Geology

B.A. / B.Sc. Geology-I **Total Mark: 100**

Appendix 'A'

(Outlines of Tests)

Paper-A:	General Geology, Mineralogy Petrography (Written)	:	75 Marks
Paper-B:	Practical	:	25 Marks

Appendix 'B'

(Syllabi and Courses of Reading)

Paper-A: General Geology:Mineralogy/Petrography 75 Marks

Section-I: General Geology: 25 Marks

The earth as a planet, its place in the universe and its origin. Introduction to Geomagnetism and

the earth's gravity field. Earthquakes, the internal structure of the earth, the age of the earth.

Volcanism, the material and Chemistry of the earth crust, plutonic rocks, metamorphic rocks.

Faulting and Folding,epeirogenicforces and Isostasy, organic forces and mountain building, Nature of Jointing and cleavage.

Introduction of Modem Trends and Techniques

Section-II: Mineralogy and Petrography: 50 Marks

(i) Elementary Crystallography:

Formation of crystals, development of the science of Crystallography. Regular arrangement of point in space, the space lattice, Elements of symmetry, relation of crystal lattice to the crystal symmetry. Crystal forces, each figures and solution pits, crystal axes and Miller Indices. Crystal edges, lattice rows and zone axes. The choice of axes in crystals. The crystal classes.

Symmetry operations, Triclinic system, Monoclinic system, Hexagonal system, Tetragonal system and Cubic system.

Crystal aggregates, twinned crystals, effect of twinning, causes of twinning.

(ii) Physical Properties of Minerals:

Colour, Streak: Cleavage Parting, fracture: hardness, tenacity: specific gravity properties depending upon light,electricity, magnetism and heat.

Classification and description of common mineral groups, namely: Native elements, Sulphides, Sulphates Oxides, Halides, Carbonates, Nitrates, Borates, Chromatek, Sul- phatesMolyosdtes, Tungstateat, phosphates, Vanadates, Sillicates.

(iii) Optical Mineralogy:

Examination in plane polarized light.

Crystal from, cleavages, inclusions, colour, pleoch, refractive index, relief alteration.

(d) Representation of statistical data in maps and diagrams (the Data used shall be related to the regions studied in Paper B).

(e) Preparation of survey plan with the help of following:

(i) Chin surveying.

(ii) Plane Table surveying.

N.B:- Map Work and Practical will be taught along with Paper A and B, as indicated above. But there shall be a separate examination carrying 25 marks. The examination in crossed polars:

Double refractions, isotropism and anisotropism extinction and extinction angles, interferency colours, birefringence, elongation, twining.

Examination in Convergent Light.

Interference figures, Uniaxial and Biaxial crystals, determination of optic sign and estimation 2V.

Diagnostic properties of common rock-forming minerals in thin sections

(iii) Elementary Classification of Rocks and their Petrography:

Forms Igneous Rock Bodies, nature of magma, sequence of events in the crystallization of magma, textures and classification of igneous rock on the basis of field, textural mineralogical and chemical criteria. The clan concept and Petrography of common rock types in (i) Ulteramafic Clan (ii) Cala-Alkali Gabro Clan (iii) DioriteMonzonite and Syenith Clans (iv) Granodiorite, Adamellite and Granite films, introduction to petro- genesis of Igneous rocks. Structures in Igneous rocks.

Pyroclastic Rocks:

Classification of volcanic ejecta according to size, mode of origin and composition, Alteration.

Metamorphic Rocks:

Concepts of regional contact and dynamic metamorphism, petrography of common types (gneiss schist quartzite, slate marble, serpentine, hornfels, cataclastic and mylonites,

Sedimentary Rocks:

Petrography of' common varieties calcareous, arenaceous, rudaccoas argillaceous sedimentary

rocks. Texture, size sorting, sphericity, roundness packing and orientation mineral grains in sediments. Introduction of modern trends and techniques.

Paper-B: Practical **25 Marks**

Map projection: topographic

Elementary geological map exercises-including use of strike in map work construction of cross-sections, interpretation of geological maps involving straight strikes and constant dips.

(i) Mineralogy and Petrology
identification of crystal modals : minerals and rock specimens related to theory Paper A.

(ii) Paleontology and Stratigraphy
Identification of fossils and stratigraphic specimens related to theory.