

| | | | | | | | | | | | | |
|---|---|------|------|------|------|------|------|------|------|------|------|------|
| PaperCode: EMES112 | Paper: Environmental Studies | L | P | C | | | | | | | | |
| PaperID: 99112 | | 4 | - | 4 | | | | | | | | |
| Marking Scheme: | | | | | | | | | | | | |
| 1. Teachers Continuous Evaluation: 25 marks | | | | | | | | | | | | |
| 2. Term end Theory Examinations: 75 marks | | | | | | | | | | | | |
| Instruction for paper setter: | | | | | | | | | | | | |
| 1. There should be 9 questions in the term end examinations question paper. | | | | | | | | | | | | |
| 2. The first (1 st) question should be compulsory and cover the entire syllabus. This question should be objective, single line answers or short answer type question of total 15 marks. | | | | | | | | | | | | |
| 3. Apart from question 1 which is compulsory, rest of the paper shall consist of 4 units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain upto 5 sub-parts / sub-questions. Each Unit shall have a marks weightage of 15. | | | | | | | | | | | | |
| 4. The questions are to be framed keeping in view the learning outcomes of the course / paper. | | | | | | | | | | | | |
| 5. The requirement of (scientific) calculators / log-tables / data - tables may be specified if required. | | | | | | | | | | | | |
| Course Objectives: | | | | | | | | | | | | |
| 1: | The course is designed to impart basic knowledge of the environment and its components. | | | | | | | | | | | |
| 2: | The course deals in creating awareness about the energy resources and current environmental problems faced by the world. | | | | | | | | | | | |
| 3: | To understand and learn about environment pollution, related case studies and measures taken for control to pollution. | | | | | | | | | | | |
| 4: | To understand and explore different approaches of conserving and protecting environment for the benefit of society. | | | | | | | | | | | |
| Course Outcomes (CO): | | | | | | | | | | | | |
| CO1: | Environmental Studies course will provide necessary information and knowledge about the various aspects of environment, ecosystems and related biodiversity. | | | | | | | | | | | |
| CO2: | Students will be able to learn and understand about the availability and sustainable use of resources, environmental problems and their short term and long term impacts to humans. | | | | | | | | | | | |
| CO3: | Course will help them to learn about environmental policies and protocols, social issues and role of human in conservation and protection of environment. | | | | | | | | | | | |
| CO4: | Overall, course will help students to develop skills and ability of understanding environment-human relationship. | | | | | | | | | | | |
| Course Outcomes (CO to Programme Outcomes (PO)) Mapping (scale 1: low, 2: Medium, 3: High) | | | | | | | | | | | | |
| CO/P O | PO01 | PO02 | PO03 | PO04 | PO05 | PO06 | PO07 | PO08 | PO09 | PO10 | PO11 | PO12 |
| CO1 | - | 1 | 1 | - | - | 2 | 3 | 2 | 1 | 1 | 1 | 1 |
| CO2 | - | 1 | 1 | - | - | 2 | 3 | 2 | 1 | 1 | 1 | 1 |
| CO3 | - | 1 | 1 | - | - | 2 | 3 | 2 | 1 | 1 | 1 | 1 |
| CO4 | - | 1 | 1 | - | - | 2 | 3 | 2 | 1 | 1 | 1 | 1 |

Unit I

Fundamentals: The Multidisciplinary nature of environmental studies: Definition, components, scope and importance, need for public awareness;

Ecosystems: Concept, Structure and function of an ecosystem, energy flow in ecosystems, food chain, food web, ecological pyramids, ecological succession; Introduction to types, characteristics features, structure and function of different ecosystems including forest, grassland, desert and aquatic ecosystem;

Biodiversity: Introduction to biodiversity-definition, genetics, species, ecosystem diversity, biogeographical classification of India, value of biodiversity-consumptive uses, productive, social, ethical, aesthetic and option values, biodiversity at global, national and local level, India as a mega diversity nation, endangered and endemic species of India, hot spots of biodiversity, threats to biodiversity - habitat loss, poaching of wild life, man wildlife conflicts and conservation of biodiversity- in-situ and ex-situ conservation. [16Hrs]

Unit II

Renewable and Non-renewable Resources: Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources-green fuel.

Water Resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems

Forest resources: Use and over-exploitation, deforestation, Timber extraction, mining, dams and their effects on forest and tribal people, case studies

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

Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of individual in conservation of natural resources, Resource Management-Sustainable development. [8Hrs]

Unit III

Environmental Pollution: (a) Air Pollution: Types of pollutants, source, effects, sink & control of primary pollutants- CO, NOX, HC, SO_x and particulates, effect of pollutants on man & environment: photochemical smog, acid rain and global warming, CO₂ Sequestration. (b) Water Pollution: Classification of Pollutants, their sources, waste water treatment (domestic and industrial). (c) Soil Pollution: Composition of soil, classification and effects of solid pollutants and their control. (d) Solid Waste Management: Classification, waste treatment and disposal methods; composting, sanitary land filling, thermal processes, recycling and reuse methods. (e) Hazardous wastes - Classification, radioactive, biomedical & chemical, treatment and disposal- Physical, chemical and biological processes. (f) Marine Pollution: Causes, effects and control of marine pollution, coastal zone management (g) Thermal pollution: Causes, effects and control of marine pollution, coastal zone management.

Disaster Management: Floods, earth quake, cyclone and landslides

[8Hrs]

Unit IV

Environmental Policies, Human Population and Environment

Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents, case studies; Some important Environmental laws, issues involved in enforcement of environment legislations, Green bench; carbon footprint, Montreal and Kyoto Protocol, conservation of Biological Diversity, The Chemical Weapons Convention, Environment Impact Assessment; population growth and variation among nations, Impacts on environment and human health, human right, Tribal people and rights, Human and wildlife conflicts in Indian context, Environmental ethics; Role of government and non government organizations in public awareness and environment improvement.

[13Hrs]

Field work (equal to 5 hours) : visit to local areas to document environmental assets, study of simple ecosystems, study and identification of common plants, birds and insects.

Suggested Readings and References:

1. A textbook of environmental studies, R. Gadi, S. Rattan, S. Mohaptra, Kataria Publication, 2014.
2. Elements of environmental sciences & engineering, P. Meenakshi, PHI Learning Pvt Ltd, 2014.
3. Basics of Environment and Ecology, A. Kaushik & C.P. Kaushik, New Age International Publishers, 2010.
4. Fundamental concepts in environmental studies, D.D. Mishra, S Chand & Co. Ltd., 2008.
5. Textbook of environmental studies, E. Barucha, UGC, 2005.
6. Environmental studies, B. Joseph, Tata McGraw-Hill Publishing Company Ltd., 2005.

Pravin Chandra

20/11/2021
PSC