Hours**

**Credits : 1**  
**Max.Marks:25**

- 1) Identify the given megascopic rock samples 1-8 and write their mineralogy, texture, structure, mode of occurrence and origin.  
(8x2=16 M)
- 2) Identify the given thin sections 9-10 of rocks under the microscope and write their essential and accessory minerals and add a note on petrogenesis.  
(2x2=4 M)
- 3) Record & Viva  
(5M)

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