

Table-8: B.Sc., SEMESTER – II

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	First Language (Tel/Hin/Urdu/Sans...)	100	25	75	4	3
2	Second Language English	100	25	75	4	3
3	<i>Foundation course - 3</i> Environmental Sci	50	0	50	2	2
4	<i>Foundation course – 4A</i> ICT – 1 (Information & Communication Technol)	50	0	50	2	2
5	DSC* 1 B (Group Sub- 1)	100	25	75	4	3
6	DSC 1 B Lab Practical	50	0	50	2	2
7	DSC 2 B (Group Sub- 2)	100	25	75	4	3
8	DSC 2 B Lab Practical	50	0	50	2	2
9	DSC 3 B (Group Sub- 3)	100	25	75	4	3
10	DSC 3 B Lab Practical	50	0	50	2	2
	Total	750	-	-	30	25

B.Sc. Table-9: B.Sc., SEMESTER – III

SEMESTER – III

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	First Language (Tel/Hin/Urdu/Sans...)	100	25	75	4	3
2	Second Language English	100	25	75	4	3
3	<i>Foundation Course - 5</i> Entrepreneurship	50	0	50	2	2
4	<i>Foundation course -2B</i> Communication & Soft Skills -2	50	0	50	2	2
5	DSC 1 C (Group Sub- 1)	100	25	75	4	3

6	DSC 1 C Practical	50	0	50	2	2
7	DSC 2 C (Group Sub- 2)	100	25	75	4	3
8	DSC 2 C Practical	50	0	50	2	2
9	DSC 3 C (Group Sub- 3)	100	25	75	4	3
10	DSC 3 C Practical	50	0	50	2	2
	Total	750	-	-	30	25

Table-10: B.Sc., SEMESTER – IV

SEMESTER – IV						
Sno	Course	Total Marks	Mid Sem Exam*	Sem End Exam	Teaching Hours**	Credits
1	<i>Foundation Course – 2C*</i> Communication & Soft Skills -3	50	0	50	2	2
2	<i>Foundation Course – 6*</i> Analytical Skills	50	0	50	2	2
3	<i>Foundation Course - 7 **</i> CE (Citizenship Education)	50	0	50	2	2
4	<i>Foundation course – 4B</i> ICT – 2 (Information & Communication Technol)	50	0	50	2	2
5	DSC 1 D (Group Sub- 1)	100	25	75	4	3
6	DSC 1 D Lab Practical	50	0	50	2	2
7	DSC 2 D (Group Sub- 2)	100	25	75	4	3
8	DSC 2 D Lab Practical	50	0	50	2	2
9	DSC 3 D (Group Sub- 3)	100	25	75	4	3
10	DSC 3 D Lab Practical	50	0	50	2	2
	Total	750	-	-	30	25

*To be taught by English Teachers (and partly by Maths/Stat Teachers)

** To be taught by Telugu Teachers

SEMESTER-II

Paper-II- Mineralogy & Optical Mineralogy

Unit - I

Definition of a mineral - classification of minerals into rock forming and ore forming minerals.

Physical properties of minerals - Colour, streak, transparency, lustre, form, hardness, tenacity, cleavage, fracture and specific gravity.

Silicate structures- isomorphism, solid solution, polymorphism, allotropy, Pseudomorphism and radioactivity

Study of physical properties, chemical properties and mode of occurrence of the following mineral groups: Olivine, Garnet and Aluminium silicates. (12 hrs)

Unit-II

Study of physical properties, chemical properties and mode of occurrence of the following mineral groups: Pyroxenes, Amphiboles and Mica (12 hrs)

Unit-III

Study of physical properties, chemical properties and mode of occurrence of the following mineral groups: Quartz and its varieties, Feldspars, and feldspathoids
Miscellaneous: Staurolite, Tourmaline, Zircon, Calcite, Corundum and Apatite. (12 hrs)

Unit-IV

General Principles of optics, Refraction, Reflection Snell's law, Critical angle, total reflection. Isotropic and anisotropic minerals.

Polarised light, refractive index, double refraction, uniaxial and biaxial minerals – Nicol prism and its construction. (12hrs)

Unit-V

Petrological microscope (Polarising) - its mechanical and optical parts – optical properties of Minerals - extinction, pleochroism and interference colours. Optical Properties of important minerals (12hrs)

Text books:

1. A textbook of mineralogy - E.S. Dana and W.E. Ford.
2. Rutleys elements of mineralogy - H.H. Reed
3. Elements of Crystallography - F.A.Wade and R.B.Matrix

Reference Books:

1. Manual of mineralogy - C.S. Hurlbut and C.Klein
2. Mineralogy for students - M.H. Batey.
3. An introduction to rock forming minerals - Deer, Howie, and zussman.
4. Elements of mineralogy - Mason and Bern.
5. Essential of Crystallography- E. Flint.

LAB-II (Practicals) 50 Marks**At the end of Second semester****Practical-II- Mineralogy and Optical mineralogy**

Study of physical properties and diagnostic features of the following mineral:

Quartz Jasper, Agate, Chalcedony, Amethyst, Orthoclase, Microcline, Anorthite, Enstatite, Hypersthene, Augite, Hornblende, Actinolite, Tremolite, Asbestos, Muscovite, Biotite, Phlogopite, Olivine, Epidote, Garnet, Kyanite, Sillimanite, Andalusite, Beryl, Zircon, Apatite, Corundum, Talc, Gypsum, Calcite, Flurospar and Serpentine.

