

### MGE 457: GEOSCIENCES (Open Elective Paper)

<b>Unit 1</b>	Introduction to Geology, Earth and its environment - lithosphere, hydrosphere and atmosphere.	6 hrs
<b>Unit 2</b>	Geological time scale. Origin and evolution of life, fossils, fossilization and their applications.	6 hrs
<b>Unit 3</b>	Geological Agents and hazards: Weathering, Erosion, Transportation and Deposition. Volcanoes, Earthquake, Landslide, Salt water intrusion, Floods and droughts.	6 hrs
<b>Unit 4</b>	Geomorphology: Description of Earth surface features. Landforms, Physical divisions of India. Structure and composition of the Earth's interior: Crust, Mantle and Core.	6 hrs
<b>Unit 5</b>	Structural Geology: Primary structures, secondary structures - folds, faults, joints and unconformities.	8 hrs
<b>Unit 6</b>	Natural Resources: Renewable and non-renewable resources. Water as a resource. Origin, occurrence and distribution of oil and gas. Minerals, rocks. Soil. Economically and strategically important metallic and non-metallic mineral deposits of India.	8 hrs

#### List of References:

1. Fundamentals of Historical Geology and Stratigraphy of India, Ravindrakumar New Age International Pub.
2. Principles of Paleontology – Raup and Stanley – CBS Publications
3. Principles of Invertebrate Paleontology – Shrock and Twenhofel – CBS
4. Fossil Invertebrates, Cambridge Univ.- Lehmann, U and Hilimer, G. (1983)
5. Micropalaeontology, George Allen and Unwin -Brasier M.D. (1980)
6. Micropalaeontology, Graham & Trotman - Bignot, G. (1985)
7. An introduction to Paleobotany - Arnold, Chester R
8. Field Geology – McGraw Hill Book Co. - Lahee, F.H. (1961)
9. Field Geology – Crompton.
10. Structural Geology – 3<sup>rd</sup> edition, Prentice Hall - Billings M.P. (1977)
11. Principles of Engineering Geology - McGraw Hill – Krynine, D.P. Judd, W.P. (1957)
12. Principles of Petrology – G. W. Tyrell, Asia Pub. House, New Delhi
13. Igneous and Metamorphic Petrology – Turner and Verhoogen, CBS Publications
14. Sedimentary Rocks, CBS Pub. – F. J. Pettijohn (1984)
15. Stratigraphy and Sedimentation, W.H. Freeman – Krumbein and Sloss (1963)
16. Economic Mineral Deposits – Bateman
17. India's Mineral Wealth - Oxford Univ. Press - Brown and Dey (1975)
18. Indian Mineral Resources – Kirshnaswamy
19. Industrial Minerals & Rocks of India - Allied Publishers - Deb, S. (1987)
20. Hydrogeology – K. R. Karanth – Tata McGraw Hill Publishing Co. Ltd.
21. Groundwater – H. M. Raghunath – Wiley Eastern Limited
22. Elements of Hydrology – V. P. Singh
23. Courses in Mining Geology – R.N.P. Arogyaswamy, Oxford & IBH Publishing Co.