

CENTRE FOR ENVIRONMENTAL SCIENCES AND TECHNOLOGY

SYLLABUS FOR Ph.D. ENTRANCE EXAMINATION- ADMISSIONS 2016-17

PART A: General Aptitude Test

1. **General Science:** General appreciation and understanding of science including matters of everyday observation and experience.
2. **Environmental Awareness:** Pollution and its impacts, climate change, sustainable development.
3. **Current Events:** Knowledge of significant national and international events.
4. **General Mental Ability and Reasoning:** Reasoning and analytical abilities.
5. **Elementary Computer Science:** Basic computer awareness and its uses.
6. **Interactive English:** Grammar, vocabulary, sentence completion, usage, synonymous, antonymous, one word substitute, idioms/phrases, error detection and comprehension.
7. **Information and Communication Technology (ICT):** Terminology and abbreviations used in ICT, applications of ICT in academics and research.

PART B

1. **Instrumentation and Biostatistics:** Principles of Analytical techniques- Gravimetry, Titrimetry, Chromatography, Spectroscopy, Colorimetry, Electrophoresis, Flame Photometry, Spectrophotometry; Measures of central tendency and dispersal, probability distributions, Kurtosis and skewness, Correlation and regression, Student's t-test, One-way and two-way analysis of variance (ANOVA), χ^2 test.
2. **Environmental Chemistry:** Fundamentals, Atmospheric Chemistry, Water Chemistry, Geochemistry, Green Chemistry.
3. **Ecology:** Biosphere, Organizational levels of biosphere, Food Chain and Energy Flow, Population and Community Ecology, Biodiversity and its Conservation.
4. **Environmental Pollution:** Air, Water, Soil, Noise Pollution- Sources, Causes, Effects, Consequences, Physico-Chemical and Biological Characteristics, Pollutant Monitoring, Control and Abatement, Quality Standards.
5. **Environmental Geosciences:** Structure of Environment- Atmosphere, Hydrosphere and Lithosphere, Earth Processes, Geological Hazards, Mineralogy, Biogeochemical Cycles, Meteorology, Climate Change, Remote Sensing and GIS.
6. **Environmental Microbiology and Biotechnology:** Principles of Microbiology, Microbiology of Air, Water, Soil, Sewage; Biofertilizers, Fermentation, Vermicomposting, Bioremediation
7. **Environmental Toxicology:** Principles, Dose-Response Relationship, Indices of Toxicology, Environmental Toxicants (Organic and Inorganic- Pesticides, Heavy Metals), Detoxification.
8. **Waste Management:** Solid waste- municipal and hazardous, Generation, Collection, Processing and disposal, Management; Waste Handling and Management Rules, Wastewater- Treatment Technologies, Waste to energy conversion.
9. **Environmental laws and Protocols:** Laws, Conventions and Protocols- Air, Water, Noise, Biodiversity, Environmental Protection- National and International Efforts.
10. **Environmental Management:** Environmental Impact Assessment, Risk Assessment, Environmental auditing, Natural Resources -Forest, Water, Minerals, Marine, Energy (Renewable and Non-renewable) - Threats, Conservation and Management, Energy management, Current Environmental Issues and Sustainable Development.