III SEMESTER

Paper 301: EARTH PROCESSES, HAZARDS AND RISK ASSESSMENT

UNIT-I
1. Fundamental Concepts of earth.
2. Earth material and processes.
3. Resources from the earth
4. Land use pattern in India.
5. Land use management and practices.

UNIT-II
1. Hazards in the environment Dimension of Disaster.
2. Tectonic hazards
3. Atmospheric hazards
4. Hydrological hazards
5. Biophysical hazards

Unit III
1. Introduction to risk assessment.
2. The elements of human health and risk assessment.
3. Risk Characterization.
5. Future directions in risk assessment.

Unit IV
1. The concept of disaster as a product of hazard and vulnerability.
2. Disaster risk management concept areas for action and components.
3. Risk analysis concepts goals and products.
4. Bhopal disaster analysis.
5. Nuclear power plant disaster and its safety management.

Unit V
1. The chemistry of hazardous material.
2. Safety management practices for laboratory.
3. RCRA act and waste analysis plan.
4. Hazard communication.
5. Process technology and hazard analysis.
PAPER-302 BIOTECHNOLOGY, TOXICOLOGY AND ENVIRONMENTAL MANAGEMENT

UNIT I
1. Role of Biotechnology in environmental protection.
3. Genetic engineering
5. Genetically engineered microbes in Bio treatment of waste and environment.

UNIT II
1. Bioabsorption of metals.
2. Biopolymers and Bioplastics
3. Biofuels and Biodiesel.
4. Biofertilizers and Biopesticides
5. Bioremediation

UNIT III
2. Fermentation Technology.
4. Mushroom culture technology.
5. Hydroponics and their role in waste water management.

UNIT IV
1. Definition, scope, goals and divisions of environmental toxicology
2. Factors affecting environmental concentration of toxicants
3. Factors influencing toxicity
4. Toxicity of chemical mixtures
5. Dose, effect, response and dose response relationship

UNIT V
1. Membrane permeability & mechanism of chemical transfer
2. Xenobiotic compounds in the Environment
3. Degradation of Xenobiotic compounds
4. Toxicity testing methods ( single and multi - species, acute, sub-acute and chronic toxicity tests)
5. Environmental diseases.
PAPER-303: SURVEYING, PHOTOINTERPRETATION AND REMOTE SENSING.

UNIT I
1. Types of maps-survey of India maps, topographs, map reading.
2. Symbols signs used in maps.
3. Primary Division and Classification of Surveying.
5. Basic concepts of cartography and Digital cartography.

UNIT II
1. Introduction to aerial photography, Basic information and specifications of aerial photography.
2. Scale, vertical exaggeration and types of aerial photographs.
3. Stereoscopic and aerial mosaics.
5. Application of aerial photo interpretation in environmental science.

UNIT III
1. Basic concepts and principles of remote sensing, ground truth Collection and spectral Signatures.
2. (a) Platforms: Balloon, Rocket, Aircraft, Spacecraft.
   (b) Satellites: Land sat, SPOT, JRS-IKONOS
4. Thermal infrared imaging system and its applications.
5. Radar Imaging system and its application.

UNIT IV
1. Fundamental of digital image processing.
2. Introduction to image enhancement technique – the image histogram, contrast stretching and band rationing and Edge Enhancement.
4. Basic concepts of Geographical Information System (GIS) and GIS Applications.

UNIT V
1. Application of remote sensing in the assessment of environmental degradation.
2. Application of remote sensing in natural hazard detection.
3. Remote sensing in solid waste management studies.
4. Role of remote sensing and GIS in water quality mapping and monitoring.
5. Future prospect of remote sensing with special reference to environmental Sciences.
UNIT I
1. Environmental protection: issues and problems.
2. International and National efforts for environmental protection.
4. Public policies strategies in Pollution control
5. Environmental legislation

UNIT II
2. The merchant shipping (amendment) act, 1970.
4. Judiciary approach and water pollution.
   AIR 1988 SC 1115.

UNIT III

UNIT IV
2. Wildlife Protection Act, 1972 with recent amendments.

UNIT V
3. Environmental law and Public Interest Litigation.
4. Environmental law in the curriculum of legal education.