I SEMESTER

Paper 101: FUNDAMENTALS OF ENVIRONMENTAL, CLIMATIC AND SOIL SCIENCE

Unit I
1. Definition, principle and scope of Environmental Science.
2. Structure and composition of atmosphere.
3. Brief account of Hydrosphere, Global water resources and hydrological cycle.
4. Lithosphere: A brief account
5. Biosphere and its components.

Unit II
1. Scale of meteorology: Meteorological parameters pressure, temperature, precipitation, humidity, radiation and wind
3. Climate of India, Monsoons and El nino.
4. Weather and folklores on weather forecast.
5. Climate change

Unit III
1. Environmental ethics.
2. Environmental education
3. Role of people, Professionals and NGO’s in environmental education and Protection.
4. Environmental movements in India.
5. Environment protection faith and religious beliefs.

Unit IV
1. Soil and its organic and inorganic constituents.
2. Physical properties of soil.
3. Electro chemical properties of solid constituents.
4. Gas and liquid phases in soil.
5. Bioremediation of contaminated soils.

Unit V
1. Methods of soil formation
2. Organic farming, microbes and agriculture
3. Soil types of India
4. Soil erosion and conservation
5. Soil pollution and remedial measures.
PAPER-102: ECOLOGY, BIODIVERSITY, FORESTRY, WILDLIFE AND THEIR CONSERVATION

Unit I
1. Structure and function of ecosystem
2. Primary productivity
3. Secondary productivity
4. Energy flow and laws of thermodynamics
5. Energy models and energy relations in ecosystems

Unit II
1. Characteristics of populations
3. Population regulation: density dependent and density independent
4. Concept and Characteristics of communities
5. Community Development

UNIT III
1. Concept of Biodiversity.
2. Global and Indian scenario of Biodiversity.
4. Biological Diversity and Agenda-21
5. Hot spots of biodiversity and Key stone species.

UNIT IV
1. Forest Mensuration.
2. Forest Protection and Regeneration of Forest.
3. Agro forestry, Social Forestry, JFM.
4. Forest policies and community participation for sustainable forest management.
5. Ecotourism, Green people and Green organizations of the world.

UNIT V
1. Diversity and distribution of wildlife in India.
2. Wildlife habitat and their management.
3. Red data book and endangered species, CITES.
5. Exploitation, Trade and sustainable utilization of wildlife.
PAPER-103 ENVIRONMENTAL ECONOMICS AND NATURAL RESOURCES

UNIT I
1. Fundamentals and theories of Environmental Economics.
2. Environmental quality as a public good.
3. Natural resources – efficiency and market failure.
4. Environmental issues in developed and developing countries.
5. Environmental issues and five year plan.

UNIT II
1. Concept of cost and benefits in an environmental programme – classification and distribution.
2. Cost benefit and cost effective analysis.
3. Concept of economic growth and development index of economic development.

UNIT III
1. Forest resources in India and its crisis
2. State subsidies and resource use in dual society
3. Wetlands and woodlands with reference to India
4. Natural range lands- savanna, steppes and other grasslands
5. The protection of threatened ecosystems, Natural parks and other natural reserves

UNIT IV
1. Water resources of India
2. Ground water provinces in India
3. Origin and composition of sea water, ice sheets and fluctuations of sea levels
4. Resources of oceans
5. Biological resource management strategies

UNIT V
1. Minerals essential nutrients of civilization, resources and reserves as a limiting factor
2. Strategies to reduce mineral consumption and conservation
3. Impact of mining on environment
4. Ocean as a new source of exploitation of mineral resources and their cycling
5. World food supply – agriculture, ecosystem and food production
UNIT I
1. Energy Budget on Earth
2. Energy cycle and environmental effects.
3. Energy profile in India.
5. Sustainable energy development in India.

UNIT II
2. Traditional fuels in an Urban Society.
4. Electricity.
5. Flow of Energy

UNIT III
1. Sun as a source of energy
2. Solar and its spectral characteristics.
4. Solar photovoltaic applications.
5. Green building and their applicability.

UNIT IV
1. Wind energy, conversion, collectors and applications.
2. Hydrotic source of energy - hydroelectricity, ocean energy, ocean thermal electric conversion.
3. Geothermal energy-source applications, advantages and disadvantages.

UNIT V
1. Energy plantations.
2. Energy from biomass, biomass conversion technology.
4. Anaerobic digestion.
5. Biogas technology-(Methanogenesis)