

Environmental Sciences

1. Definition, principles and scope of environmental science.
2. Ancient agenda for Environment as reflected in Sanskrit.
3. Environmental ethics, education and awareness role of youth, Communities, professional, planners, decision makers and implementers.
4. Basic of Atmospheric Science and Biosphere:

(A) ATMOSPHERE

(B) INTRODUCTION TO OCEAN

5. Basics of lithosphere, hydrosphere and biosphere.
6. Fundamentals of Ecology, Definition, Subdivisions.
7. Biogeochemical cycles, food chain and food web.
8. Habitat: Freshwater, marine, estuarine and terrestrial ecosystems.
9. Geographical classification and zones natural resources, conservation and sustainable development.
10. Concept and Scope of Environmental Chemistry :
Definition and explanation for various terms, segments of environment. 26 principles and cyclic pathways in the environments.
11. Chemistry of Biologically Important Molecules :
Chemistry of Water : Unusual physical properties, hydrogen bonding in biological systems, unusual solvent properties, changes in water properties by addition of solute.

Protein structure and biological functions, enzymes, enzyme metabolism, biosynthesis of DNA and RNA, mutations and Gene control during embryogenesis.

12. Soil Chemistry : Formation, constituents and properties of soils, adsorption of contaminants in soil.

13. Environmental Microbiology : Microbes – classification and their applications in the environmental sciences. Cultivation and growth of microorganisms. Microorganisms and their association with man, animals and plants. Microbes as anti-microbial agents, Extremophilic microorganisms, Microbial metabolism

14. Biomes and Habitat Diversity : Classification of biomes, major biotic elements of each biome and their characteristics.

15. Biological diversity of India : Definition and nature, India's biogeographically history, physiography, climate and its impact on biodiversity. Indian forest and vegetation types and diversity of flora and fauna.

16. Population and Community Ecology.

17. Wetlands Forests and Semi-arid Habitats of India : Definition and types of wetlands, important wetlands of India and their conservation issues. Forests and semi- arid habitats of India : their distribution in India, ecological status of forests and arid lands, and their conservation. The Earth Systems and Biosphere : Conservation of matter in various geo-spheres – lithosphere, hydrosphere, atmosphere and biosphere. Energy budget of the earth. Earth's thermal environment and seasons. Ecosystem flow of energy and matter. Coexistence in communities – food webs. Earth's major ecosystem-terrestrial and aquatic.

General relationship between landscape, biomes and climate. Climates of India, Indian Monsoon, El Nino. Tropical Cyclones and Western Disturbances.

18. Noise Pollution: Types, sources and consequences. Sampling Methods.

19. Radio-active Pollution : Types, sources and consequences. Sampling methods.s for different type of projects. Review of methodologies of EIA. Introduction to Check list, Matrix & Network methods forEIA.Prediction of short & long term Impacts on Environment (physical, biological & socio culture).

20. Current Developments in the Subject.