



MEER SIR
— A C A D E M Y —

*We Deliver Results,
Not Promises.*

MEER SIR ACADEMY

M.Sc. Environment Sciences and Management

Entrance Examination Syllabus

Course Code M81

Department of Environmental Science

Faculty of Engineering and Technology

Jamia Millia Islamia New Delhi

8

Units

100

Total Marks

11 pt

Body Font

Examination Syllabus Overview

The syllabus assesses analytical ability and foundational knowledge of ecology, earth science, ecosystem processes, pollution control, environmental microbiology and biotechnology, global environmental issues, and solid-waste management. The unit-wise distribution totals 100 marks.

Unit	Subject Area	Marks
I	Analytical Ability	20
II	Ecology and Ecosystems	10
III	Earth and Environmental Geoscience	10
IV	Energy Flow and Biogeochemical Cycles	10



V	Water and Air Pollution	20
VI	Environmental Microbiology and Biotechnology	10
VII	Global Environmental Issues and Soil Pollution	10
VIII	Solid Waste Management	10

Unit I Analytical Ability

Weightage: 20 marks

- Reasoning, number series, and letter series.
- Codes and relationships, word analogy, and verbal analogy.
- Understanding the structure of arguments and verbal classification.
- Logical diagrams, simple diagrammatic relationships, and multidimensional diagrammatic relationships.
- Analytical reasoning, data interpretation, quantitative and qualitative data, graphical representation, and mapping of data.

Unit II Ecology and Ecosystems

Weightage: 10 marks

- Ecology: definition, scope, branches, and applications.
- Components of the environment: atmosphere, lithosphere, hydrosphere, and biosphere.
- Concept of levels of organization and the biosphere.
- Abiotic factors: nature of organisms' responses, laws of limiting factors, and tolerance.
- Concept of species, speciation, and characteristics of populations.
- Basic components, structure, and functional aspects of ecosystems; trophic structure; ecological niche; ecological dominance, stability, and diversity rules.
- Aquatic ecosystems: structure and organization of freshwater, marine, estuarine, and mangrove ecosystems.
- Terrestrial ecosystems: tundra, forests, grasslands, and deserts.



Unit III Earth and Environmental Geoscience

Weightage: 10 marks

- Origin of the Earth and primary geochemical differentiation; formation of the core, mantle, crust, atmosphere, and hydrosphere.
- Controls on the formation of landforms: tectonic processes, including plate tectonics, and climatic controls.
- Concept of minerals and rocks; formation of igneous, metamorphic, and sedimentary rocks.
- Weathering, including weathering reactions; erosion, transportation, and deposition of sediments by running water, wind, and glaciers.
- Geochemical classification and abundance of elements in the bulk Earth, crust, hydrosphere, and biosphere.
- Partitioning of elements during surficial geological processes and geochemical recycling of elements.

Unit IV Energy Flow and Biogeochemical Cycles

Weightage: 10 marks

- Energy flow in ecosystems and the laws of thermodynamics.
- Productivity: biomass production, primary productivity, and net productivity.
- Food chains: types and examples; food webs.
- Ecological pyramids of biomes; pyramids of number and energy; inverted ecological pyramids.
- Biogeochemical cycles: availability and rate of nutrient cycling; gaseous and sedimentary cycles.

Unit V Water and Air Pollution

Weightage: 20 marks

- Water pollution: definition, types, sources, and classification; groundwater and marine-water pollution; effects on human health; water-quality standards.
- Concepts of dissolved oxygen, biochemical oxygen demand, and chemical oxygen demand, and their effects on watershed systems.
- Wastewater: sources, discharge standards, treatment processes, advanced treatment technologies, applications, and limitations.
- Air pollution: definition, sources, classification, types, and effects of pollutants.
- Gaseous pollutants, particulate matter, air-quality standards, and meteorology.
- Air-pollution control systems for suspended particulate matter and gaseous pollutants.



Unit VI Environmental Microbiology and Biotechnology

Weightage: 10 marks

- Types of microorganisms: protozoa, algae, bacteria, fungi, viruses, and bacteriophages, including lytic and lysogenic cycles.
- Environmental significance of microorganisms and their role in biogeochemical cycles.
- Biological fuel generation: biohydrogen, biomethanation, and alcohol production.
- Major water-borne diseases and airborne microbes.
- Introduction to environmental biotechnology, recombinant DNA technology, polymerase chain reaction, types of PCR, and sequence analysis.
- Plants and microorganisms used for in situ and ex situ remediation.
- Application of genetically engineered microorganisms in hazardous-waste management.
- Biofertilizers, biofuels, bioscrubbers, biosensors, bioleaching, and biobeneficiation.

Unit VII Global Environmental Issues and Soil Pollution

Weightage: 10 marks

- Greenhouse effect, acid rain, and ozone depletion.
- Soil erosion and deforestation.
- Soil pollution: definition, sources, types, classification of soil pollutants, and effects on human health and productivity.

Unit VIII Solid Waste Management

Weightage: 10 marks

- Classification of different categories of solid waste.
- Physical, chemical, and biological properties of waste.
- Screening, waste separation, treatment, and transportation methods.
- Integrated waste-management systems.
- Hazardous-waste management.



Preparation Priorities

Analytical practice: Solve number and letter series, analogy, diagrammatic reasoning, argument-structure, and data-interpretation questions under time limits.

Concept maps: Link ecology, ecosystems, energy flow, food webs, productivity, and biogeochemical cycles.

Pollution standards: Revise water- and air-quality indicators, pollution sources, human-health effects, treatment methods, and control technologies.

Earth processes: Prepare rock formation, weathering, erosion, sediment transport, plate tectonics, and elemental cycling.

Applied biotechnology: Understand microbial roles in remediation, fuel production, waste treatment, biosensors, bioleaching, and related applications.

Unit-wise testing: Give extra practice time to Units I and V because each carries 20 marks.

Important Note

This document is a professionally formatted and language-corrected study edition of the attached M81 syllabus. Candidates should verify the latest JMI admission prospectus, examination schedule, eligibility requirements, test pattern, and any subsequent corrigendum before applying or appearing for the entrance examination.

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Entrance Guidance for JMI AMU and CUET

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