

VI SEMESTER ZOOLOGY

6.8: PAPER VIII- ENVIRONMENTAL BIOLOGY AND ETHOLOGY

CREDITS-3 , 45 Hours

Unit 1: Fundamentals of Ecology

02 Hours

Introduction to Ecology, Sub division of Ecology- Autoecology, Synecology and other Sub divisions.

Scope of Ecology.

Concept of Habitat, Micro habitat, Macro habitat with appropriate examples.

Concept of Ecological niche, Habitat [Spatial] niche, Tropical niche, Hyper volume [Multi dimensional niche]

Unit II: Abiotic factors

04 Hours

Temperature: Thermal stratification, Range of tolerance, Poikilothermy and Homeothermy.

Light: Distribution, Ecological effects, Photoperiodism and bioluminescence.

Limiting factors: Liebig's Law of Minimum and Shelford's Law of Tolerance.

Unit III: Ecosystem

04 Hours

Structure and function of Pond and Estuarine ecosystem.

Concept of Productivity, Energy flow, Laws of Thermodynamics.

Food chain, Food web, Ecological pyramids and its Significances.

Unit IV: Animal relationships

04 Hours

Mutualism, Proto-cooperation and Commensalism.

Antibiosis, Parasitism, Predation and Competition.

Competitive exclusion principle [Gause's principle].

Unit VI: Animal Adaptations

03 Hours

Deep sea adaptation in Fish.

Aerial adaptation in Insects.

Desert adaptation in Camel.

Unit VII: Population Ecology

02Hours

Density, Natality, Mortality, Age distribution, Population growth, Dispersal and Biotic potential

Theory on population- Malthusian theory.

Unit VIII: Environmental pollution

04 Hours

Pollutants, Types of pollutants, Types of pollution Air, Water and Noise [Causes, Ecological effects and Control measures]. Solid waste management, Sources, Types, Effects of solid waste. Management of solid waste.

Unit IX: Toxicology

04Hours.

Introduction, Scope and Basic divisions of Toxicology.

Toxicants, Classification of toxicants [Microbial and animal toxin].

Toxicity, Lethal concentration LC-50.

Toxic effects of heavy metals – Arsenic, Cadmium, Lead, Mercury, Chromium on Human health.

Unit X: Current Environmental issues

03 Hours.

Ozone layer depletion, Causes, Effects and Control measures.

Green house effect and Green house gases, Causes, Effects and Control measures.

Global warming and Effects of global warming.

Acid rain, causes effects and control measures.

Unit XI: Wild life conservation and Management

03 Hours

Wild life, Aims of wild life conservation, Necessity for conservation, Causes for wild life depletion, Threatened species, Endangered species Red data book. Major wild life Sanctuaries and National parks of India, Biosphere reserves, aims and important reserves of India

Major organization involved in wild life conservation.

Unit 12

02 Hours

Introduction to Ethology, Branches of Ethology

Historical contributions. Aims and Objectives.

Unit13: Stereotyped behaviour/Innate behaviour **02 Hours**
Kinesis, Taxes, Reflexes, Instincts with suitable example.

Unit 14 Acquired behaviour/Learning behaviour **02Hours**
Imprinting, Habituation and Trail and error and learning with suitable example.

Unit 15 Animal Communication **03Hours**
Light, Odour, Signal and Sound with suitable example.

Unit 16: Social organization in Animals **03 Hours**
Termites and Primates.

SUGGESTED READINGS

- 1] Fundamentals of Ecology by Eugene. P. Odum
- 2] Essential Environment by Dr M.K. Goyal.
- 3] Toxicology by P.D. Sharma.
- 4] Introduction to Animal behaviour by Manning and M.S. Dawkins
- 6] Animal Behaviour by Reena Mathur.
- 7] Animal Behaviour, M.P. Arora.
- 8] P.S. Verma and V.K. Agarwal: Cell Biology, Genetics, Molecular Biology, Evolution and Ecology. S.Chand.