



## **GANDHI INSTITUTE OF TECHNOLOGY AND MANAGEMENT (GITAM)**

(Declared as Deemed to be University u/s 3 of UGC Act, 1956)

Visakhapatnam | Hyderabad | Bengaluru

Accredited by **NAAC** with **A++** Grade

Website: [www.gitam.edu](http://www.gitam.edu)

### **GITAM SCHOOL OF SCIENCE**

#### **PhD Entrance Test Syllabus**

##### **PhD in Science: Environmental Science**

**UNIT – I** Ecosystem Introduction, types of Ecosystems; structure and function of an ecosystem; Major ecosystems: Pond ecosystem; Ocean (marine) ecosystem, Grassland Ecosystem, Forest Ecosystems, Desert Ecosystem and Cropland Ecosystem. Functional aspects of an ecosystem; Food web, Food chains; Ecological Pyramids. Ecological energetics. Biodiversity: definition, types, importance, threats, hot spots & conservation.

Water Resources: Types of Water sources, Ground Water, Surface Water etc, Water Conservation, Watershed Management, Rainwater Harvesting & Cloud seeding for artificial rains. Energy Resources: Conventional & Non-conventional energy Advantages & disadvantages of Fossil fuels, Nuclear energy, Hydelpower, Geothermal & Tidal Energy, Wind Energy and Solar Energy. Biofuels

**UNIT – II** Air Pollution: Types and sources of air pollutants; Effects of pollutants on human beings, plants, animals and materials. Water Pollution: Sources of pollution of surface and ground water, Types of water pollutants; Effects of water pollution on water bodies - eutrophication, Soil Pollution: Sources, effects and control of soil pollution. Biomagnification. Noise Pollution: Noise pollution – source, measurement, effects and control. Municipal solid waste management- Sources and types, composition and properties, collection and transportation, disposal methods (land filling, incineration, composting). Recycling of paper, plastics, glass and metals. Hazardous Waste Management: Sources, characteristic, handling & disposal methods. Management of Biomedical & Nuclear Wastes.

**UNIT – III** Global and National Environmental Issues: Climate change, ozone depletion, greenhouse effect, Acid rain, el nino & la nina effects, Deforestation and Biodiversity loss Types of natural disasters and their Management Environmental consequences of Dams. Mining: Types of mining. Environmental consequences of Mining and control methods.



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Environmental movements: Major environmental movements in India. Chipco movement, Silent Valley movement, Appiko movement, Narmada Bachavo Andolan and Tehri Dam conflict. International Conventions on Global Environmental issues.

**UNIT – IV** Land degradation: Land use pattern in India, causes of land degradation, environmental consequences of land degradation due to Mining, soil erosion, desertification, Salination and water logging. Control of land degradation. Waste Lands: Causes of waste land formation and reclamation of waste lands. Wetlands: Importance and types of wetlands and their management. Ramsar convention. Environmental Legislation: Environmental Laws in India. Green benches: Structure and functions of green bench.