

**SYALLABUS**  
**B.Sc.II**  
**GEOLOGY**  
**SEMESTER-III**  
**Paper-I**  
**Igneous petrology**

**Unit-I** Petrology : Definition and Sub- branches. Crust and its composition .Classification of rocks. Rock cycle. Igneous Petrology: Forms of Igneous rocks. Structures of igneous rocks: Vescicular and amygdaloidal Structure, block lava and ropy lava, pillow and flow structure, columner structure, jointing, Sheet and platy structures

**Unit-II** Textures and microstructures of igneous rocks. Classification of igneous rocks. Mineralogical Characteristics of acid, alkaline, basic and ultra basic igneous rocks.

**Unit-III** Magma : Definition, Composition and origin. Bowen's reaction series , Magmatic differentiation and Assimilation and hybrid rocks.

**Unit-IV** Phase rule and phase equilibria: Concept of System Phase and Component . Chemical potential and phase rule. Phase equilibria and their applications in petrology. Basic principles of phase equilibria in Crystallisation of uni- component and bi-component magma-

**Books Recommended:**

- 1) G. W. Tyrell: Principles of Petrology (1998) B.I. Publications Pvt. Ltd. New Delhi
- 2) Hatch, Wells and wells: Petrology of igneous rocks(1984) CBS Publishers, New Delhi
- 3) Hall : Igneous Petrology (1987) Longman ELBS
- 4) Nackolds knox and Chinner : Petrology for Students (1978) Combridge Univ. press, London
- 5) Turner and Verhoogen: Igneous and Metamorphic Petrology(1987)CBS
- 6) Phillipotts : Igneous and Metamorphic Petrology(1992)Prentice Hall
- 7) Ehlers and Blatt : Petrology Igneous, Sedimentary and Metamorphic (1981) CBS, New Delhi
- 8) Moorhouse : The study of rocks in thin sections (1985) CBS Publishers
- 9) Williams,Turner and Gilbert: Petrography : An introduction to study of rocks in thin sections (1985) CBS Publishers

**SEMESTER-III**  
**PAPER-II**  
**Palaeontology**

**Unit I**

Definition and scope of palaeontology. Processes of fossilization. Preservation of organisms. Elementary ideas about origin of Life , evolution and fossil record. Application of palaeontological data in economic geology, palaeoecology, evolution, and Stratigraphy . Palaeogeographics and palaeo climatic reconstructions. Basic ideas about micro-palaeontology and microfossils.

Classification, diagnostics morphological characters, environment and geological distribution of Brachiopoda.

**Unit II**

Classification, diagnostics morphological characters, environment and geological distribution of the following : Pelcypoda, Gastropoda and Cephalopoda.

**Unit III**

Classification , diagnostics morphological characters environment and geological distribution of the following : Foraminifera, Graptoloidea, Echinoidea and Crinoidea.

**Unit IV**

Classification , diagnostics morphological characters environment and geological distribution of the following : Anthozoa, Trilobita and Plants of Gondwana period.

**Book Recommended:**

Palaeontology:

- 1) E.N.K Clarkson (1986) Invertebrate Palaeontology and Evolution ELBS Allen and Unwin , London
- 2) H.H. Swinnerton (1973) Fossils, Williams Collins Son's and Co.Ltd.
- 3) R.R Shrock & W.H. Twenhofel (1999) Principles of Palaeontology ,CBS publishers.
- 4) Henry Woods (1985) Invertebrate Palaeontology CBS publishers
- 5) R. C. Moore C.G. Lalicker & A.G. Fisher (1997) Invertebrate Fossils CBS publisher
- 6) W.C. Steam and R.L. Carroll(1989) Palaeontology : The record of Life. John Wiley and Sons Inc.) New York.
- 7) C.A. Arnold (1947) An Introduction to Palaeobotany McGraw Hill. New York.
- 8) R.M Black (1970) The elements of invertebrate palaeontology Cambridge university Press
- 9) M.A. koregave (1998) Fundamentals of Invertabrate Palaeontology. Book World Enterprises ,Mumbai.

## **PRACTICALS**

### **PETROLOGY:**

Megascopic study of the following rock types:

Igneous Rocks:

Granite, Granodiorite, Diorite, Anorthosite, Lamprophyre, Porphyries, Gabbro, Norite, Dolerite, Diabase, Peridotite, Dunite, Pyroxenite Obsidian, Pitchstone, Pumice, Trachyte, Andesite, Phonolite, Tuff, Basalt, Rhyolite, Charnokite.

### **PALAEONTOLOGY**

Morphological characters, identification, age and sketches of the following fossils:

Nummulite, Rhynchonella, Terebratula, Productus, Spirifer, Pecten, Ostrea, Trigonia, Cerithium, Conus, Turritella, Physa, Ceratites, Orthoceras, Nautilus, Belemnites, Monograptus, Cidaris, Hemiaster, Paradoxide, Calymene, Zaphrentis, Cyathophyllum, Calceola.

Alethopteris, Lepidodendron, Calamites, Glassopteris, Gangamopteris, Vertibraria, Cordiales, Ptilophyllum.