

Semester IV

Paper 10: Stratigraphy of India

Topics

International Stratigraphic Code – development of a standardized stratigraphic nomenclature.

Concepts of Stratotypes.

Global Stratotype Section and Point (GSSP).

Brief introduction to the concepts of lithostratigraphy, biostratigraphy, chronostratigraphy, seismic stratigraphy, Chemostratigraphy, Magneto-stratigraphy, sequence stratigraphy and their subdivisions with Indian examples. (03 lectures)

Principles of stratigraphic analysis, Facies concept in stratigraphy: Walther's Law of Facies. (02 lectures)

Physiographic and tectonic subdivisions of India (02 lectures)

Introduction to Indian Shield (02 lectures)

Concept of paleogeographic reconstruction (02 lectures)

Brief Introduction to Proterozoic basins of India. Geology of Vindhyan and Cudappah basins of India (03 lectures)

Palaeozoic succession of Kashmir and its correlatives from Spiti and Zaskar (03 lectures)

Stratigraphy, structure and hydrocarbon potential of Gondwana basins. (03 lectures)

Mesozoic stratigraphy of India: a. Triassic successions of Spiti, b. Jurassic of Kutch, c. Cretaceous successions of Cauvery basins (04 lectures)

Volcanic provinces of India: a. Deccan, b. Rajmahal c. Sylhet Trap (04 lectures)

Cenozoic stratigraphy of India: a. Kutch basin, b. Siwalik successions, c. Assam, Andaman and Arakan basins. (02 lectures)

Important Stratigraphic boundaries in India:

a. Precambrian-Cambrian boundary, b. Permian-Triassic boundary c. Cretaceous-Tertiary boundaries (02 lectures)

Stratigraphy and structure of Krishna-Godavari basin, Cauvery basin, Bombay offshore basin, and Kutch and Saurashtra basins and their potential for hydrocarbon exploration (04 lectures)

12 rounds of student presentations will be arranged in Groups on different topics covered under Theory

Practicals -

12 lectures

1. Study of geological map of India and identification of major stratigraphic units.
2. Study of rocks in hand specimens from known Indian stratigraphic horizons
3. Drawing various palaeogeographic maps of Precambrian time
4. Study of different Proterozoic supercontinent reconstructions.

List of Project (extendable)

- a. Evolution of life through ages
- b. Iron ore catastrophe
- c. Mass extinction during geological past Cambrian explosion and its relation with Ediacaran fossils.
- d. Coal reserves of Gondwana Super Group

Suggested Readings:

1. Krishnan, M.S. 1982. Geology of India and Burma, CBS Publishers, Delhi
2. Doyle, P. & Bennett, M.R. 1996. Unlocking the Stratigraphic Record. John Wiley
3. Ramakrishnan, M. & Vaidyanadhan, R. 2008. Geology of India Volumes 1 & 2, geological society of India, Bangalore.
4. Valdiya, K.S. 2010. The making of India, Macmillan India Pvt. Ltd.