Syllabus for Level-10 Post Code: NCB/CME-03

Air and Noise Pollution

Structure of the atmosphere; Natural and anthropogenic sources of pollution; Atmospheric sources, sinks, transport; Indoor air pollution; Effects on health and environment; Air pollution: gases and particulate matter; Air quality standards; Primary and secondary pollutants; Criteria pollutants, ambient and source standards, air quality indices, visibility.
Particulate Pollutants: Measurement and control methods; Control of particulate air pollutants using gravitational settling chambers, cyclone separators, wet collectors, fabric filters (Bag-house filter), electrostatic precipitators (ESP).

Gaseous Pollutants: Measurement and control methods; Control of gaseous contaminants: absorption, adsorption, condensation and combustion; Control of sulphur oxides, nitrogen oxides, carbon monoxide, and hydrocarbons; Vapour-liquid and vapour-solid equilibria; Diffusion, Fick's law and interfacial mass transfer. Automotive emission controls, fuel quality, diesel particulate filters, catalytic convertors.

Air Quality Management: Point, line and area sources; Inventory; Influence of meteorology - wind rose diagrams, stability, mixing height, topography, dispersion modelling, monitoring.

Noise Pollution: Sources; Health effects; Standards; Measurement and control methods.

Solid and Hazardous Waste Management

Integrated solid waste management; Waste hierarchy; Rules and regulations for solid waste management in India.

Municipal solid waste management: Sources, generation, characteristics, collection and transportation, waste processing and disposal (including reuse options, biological methods, energy recovery processes and landfilling).
Hazardous waste management: Characteristics, generation, fate of materials in the environment, treatment and disposal. Soil contamination and leaching of contaminants into groundwater.

Management of biomedical waste, plastic waste and E-waste: Sources, generation and characteristics; Waste management practices including storage, collection and transfer.

Global and Regional Environmental Issues

Global effects of air pollution: Greenhouse gases, global warming, climate change, urban heat islands, acid rain, ozone hole.

Ecology and various ecosystems; Biodiversity; Factors influencing increase in population, energy consumption, and environmental degradation.

Environmental Management and Sustainable Development

Environmental Management Systems; ISO14000 series; Environmental Auditing: Environmental Impact Assessment; Life cycle assessment; Human health risk assessment.

Environmental Law and Policy: Objectives; Polluter pays principle, Precautionary principle; The Water and Air Acts with amendments; The Environment (Protection) Act (EPA) 1986; National Green Tribunal Act, 2010; National Environment Policy; Principles of International Law and International treaties.

Energy and Environment: Energy Sources: Overview of resources and reserves; Renewable and non-renewable energy sources; Energy-Environment nexus.

Sustainable Development: Definition and concepts of sustainable development; Sustainable development goals; Hurdles to sustainability; Environment and economics.