

INSTRUCTIONS TO PAPER SETTERS:**MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from question no. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only one question from each unit.

UNIT – I

Introduction to geology: Origin, age and interior of earth, Earth movements, atmosphere and environment, Geological Time Scale, Geology of rocks and minerals, Weathering of rocks, Erosion by running water, Winds, Glaciers &, Oceans, soil and soil erosion, Dip, Strike, Folds, Faults, Joints, and their significance in environmental engineering.

[No. of Hours: 11]**UNIT – II**

Introduction to Seismology: Earthquakes & their causes, Environmental consequences of earthquakes; Landslides: Causes and effects, Preventive measures, Tsunamis, Seismic Zoning map of India.

[No. of Hours: 10]**UNIT – III**

Introduction to GIS and Remote Sensing: Components of GIS, Database structure vector and raster data, GIS software packages, Fundamentals of remote sensing, Atmospheric interaction, Scattering, Reflection, Absorption and Transmission platforms and sensors, Remote sensing data for mapping, Image interpretations .Application of GIS and remote sensing to environmental engineering.

[No. of Hours: 10]**UNIT – IV**

Introduction to natural pollution: Ground water, lakes and river basins, sources of pollution, introduction to environmental impact of dam construction, Water quality mapping, Identification of ground water potential & recharge areas, Integrated watershed management, soil salinity and soil conservation.

[No. of Hours: 10]**Text and Reference Books:**

1. M.Demers, “Fundamentals of Geographical Information Systems”, Wiley Wew Yock.
2. Alisdur Rogers & H.A. Villvs, “Geography”, Black Well Publishing.
3. Heywood Cornetues & Carver, “Introduction to Geographical Information System”, Prentice Hall, London.
4. Borrough & Mc Donnel, “Principles of Geographical Information System”, Oxford University- Press.
5. M.P. Billings, “Structural geology”, Prentice Hall of India.
6. S. Kumar, Basic Remote Sensing and GIS, Laxmi Publication.
7. A M Chandra, Remote Sensing and GIS, Narosa Publishing House, Pvt. Ltd..
8. D. S. Arora, Geology for Engineers, Mohindra Publications.
9. P. N. Agrawal, Engineering Seismology.
10. Coburn and Spence, Earthquake Protection, Wiley.