

Krantiguru Shyamji Krishna Verma

Kachchh University

BHUJ : 370 001



SYLLABUS (CBCS)

Semester 4

GEOLOGY

(With effect from June 2017)

K.S.K.V. KACHCHH UNIVERSITY
SYLLABUS OF B. Sc. (GEOLOGY)
SEMESTER- 4

CEGE 405 STRATIGRAPHY, HYDROGEOLOGY & GEOMORPHOLOGY

Unit : 1 General Stratigraphy: (15 Marks)

- General principles of Stratigraphy, Stratification, Geological Time scale – major divisions, Correlation and Homotaxis of strata, lithostratigraphic, chronostratigraphic and biostratigraphic units. Imperfection of geological records – their causes and importance, Concept of Zone fossils and Index fossils.

Unit : 2 Indian Stratigraphy: (15 Marks)

- Introduction to physiography, Physiographic and tectonic framework of India. Classification of geological formations of India. Brief account of different geological formations of India. Study of Precambrians of Gujarat, Rajasthan and Dharwar formations of India with its economic importance.

Ref: Geology of India & Burma by M.S. Krishnan

Unit : 3 Hydrogeology: (15 Marks)

- Terminology, Hydrological cycle, Hydrological properties of rocks - porosity, permeability, specific yield. Vertical distribution and Subsurface classification of ground water. Classification of aquifers. Darcy's law and its validity; Ground water as a geological agent, Springs.

Unit : 4 Geomorphology: (15 Marks)

- Basic concepts and significance. **Fluvial system**; Types of drainage pattern, valley development, erosional landforms, depositional landforms. **Eolian system**; erosional features, types of dunes. **Coastal system**; erosional landforms, depositional landforms. **Glacial system**: erosional landforms, depositional landforms. Major geomorphological sub-divisions of India; their characteristics and drainage pattern.

Reference Books:

- Geology of India, D. N. Wadia (1978), Tata Mc. Graw Hill.
- Ground Water, C. E. Tallman (1937), Mc Graw Hill
- Geomorphology, Enayat Ahmed, Kalyani Publisher, New Delhi.
- Principles of Geomorphology, W. D.Thornbury (1969), John Willey Inc..

SEMESTER- 4**CEGE 406 CRYSTALLOGRAPHY, ECONOMIC & APPLIED GEOLOGY****Unit : 1 Economic Geology: (15 Marks)**

- Introduction to common rock forming, ore forming and industrial minerals.
- Basic ideas about the methods of mineral exploration.
- Important economic minerals of India.
- Study of the following economic minerals with reference to India: Mica, Iron-, Manganese-, Chromium-, Aluminium-ores, Diamond, Asbestos,

Unit : 2 Industrial minerals and Fossil fuels: (15 Marks)

- Minerals used for Cement, Glass and Ceramic industries. Fertilizer minerals.
- Fossil fuels: Coal Petroleum and Natural Gas: their Origin, Distribution and economic significance in global context.

Unit : 3 Applied Geology: (15 Marks)

- Maps, Scales – their representation on maps, use of clinometer compass.
- Soils – definition, classification, composition, texture, fertility, chief types and soil profile. Soil-erosion and conservation.

Unit : 4 Crystallography: (15 Marks)

- Definition, Characteristics, Laws of Crystallography, Interfacial angle, Elements of symmetry, Parameters system of Weiss and Miller Indices. Classifications of crystals, Crystal systems: Cubic, Tetragonal and Orthorhombic – their study with examples in detail

Reference books:

- Mineral Economics, R. K. Sinha and N. L. Sharma (1981), Oxford IBH Publishers.
- Manual of Geological Maps, Gokhale.
- India's Mineral Resources, S. Krishnaswamy, (1979) Oxford & IBH Co.
- Engineering and General Geology, Parbin Singh (1994), S.K. Kataria and Sons, Delhi.
- Rutley's Elements of Mineralogy, H. H. Read, CBS publishers.

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B.Sc. Semester 4 (FOUR)

SUBJECT : GEOLOGY

(PRACTICAL-405)

Total Marks : 50

Passing standard : 20 Marks

1. Drainage basin analysis.
2. Identification of Landforms.
3. Construction of Subsurface hydrogeological profile.
4. Use of Clinometer and Brunton Compass.

(PRACTICAL-406)

Total Marks : 50

Passing standard : 20 Marks

1. Classification of crystals in to Cubic, Tetragonal and Orthorhombic System. Study of Elements of Symmetry.
2. Study of the physical properties of the Ores: Magnetite, Hematite, Limonite, Siderite. Ilmenite, Chromite, Pyrolusite, Pyrite, Chalcopyrite, Galena, Sphalerite Malachite, Azurite, Bauxite.

Note: Compulsory field work in a suitable geological area to study the elementary aspects of field geology.