Subject Code : P8AGE1

ENVIRONMENTAL GEOLOGY AND DISASTER MANAGEMENT

UNIT 1

Environmental Geology (Introduction: An Overview of our Planetary Environment: Earth in space and time. Objectives and scope - Definition of ecology and environmental Geology. Different ecosystems. Classification of Natural resources. A short account of renewable and nonrenewable resources.
Energy sources of disasters: internal sources of energy – external sources of energy – energy circulation and human risk – human fatalities through geological time.

UNIT 2

Landslides: Causes of Landslides, landslides induced by human activity, factors influencing slope stability, hazards related to landslides, landslide disaster management planning and role of geology, case studies
Soil Erosion: Soil formation processes, soil profiles, soil horizon, soil properties, soil classification, causes of soil erosion, consequences of soil erosion, strategies for reducing soil erosion and role of geology, case studies

UNIT 3

Earthquakes: Causative factors, Seismic waves, earthquake strength, distribution, seismicity in the Indian region, earthquake related hazards, earthquake disaster management planning and role of geology, case studies
Volcanic eruption: Magma sources and types, causative factors, distribution and types of volcanoes, hazards related to volcanic eruption – Disaster management planning and role of geology, case studies
River Flooding: Causes and factors influencing flood severity, flood characteristics, stream hydrographs, flood frequency curves, flood hazards, flood disaster management planning and role of geology, case studies.

UNIT 4

Environmental Problems Associated with Human Activities:
Impact of Mining Activities: Surface mining and its impacts, underground mining and its impacts, strategies for reducing hazards relating to mining activities and role of geology, case studies
Environmental problems associated with coastal zones: Coastal zone processes, hazards related to coastal zones – coastal erosion, coastal flooding, sea water intrusion, coastal pollution, strategies for reducing environmental problems associated with coastal zones and role of geology, case studies.
Tsunamis – origin, significance and prediction.
Nature and rate of human population growth, Impact of population explosion.
Urbanisation: Causes of urbanisation, impacts of urbanisation, role of geology and urban planning.

UNIT 5

Pollution: Pollution, types of pollution, Surface and groundwater pollution, pollution due to domestic sewage, industrial effluents, agricultural run off, strategies for reducing pollution, role of geology, case studies. Waste Disposal: Solid, liquid wastes – sources, waste disposal strategies, role of geology, case studies.

TEXT BOOKS

1. Todd, D.K. 1959- Ground water Hydrology, Wiley
2. Tolman, C.F. – 1937, Ground water, McGraw Hill
3. Ragchunath, H.M. - 1983 - Groundwater, Wiley Eastern
4. Davis, S.N. and Dewiest, R.J.M, 1966-- Hydrology, Wiley
5. Keller, E.A (1976).Environmental Geology. Charles E. Merril Publishers, New York
6. Lundgren, L (1986). Environmental Geology. Prentice-Hall Publishers, New Jersey
7. Strahlfer, N, and Strahler, A.H. - 1973 - Environmental Geosciences Wiley Eastern
8. Davis *et.a1*. - 1976 - Environmental Geoscience, Wiley Eastern
9. Howard, A.D &Irwin Remson (1978). Geology in Environmental Planning. McGraw-Hill Publications, New York
10. Coates, D.R (1985). Geology and Society. Cahpman and Hall Publishers, New York
11. Janet Watson (1983). Geology and Man – An Introduction to Applied Earth Sceinces, George Allen and Unwin Publichers, London
12. Miller, G.T.Jr. (1994). Living in the Environment – Principles, Connections and Solutions. Wadsworth Publishing Company, California.
13. Sinha and Pankaj Srivastava (2000). Earth Resources and Environmental Issues, ABD Publishers, Jaipur

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1. Meinzer.O.E - 1962 - Hydrology, Dover
2. Garg, S.P. - 1982 - Groundwater and Tube wells, Oxford and IBH
3. Fox, C.S. - 1949 - Geology of Water supply, Technical Press
4. Frederick Betz, J.R. - 1975 - Environmental Geology -Benchmark papers in Geology, V.25, Dowden.
5. Abbott, P.C (2002). Natural Disasters, McGraw-Hill Publications, New Delhi
6. Montgomery, C.W (2000). Environmental Geology, McGraw-Hill Publications, New Delhi
7. Valdiya, K.S (1987). Environmental Geology – Indian Context. Tata McGraw-Hill Publishing Company Ltd., New Delhi