**Nalanda Open University**

Course Name: M.A. / M.Sc. Environmental Science

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**E-CONTENT - 7**

for

**M.A. / M.Sc. Environmental Science,**

**Part-II Students**

**Session – 2018–2020**

(For examines of M.A. / M.Sc. Environmental Science,

Part – II, Examination, 2020; Theory Papers)

Important topics suggested to be prepared for Annual Examination, 2020

**THEORY PAPER**

**PAPER – IX**

**(MARINE ECOLOGY)**

1. Development of Marine Ecology; “19th century is called the Golden Period of the development of Marine Science” – elaboration of the statement with reasons.
2. Bottom relief of Oceans; detailed account of the bottom relief of either Indian Ocean or Pacific Ocean.
3. Salinity of Sea and Oceans; description of salinity in open seas and partially closed seas; Reasons as to why the salinity of oceans water is not the same everywhere.
4. Sources of temperature in ocean water; Description of heat budget of the ocean.
5. Factors controlling the density of the ocean water. An account of the horizontal and vertical distribution of density in the ocean water.
6. “Oceans are vast storehouses of energy”; Elaboration of the statement with reasons.
7. Role of waves and nature of coast in coastal erosion. Measures to protect coasts from erosion.
8. An account of flora and fauna found at different levels of an ocean.
9. Conditions essential for development of fisheries. Major fishing grounds of India/world.
10. Causes and consequences of pollution of Ocean water. Effect of ocean pollution on different biotic and abiotic components of ocean water.
11. Descriptive notes on

* Geophysical Oceanography
* Oil spill in seas
* Ocean Currents
* Pelagic zone of ocean.

**THEORY PAPER**

**PAPER – X**

**(WASTE GENERATION AND MANAGEMENT)**

1. Introductory account of Solid Waste; Classification of wastes on the basis of their physical and chemical composition.
2. Meaning of Solid Waste Management; Challenges of Solid Waste Management.
3. Meaning of Hazardous Waste; Impact of Hazardous Waste on public health and environment.
4. Detailed description of treatment and disposal methods of biomedical waste.
5. Meaning of radioactive waste; Impacts of radioactive waste on public health and environment; How management of radioactive waste is different from management of other wastes?
6. An account of different segments and types of domestic and municipal wastes and their polluting effects.
7. Generation sources, types and composition of waste which are intended for the purpose of recycling.
8. Critical examination of the three R-mantra – Reduce, Reuse and Recycle – as effective measures to control pollution.
9. Brief account of rules and regulations promulgated in our country for management of different types of waste.
10. Short descriptive notes on :
11. Incineration
12. Composting of municipal waste.
13. Duty of hospital/health center in-charge regarding disposal of hospital waste.
14. Solid waste management rules, 2016.

**THEORY PAPER**

**PAPER – XI**

**(ENVIRONMENTAL TOXICOLOGY)**

1. Importance and usefulness of the study of toxicology to human beings.
2. Definition of the terms ‘Toxicants and Toxicity’; Brief description of acute toxicity, chronic toxicity and selective toxicity.
3. Definition of Response; Descriptive account of dose-response relationship.
4. An account of heavy mental toxicity. Brief description of the sources and biochemical effect on humans of either Lead or Mercury.
5. Concept and definition of Bio-indicator. Brief description of fishes and birds as Bio-indicators.
6. Introductory note on occupational hazards. Brief description of common occupational hazards.
7. Description of two physical hazards and two biological hazards, the associated work-places and their effect on the concerned people at the workplaces.
8. Detailed account of occupational hazard control measures.
9. Discussion on need for control of common environmental toxicants in context of India.
10. Descriptive notes on :
11. Synergism
12. Threshold Limit Value (TLV)
13. Biomonitoring progamme
14. Bioremediation

**THEORY PAPER**

**PAPER – XII**

**(STATISTICAL ANALYSIS AND DATA PROCESSING)**

1. Scope, utility and limitations of statistics.
2. Importance of collection of data; Main sources of data.
3. Importance of chart in understanding and interpretation of ‘Numerical data’; Short description of different types of one dimensional chart/diagram.
4. Definition of central tendency; Discussion on different measures of central tendency with their merits and demerits.
5. Definition of Skewness and Kurtosis; Measurement of Skewness and Kurtosis.
6. Definition of Correlation and its measurement. Definition of Regression. How is Regression different from Correlation?
7. Need of Probability; Explanation of the rule of addition and rule of multiplication of probability.
8. Difference between census survey and sample survey; their merits and demerits.
9. Descriptive notes on
10. Difference between primary data and secondary data.
11. Normal distribution.
12. Geometric mean.
13. Sampling and Non-sampling error.

