CRYSTALLOGRAPHY AND MINERALOGY

Time: 3 hrs **MM 5**

UNIT–I

Fundamental Laws of Crystallography, Elements crystal symmetry, Millers and Wiess systems Notation. Crystal forms and their classification in crystal system.

UNIT-II

Study of holohedral classes of following crysta systems- Cubic system, Tetragonal system, Hexagona system, Orthorhombic system, Monoclinic system an Triclinic system.

UNIT–III

Physical properties of minerals, Concept o isomorphism and polymorphism. Elementary idea about structure and classification of silicate minerals Study of physical and optical properties of quartz, feldspa and mica families.

UNIT–VI

Petrologic microscope and its construction; principles of optics as applied to orthoscopic study of minerals color, form, birefringence, and pleochroism. Ideas about uniaxial and biaxial characters of minerals.

UNIT–V

Study of the physical and optical properties of following rock forming mineral families: Olivine, pyroxene, amphibole, and nepheline. Study of optical properties in particular of following minerals: Muscovite, biotite, quartz, orthoclase, microcline, albite, olivine, augite, diopside, hypersthene, hornblende and tremolite.

B. SC. FIRST YEAR GEOLOGY PRACTICAL 2007-2008

Examination will be of four hours' duration.

Maximum Marks 75

Physical Geology	05
Paleontology	20
Crystallography-Mineralogy	20
Field Work	15
Viva Voce	05
Record	10
Total	**75**

(i) Paleontology:

Identification and description of following fossils in hand specimens:

Foraminifera :	*NummulitesAssilina, Alveolina.*
Echinoidea :	*Cidaris, Hemiaster, Micraster.*
Brachiopoda :	*Rhynchonella, Terebratula, Productus, Spirifer.*
Pelecypoda :	*Pecten ,Ostrea, Trigonia, Lima, Exogyra.*
Gastropoda :	*Trochus, Murex, Voluta, Physa, Turritella, Conus.*

Ammonoidea :	*Phylloceras, Ceratites, Perisphinectes.*
Coleoidea :	*Belemnites.*
Nautiloidea :	*Nautilus, Orthoceras.*
Trilobita :	*Calymene, Phacops, Agnostus, Trinucleus, Paradoxides.*
Graptoloidea:	*Monograptus, Diplograptus.*
Plant fossils :	*Glossopteris, Gangmopteris, Vertibraria, Ptilophyllum.*

(ii) Crystallography and Mineralogy:

Description and identification of the following minerals in hand specimen : Quartz, feldspar, muscovite, biotite, chlorite, hornblende, augite, olivine, garnet, kyanite, staurolite, sillimanite, tremolite, asbestos, serpentine, calcite, dolomite, magnetite, hematite, epidote, tourmaline, beryl, nepheline, talc, gypsum, apatite, fluorite, topaz and corundum.

Drawing, description and identification of crystal models.

(iii) Physical Geology:

Preparation of charts and diagrams illustrating important processes of erosion and weathering.

(iv) Field Training:

Five days Geological field excursion and a report thereon.

Fieldwork is compulsory. Students not taking part in the fieldwork shall not be allowed to appear in the examination.

Books suggested, besides the Internet: B. Sc. Part I

Datta A. K.: Introduction to Physical Geology, Kalyani Publishers, New Delhi.

Ford, W. E.: Dana's Textbook of Mineralogy, John Wiley & Sons, New York.

Hamblin W. K.: Earth's Dynamic Systems, Macmillan Publishing Company, New York.

Homes A.: Principles of Physical Geology, Thomas Nelson & Sons, London.

Mahapatra G. B.: A Textbook of Geology, CBS Publishers & Distributors, Delhi.

Mukerjee P. K.: A Textbook of Geology, The World Press Pvt. Ltd., Calcutta.

Parbin Singh: Engineering & General Geology, S. K. Kataria & Sons, New Delhi.

Read H. H.: Rutley's Elements of Mineralogy (revised by C.D. Gribble), CBS Publishers & Distributors, Delhi.

Sharma, N. L.: Determinative Tables, ISM, Dhanbad.

Shrock R. R. & Twenhofel W. H.: Principles of Invertebrate Palaeontology, CBS Publishers & Distributors, Delhi.

Tarbuck E. J. & Lutgens F. K.: The Earth - An Introduction to Physical Geology, Merrill Publishing Company, London.

Woods, Henry: Paleontology Invertebrates, CBS Publishers & Distributors, Delhi.