

GES-106-F : ENVIRONMENTAL STUDIES

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| Theory | 75 Marks |
| Field Work | 25 Marks (Practical) |

Unit-1 The Multidisciplinary nature of environmental studies. Definition, scope and importance.

Unit-2 Natural Resources :

Renewable and non-renewable resources : Natural resources and associated problems.

- a) Forest resources : Use and over-exploitation : deforestation, case studies. Timber extraction, mining dams and their effects on forests and tribal people.
 - b) Water resources : Use and over-utilisation of surface and ground water, floods, drought, conflicts over water, dams- benefits and problems.
 - c) Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
 - d) Food resources : World food problems, changes, caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, Water logging, salinity, case studies.
 - e) Energy resources : Growing energy needs; renewable and non- renewable energy sources, use of alternate energy sources, case studies.
 - f) Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
- * Role of an individual in conservation of natural resources.
 - * Equitable use of resources for sustainable lifestyles.

(8 lectures)

Unit-3 Ecosystems :

- * Concept of an ecosystem.
- * Structure and function of an ecosystem.
- * Producers, consumers and decomposers.
- * Energy flow in the ecosystem.
- * Ecological succession.
- * Food chains, food webs and ecological pyramids.
- * Introduction, types, characteristic features, structure and function of the following ecosystem :
 - a. Forest ecosystem.
 - b. Grassland ecosystem.
 - c. Desert ecosystem.
 - d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

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- * Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- * Wasteland reclamation.
- * Consumerism and waste products.
- * Environment Protection Act.
- * Air (Prevention and Control of pollution) Act.
- * Water (Prevention and Control of pollution) Act.
- * Wildlife Protection Act.
- * Forest Conservation Act.
- * Issues involved in enforcement of environmental legislation.
- * Public awareness. (7 lectures)

Unit-7 Human population and the Environment.

Population growth, variation among nations. Population explosion- Family Welfare Programme. Environment and human health. Human Rights. Value Education. HIV/AIDS. Woman and Child Welfare
 Role of Information Technology in Environment and human health.
 Case Studies. (6 lectures)

Unit-8 Field Work :

- * Visit to a local area to document environmental assets - river/forest/grassland/hill/mountain.
- * Visit to a local polluted site-urban/Rural/ Industrial/ Agricultural.
- * Study of common plants, insects, birds.
- * Study of simple ecosystems- pond, river, hill slopes, etc. (Field work equal to 5 lecture hours).

References

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Pub. Ltd. Bikaner.
2. Bharucha, Frach, The Biodiversity of India, MAPIN Publishing Pvt. Ltd. Ahmedabad-380013, India, E-mail : mapin@icenet.net (R).
3. Brunner R.C. 1989, Hazardous Waste Incineration, Mc. Graw Hill Inc. 480p.

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(6 lectures)

Unit-4 Biodiversity and its conservation

- * Introduction - Definition: Genetic, Species and ecosystem diversity.
- * Biogeographical classification of India.
- * Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values.
- * Biodiversity at global, National and local levels.
- * India as a mega-diversity nation.
- * Hot-spots of biodiversity.
- * Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts.
- * Endangered and endemic species of India.
- * Conservation of biodiversity : In-situ and ex-situ conservation of biodiversity.

(8 lectures)

Unit-5 Environmental pollution :

Definition, causes, effects and control measures of :

- a) Air pollution.
 - b) Water pollution
 - c) Soil pollution
 - d) Marine pollution
 - e) Noise pollution
 - f) Thermal pollution
 - g) Nuclear hazards
- * Solids waste management : causes, effects and control measures of urban and industrial wastes.
 - * Role of an individual in prevention of pollution.
 - * Pollution case studies.
 - * Disaster management : floods, earthquake, cyclone and landslides.

(8 lectures)

Unit-6 Social issues and the Environment :

- * From unsustainable to sustainable development.
- * Urban problems related to energy.
- * Water conservation, rain water harvesting, watershed management.
- * Resettlement and rehabilitation of people : its problems and concerns case studies.
- * Environmental ethics : Issues and possible solutions.

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