

Hemchandracharya North Gujarat University, Patan
B.Sc. Programme (CBCS-Semester-Grading pattern)
Semester end Examination

Format for Question paper **Core Complementary Courses in Geology**

Time: 3Hrs

Total Marks: 70

Part A

(Answer all questions)

- 1-06.** Questions such as, MCQs, Fill in the blanks, Match the pairs, etc.
(Each of **1** Mark) [Covering All Units]

Part B

(Answer all questions)

- 07-11.** Very short answer type questions such as, Definition, Explain the terms, etc
(Each of **2** Mark) [Covering All Units]

Part C

(Answer any eight/ten of the following)

- 12-17.** Short answer type questions such as, Definition, Explain the terms, examples/problems, reasons, differences, figures/diagrams, etc. (Each of **2** Marks) [Covering All Units]

Part D

(Answer any four/six of the following)

- 18-23.** Medium answer type questions such as, Short notes, figures/diagrams, examples/problems, reasons, differences, etc. (Each of **3** Marks) [Covering All Units]

Part E

(Answer any three/five of the following)

- 24-27.** Long answer type questions such as, Describe / Discuss in detail, diagrams, examples/problems, etc. (Each of **6** Marks)) [Covering All Units]

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN
CBCS - Semester - Grading Pattern
B.Sc. GEOLOGY Practical: SEMESTER-I
CC GEO-102 PR: Mineralogy Lab.
(in force from June 2016)

Study of the physical properties of the minerals

- 1. Megascopic identification of the following common rock forming minerals:**
Quartz, Amethyst, Chalcedony, Agate, Jasper, Orthoclase, Microcline, Plagioclase

- 2. Megascopic identification of the following common rock forming minerals:**
Muscovite, Biotite, Garnet, Hornblende, Augite, Tourmaline, Olivine, Chlorite.

- 3. Megascopic identification of the following common rock forming minerals:**
Magnetite, Hematite, Chromite, Pyrolusite, Pyrite, Galena, Sphalerite, Bauxite.

- 4. Determination of specific gravity of minerals – by Walker Steel Yard Balance and Jolly's spring Balance.**

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CBCS - Semester - Grading Pattern
B.Sc. GEOLOGY Practical: SEMESTER-II
CC GEO-104 PR: Optical Mineralogy, Crystallography and Petrology Lab.
(in force from June 2016)

- 1. Identification of the following minerals in thin sections:**
Quartz, Orthoclase, Microcline, Plagioclase, Muscovite, Biotite.
- 2. Classification of crystals in to six types. Study of Elements of Symmetry of Eleven (11) types of symmetry.**
- 3. Megascopic identification of typical Igneous rocks:**
Granite, Syenite, Gabbro, Rhyolite, Basalt
- 4. Megascopic identification of typical Sedimentary and Metamorphic rocks:**
Conglomerate, Sandstone, Shale, Limestone, Quartzite, Marble.

HEMCHANDRACHARYA
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F. Y. B. Sc.

Semester I

GEOLOGY - THEORY and PRACTICALS

Course-wise detail syllabus

GEO 101: General and Physical Geology, Mineralogy

Unit Course details

- Unit –1 **EARTH AS A PLANET:** General principles of geology as a science. Branches & scope of subject. Earth as a member of solar system – shape, size, mass and density of the earth – its movements. Origin of the earth – review of the different theories. Origin of the universe and evolution of the solar system.
- Unit –2 **EARTH’S INTERNAL STRUCTURE:** Earth’s internal structure, constitution, composition and formation. Brief introduction to Radioactivity and age of the Earth. Introduction to Convection in the earth’s interior and earth’s magnetic field. Elementary ideas of continental drift and plate tectonics.
- Unit - 3 **PHYSICAL GEOLOGY:** Weathering, erosion, denudation, transportation and deposition. Introduction to Geological agents – Glaciers, Rivers, Lakes, Winds.
- Unit - 4 **MINERALOGY:** Chemical bonding and compound formation. Definition, Classifications and Physical properties of minerals.

