

ENVIRONMENTAL STUDIES

ES-101

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Time - 3 hrs
Marks - 60

Unit 1: Multidisciplinary nature of environmental studies
Definition, scope and importance, need for public awareness.

Unit 2: Natural Resources:

Renewable and non-renewable resources:

Natural resources and associated problems

- Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
 - Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
 - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
 - Food resources: World food problems, changes caused by agriculture and over-grazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
 - Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Case studies.
 - 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.

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 ecosystems:-
 - Forest ecosystem
 - Grassland ecosystem
 - Desert ecosystem
 - Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

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.

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Unit 5: Environmental Pollution

Definition

Cause, 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

- Solid 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.

Unit 6: Social Issues and the Environment (7 lectures)

- 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.
- 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.

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.
- Women and Child Welfare.
- Role of Information Technology in Environment and human health.
- Case Studies.

Note for Paper-setter: EIGHT questions are to be set covering entire syllabus. Students will be required to attempt FIVE questions.

REFERENCES

- a) Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
- b) Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad -380 013, India, Email:mapin@icenet.net (R)
- c) Brunner R.C.. 1989. Hazardous Waste Incineration. McGraw Hill India.

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- Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
- Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p
- f) De A.K., Environmental Chemistry, Wiley Eastern Ltd.
- g) Down to Earth, Centre for Science and Environment (R)
- h) Gleick, H.P. 1993. Water in Crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p
- i) Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
- j) Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
- k) Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.
- l) McKinney, M.L. & School, R.M. 1996. Environmental Science Systems & Solutions, Web enhanced edition. 639p.
- m) Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
- n) Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
- o) Odum E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
- p) Rao M.N. & Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345p.
- q) Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
- r) Survey of the Environment, The Hindu (M)
- s) Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science
- t) Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards, Vol I and II, Enviro Media (R)
- u) Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
- v) Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p
- w) Kaushik A and Kaushik C.P. Perspectives in Environmental studies. New Age International Publisher (TB)*
- x) Deswal S. and Deswal A. Basic Course in Environmental Studies. Dhanpar Rai & Co. (TB)*
- y) Santra S.C. Environmental Science. New Central Book Agency (P) Ltd (TB)*
- z) Sharma P.D. Ecology and Environment. Rastogi Publications. (TB)

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