

**B.Sc. (Data Science)**  
**Ability Enhancement Compulsory Course (AECC)**  
**Semester II**

**AE2B31204T: ENVIRONMENT STUDIES**

**Total Marks: 100**  
**External Marks: 70**  
**Internal Marks: 30**  
**Credits: 4**  
**Pass Percentage: 40%**

**Objective:**

The objective of this paper is to create awareness about environmental problems among learners. The paper imparts basic knowledge about the environment and its problems and attempts to motivate learners to participate in improvement.

**INSTRUCTIONS FOR THE PAPER SETTER/EXAMINER:**

1. The syllabus prescribed should be strictly adhered to.
2. The question paper will consist of three sections: A, B, and C. Sections A and B will have four questions each from the respective sections of the syllabus and will carry 10 marks each. The candidates will attempt two questions from each section.
3. Section C will have fifteen short answer questions covering the entire syllabus. Each question will carry 3 marks. Candidates will attempt any 10 questions from this section.
4. The examiner shall give a clear instruction to the candidates to attempt questions only at one place and only once. Second or subsequent attempts, unless the earlier ones have been crossed out, shall not be evaluated.
5. The duration of each paper will be three hours.

**INSTRUCTIONS FOR THE CANDIDATES:**

Candidates are required to attempt any two questions each from the sections A, and B of the question paper, and any ten short answer questions from Section C. They have to attempt questions only at one place and only once. Second or subsequent attempts, unless the earlier ones have been crossed out, shall not be evaluated.

**SECTION-A**

The multidisciplinary nature of environmental studies. Definition, scope and importance Concept of Biosphere – Lithosphere, Hydrosphere, Atmosphere.

**Ecosystem & Biodiversity Conservation**

Ecosystem and its components, Types of Ecosystems

Biodiversity - Definition and Value, Threats to biodiversity and its conservation

Level of biological diversity: genetic, species and ecosystem diversity; bio-geographic zones of India; biodiversity patterns and global biodiversity hot spots.

India as Mega-biodiversity nation; Endangered and endemic species of India.

Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational value.

**Natural Resources–Renewable And Non Renewable Resources**

Land resources and land use change; land degradation, soil erosion and desertification. Deforestation: causes and impacts due to mining, dam building on environment, Forests, Biodiversity and tribal populations.

Water: Use and over-exploitation of surface and ground water, Floods, droughts, conflicts over water (international & inter-state)

Energy resources: renewable and nonrenewable energy sources, use of alternate energy sources, growing energy needs, case studies.

**Environmental Pollution**

Environmental Pollution : types, causes, effects and controls; Air, Water, Soil and noise pollution. Nuclear hazards and human health risks Solid waste management, Source Segregations : Control measures of urban and Industrial waste. Pollution case studies.

## SECTION-B

### Environmental Protection Laws In India

Environmental protection act for; Air (Prevention and control of pollution), Water (Prevention and Control of pollution), Wild life, Forest Conservation, Issues involved in the enforcement of environmental legislation. Role of an individual in prevention of pollution.

Environmental policies & Practices; Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture.

#### Human Communities and the Environment

Human population growth: Impacts on environment, human health and welfare, Sanitation & Hygiene. Resettlement and rehabilitation of project affected persons; case studies. Disaster management: floods, earthquake, cyclones and landslides. Environment movements: Chipko, Silent valley, Bishnois of Rajasthan. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation for a Clean-green pollution free state.

Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi)

#### Road safety awareness

Concept and significance of Road safety, Traffic signs, Traffic rules, Traffic Offences and penalties, How to obtain license, Role of first aid in Road Safety.

#### Stubble Burning

Meaning of Stubble burning. Impact on health & environment.

Management and alternative uses of crop stubble.

Environmental Legislations and Policies for Restriction of Agriculture Residue Burning in Punjab.

### Suggested Readings

1. Carson, R. Silent Spring, Houghton Mifflin Harcourt, 2002..
2. Gadgil. M., & Guha, R. This Fissured Land : An Ecological History of India. Univ. of California Press, 1993.
3. Gleeson, B. and Low, N.(eds.) Global Ethics and Environment, London, Routledge, 1999.
4. Gleick, P.H. Water in Crisis. Pacific Institute for Studies in Dev. Environment & Security. Stockholam Env. Institute, Oxford Univ. Press, 1993..
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland : Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. Threats from India's Himalays dams. Science, 339:36-37, 2013.
7. McCully, P. Rivers no more: the environmental effects of dams (pp.29-64). Zed Books, 1996
8. McNeill, John R. Something New Under the Sun : An Environmental History of the Twentieth Century, 2000.
9. Pepper, I.L., Gerba ,C.P & Brusseau, M.L. Environmental and Pollution Sciences. Academic Press, 2011.
10. Rao, M.N. & Datta, A.K. Waste Water Treatment. Oxford and IBH Publishing Co. Pvt.Ltd, 1987..
11. Raven, P.H., Hassenzahl, D.M. & Berg, L.R., Environment. 8Th edition. John Wiles & Sons, 2012.
12. Rosencranz, A., Divan, S., & Nobie, M.L. Environmental law and policy in India. Tripathi, 2001.
13. Sengupta, R. Ecology and economics: An approach to sustainable development. OUP, 2003.
14. Singh, J.S., Singh, S.P. and Gupta, S.R. Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi, 2014.
15. Sodhi, N.S. Gibson, L. & Raven, P.H. (eds). Conservation Biology: Voices from the Tropics. John Wiley & Sons, 2013.
16. Wilson, E.O. The Creation: An appeal to save life on earth. New York: Norton, 2006.
17. World commission on Environment and Development. Our Common Future. Oxford University Press, 1987.