Reference Books:

- 1) Introduction to Physical Geology, A. K. Datta, Kalyani Publisher, New Delhi.
- 2) A Text Book of Geology, P. K. Mukerjee, World press.
- 3) A Text Book of Geology with Special Reference to India, G. B. Mahapatra.
- 4) General Geology, V. Radhakrishnan (1987), V.V.P. Publishers, Tuticorin.
- 5) Geomorphology, Enayat Ahmed, Kalyani Publisher, New Delhi.
- 6) Principles of Geomorphology, W. D. Thornbury (1969), John Willey Inc.
- 7) Principles Physical Geology, Arthur Holmes (1978), ELBS.
- 8) Engineering and General Geology, Parbin Singh (1994), S.K. Kataria and Sons, Delhi.
- 9) Rutley’s Elements of Mineralogy, H. H. Read, CBS publishers.
- 10) Introduction to Rock Forming Minerals, R. A. Deer, R. E. Howie and J. Zussman (1978), The English Language Book Society.

GEO 102 PR: Mineralogy Lab.

Course details

Study of the physical properties of the minerals –

Megascopic identification of the following common rock forming minerals:

Quartz, amethyst, chalcedony, agate, jasper, orthoclase, microcline, plagioclase, muscovite, biotite, garnet, hornblende, augite, tourmaline, olivine, chlorite.

Ores – magnetite, hematite, chromite, pyrolusite, pyrite, galena, sphalerite, bauxite.

Determination of specific gravity of minerals – by Walker Steel Yard Balance and Jolly's spring Balance.

F. Y. B.Sc.

Semester II

GEOLOGY - THEORY and PRACTICALS

Course-wise detail syllabus

GEO 103: Physical Geology, Mineralogy and Petrology Unit Course details

- Unit –1 **DYNAMICS OF THE EARTH:** Volcanoes – types, causes, effects, products and distribution. Earthquakes – causes, classification, intensity, effects, seismic belts, seismograph and seismogram, prediction. Mountains – causes, types, distribution.
- Unit –2 **OPTICAL MINERALOGY:** Nature of light, Phenomenon of polarisation, Reflection, Refraction, Double refraction, Properties of isotropism, anisotropism. Construction of Nicol prism, Petrological microscope and its parts. Passage of light through Nicol prism.
- Unit - 3 **CRYSTALLOGRAPHY:** Definition, Characteristics, Laws of Crystallography, Interfacial angle, Elements of symmetry, Parameters system of Weiss and Miller Indices. Classifications of crystals.
- Unit - 4 **PETROLOGY:** Magma: Definition, composition, origin; Definition and classification of rocks Igneous rocks: Origin, classification, common textures, composition and uses. Sedimentary rocks: Origin, classification, consolidation, diagenesis, fabric and textures, composition and uses. Metamorphic rocks: Agents, origin, classification, textures, composition and uses.

Reference Books:

- 1) Elements of Optical Mineralogy, N. H. Winchel, A. N. Winchel (1968), Willey,
- 2) The Principles of Petrology, G. W. Tyrell (1960), Asia Publishing House.
- 3) Petrology, W. T. Haung (1962), Mc. Graw Hill.
- 4) Dana's Text Book of Mineralogy, Revised by W.E. Ford, Wiley Eastern Ltd., New Delhi.

GEO 104 PR: Optical Mineralogy, Crystallography and Petrology Lab

Course details.

Identification of the following minerals in thin sections –

Quartz, orthoclase, microcline, plagioclase, muscovite, biotite.

Classification of crystals in to six types. Study of Elements of Symmetry of Eleven (11) types of symmetry.

Megascopic identification of typical rocks:

Granite, Syenite, Gabbro, Rhyolite, Basalt, Conglomerate, Sandstone, Shale, Limestone, Quartzite, Marble.