Study of optical properties of the following minerals:

Quartz, Orthoclase, Microcline, Plagioclase, Hypersthene, Augite, Tremolite, Hornblende, Muscovite, Biotite, Olivine, Epidote, Garnet, Kyanite, Beryl, Calcite, Chlorite, sillimanite and Leucite.

III-SEMESTER

Paper- I I I - Igneous Petrology and Sedimentology

Unit-I

Nature and scope of petrology - definition of rock, classification of rocks into igneous, sedimentary and metamorphic. Distinguish features of three types of rocks.

Forms - Lava flows, Intrusions, sills, laccolith, lopolith, dykes, ring dykes - vesicular, amygdaloidal, block lava, ropy lava, pillow, flow, and sheet structures. Columnar and prismatic structures (12hrs)

Unit-II

Textures - Definition of texture, micro-structure, devitrification- Hypidiomorphic, pandiomorphic, porphyritic, poikilitic, ophitic, intergrartular, intersertal, trachytic, graphic and micro-graphic textures. Classification of igneous rocks - CIPW and Tyrrelltabular classification.

Descriptive study of the following rock types: Granite, Syenite, Diorite, Pegmatite, Gabbro, Pyroxenite, Dunite, Dolerite, Rhyolite, Trachyte and Basalt (12hrs)

Unit-III

Composition and constitution of magma - Crystallisation of magma - Unicomponent, binary system, eutectic and solid solutions.

Origin of igneous rocks - Bowen's reaction principle, differentiation and assimilation of magma.

(12hrs)

Unit - IV

Sources of sediments - mechanical and chemical weathering, modes of transportation, stratification. Sedimentary structures - Types of bedding, surface marks, deformed bedding, solution structures. (12hrs)

Unit-V

Classification of sedimentary rocks; clastic - rudaceous, arenaceous, argillaceous, non-clastic --calcareous, carbonaceous, evaporities.

Descriptive study of the following sedimentary rocks - conglomerate, Breccia, Sandstone, Gritt, Arkose, Shale and limestone. (12 hrs)

Text books

1. Principles of petrology - G.W. Tyrrell
2. Sedimentary Rocks -F.J.Peettijohn

Reference Books:

1. Igneous Petrology - Hyndman
2. A Text book of sedimentary petrology - Verma& Prasad
3. Petrology of the sedimentary rocks - J.T. Greehsmith
4. Petrology of the igneous rocks - F.KHatch, Wells and Wells.

LAB-III (Practicals) 50 Marks

At the end of Third semester

Practical- II-Igneous Petrology and Sedimentology

Megascopic and microscopic study of the following igneous rocks:
Dunite, Peridotite, Granite, Syenite, Diorite, Gabbro. Dolerite, Rhyolite, Basalt and Pegmatite.

Megascopic and microscopic study of the following sedimentary rocks:
Conglomerate, Breccia, Sandstone, Arkose, Gritt, Shale, Limestone and its varieties.

IV-SEMESTER

Paper-IV- Metamorphic Petrology and Structural Geology

Unit-I

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, xenoblastic.
(12 hrs)

Unit-II

Classification of metamorphic rocks. Cataclastic metamorphism of argillaceous and arenaceous rocks. Thermal metamorphism of argillaceous, arenaceous and calcareous rocks. Dynamothermal metamorphism of argillaceous, arenaceous and igneous rocks.

Descriptive study of the following metamorphic rocks - Gneiss, schist, slate, phyllite, quartzite, marble, Charnockite and khondalite.
(12 hrs)

Unit-III

Definition of structural geology - aim and objectives of the structural Geology; importance of study of structures - primary and secondary structures; outcrop, attitude of beds – strike and dip. Use of clinometer and Brunton compass. Folds -description, nomenclature of folds - Geometrical and genetic classification. Recognition of folds in the field.
(12 hrs)

Unit-IV

Joints-Classification of Joints- geometrical and genetic classification. Faults – geometrical and genetic classification of faults, recognition of faults in the field.
(12 hrs)

Unit-V

Unconformities- types of unconformities. Recognition of unconformities in the field. Distinguishing the faults from unconformities. Definitions of overlap, outlier, cleavage, schistosity, foliation and lineation
(12 hrs)

Text books

1. The principles of petrology - G. W. Tyrrell
2. Metamorphic petrology - B. Bhaskar Rao
3. Structural Geology - Marlarid. F. Billings.

Reference Books:

1. Petrology of Igneous and Metamorphic rocks. - Hyndman
2. Structural Geology - L.U. De Setter
3. An outline of structural Geology - E.S. Hills

LAB-IV (Practicals) 50 Marks

At the end of Fourth semester

Practical- IV: Metamorphic Petrology and Structural Geology

Megascopic and microscopic study of the following rocks: Schist, Gneiss, Quartzite, Marble, slate, phyllite, charnockite and khonodolite.

Study of topographical maps: Interpretation of simple geological maps with horizontal and inclined beds. Unconformity, folds and faults with reference to the topography and structure, geological succession and history. Geological Section drawing (at least 8 maps)

Problems dealing with true dip and apparent dip. Bore-hole data thickness and width of the outcrop and dip of the beds (At least 8 problems for each method).