Note : To test your understanding of different topics suggested above for preparation of this paper a number of data based questions may be asked to solve as per direction given in the question.

**THEORY PAPER**

**PAPER – XIII**

**(REMOTE SENSING AND ITS APPLICATION IN ENVIRONMANTAL SCIENCE)**

1. Concept of Photogrammetry; various aspects of geometry of photographs.
2. Meaning and definition of Remote Sensing; Importance of Electromagnetic Radiation and Electromagnetic Spectrum in the process of Remote Sensing.
3. Elaboration of the statement “Sensor and Scanner are main organs of Remote Sensing System”.
4. Classification of Earth Resource Satellites; brief description of each class.
5. Definition of Digital Image Processing; description of techniques and methods of Digital Image Processing.
6. Introduction and Definition of Geographical Information System; Data Merging and Integration of Geographical Information System.
7. Meaning of Remote Sensing; usefulness of Remote Sensing and Geographical Information System in the identification of mineral areas, and the planning and management of mining activities.
8. Importance of Remote Sensing Technique in the management of ocean resources and coastal zones.
9. Description of application of Remote Sensing in Land Use Planning.
10. Description of application of Remote Sensing in Environmental Protection.
11. Descriptive notes on
12. Remote Sensing Platform.
13. Meteorological Satellite (METSAT)
14. Image Enhancement Techniques.

**THEORY PAPER**

**PAPER – XIV**

**(EIA, ECO-PLANNING AND SUSTAINABLE DEVELOPMENT)**

1. Definition and elaboration of Environmental Impact Assessment; Purpose of EIA.
2. Brief description of broad steps in EIA.
3. Importance of Public Participation in Environmental Impact Assessment process. Brief discussion on pros and cons of this participation.
4. Role and key elements of Environmental Impact Assessment report.
5. Advantages and disadvantages of different Environmental Impact identification methods.
6. Discussion on different approaches used for Environmental Impact Mitigation.
7. Definition and important ingredients of Ecoplanning.
8. Meaning of Sustainable development. Role of different sectors in maintaining sustainability.
9. Salient features of the EIA procedure adopted in our country.
10. Descriptive notes on :
11. Indian EIA notification, 1994
12. World Bank Classification of Projects for Screening.
13. Agro-climatic regions of India
14. Disaster Management Plan.

**THEORY PAPER**

**PAPER – XV**

**(ENVIRONMENTAL LAW, POLICY & MANAGEMENT)**

1. Meaning of Environmental Management; Ecological base of Environmental Management.
2. Brief description of the objectives and principles of National Environmental Policy of our country.
3. Critical analysis of the statement “Protection of natural resources and biodiversity are important components of environmental protection”.
4. National efforts which have been made in India for “Environmental Protection”; Short description of the names and efforts of different agencies/organizations working for environment protection.
5. Brief description of constitutional background of Environmental Acts in India.
6. Salient features and aspects of Environmental (Protection) Act, 1986.
7. An account of Bio-diversity Conservation Act, 2002.
8. Brief description and salient features of Hazardous Waste (Management and Handling) Rules, 1989.
9. Introductory explanation, definition and concept of eco-mark. Short description of Eco-mark logo of our country.
10. Descriptive notes on the following:
11. Central Pollution Central Board.
12. Environmental Ethics
13. National Green Tribunal
14. IUCN

**THEORY PAPER**

**PAPER – XVI**

**(SOCIAL ISSUES & ENVIRONMENT)**

1. Short description of National Environment. Adverse effects of rapid population growth on National Environment.
2. Causes of insanitation; Negative impacts of insanitation on human body and the ambient environment.
3. Chipko Movement and its importance in context of forest conservation.
4. Introductory description of occupational hazards. Short description of the types of occupational hazards.
5. Short description of those natural disasters whose solution measure needs resettlement and rehabilitation.
6. Importance of Reduce, Reuse and Recycle principle in the solution of the problems related to Waste Generation and Waste Management.
7. Discussion on community participation in conservation and upgradation of environment.
8. Discussion on some major Urban Environmental Issues in the context of Urbanization.
9. Ozone layer depletion and its adverse effect on human health and the environment; Short description of the global efforts to reduce the ozone depletion.
10. Short notes on the following:
11. Social forestry in India
12. Squatter Settlement.
13. Personal Hygiene
14. Kyoto Protocol
15. Role of NGOs in promoting environmental awareness.

NOTE: SHORT DESCRIPTION OF THE SUGGESTED TOPICS WILL BE UPLOADED IN DUE COURSE.