FUTURE TOPPER

Environmental Science

Subject Code: 307

Based on the Latest Official CUET (UG) 2026 Syllabus released by NTA For CUET (UG) 2027 Aspirants

Important Notes

Syllabus Source	This syllabus is reproduced from the official CUET (UG) 2026 syllabus published by the National Testing Agency (NTA). All topics are preserved verbatim.
CUET 2027 Status	As of preparation date, NTA has not released the official CUET 2027 syllabus. This document serves as the best available reference for CUET 2027 preparation.
Verify Updates	Always check **cuet.nta.nic.in** or **nta.ac.in** for the latest official notifications before your examination.
Exam Pattern	The Environmental Science paper typically comprises 50 questions (40 to be attempted) in MCQ format. Confirm the exact pattern from the official NTA information bulletin.
Marking Scheme	Generally: +5 for correct answer, –1 for incorrect answer, 0 for unattempted. Verify with the official NTA bulletin.
Preparation Tip	Focus on NCERT textbooks as the primary source. Supplement with previous years' CUET papers and Future Topper practice material.

Environmental Science — Complete Syllabus

Unit 1: Human Beings and Nature

- (i) Modern schools of ecological thought.
- (ii) Definitions and basic understanding of Deep ecology (Gary Snyder, Earth First) vs. shallow ecology.
- (iii) Stewardship of land (e.g., Wendell Berry).
- (iv) Social ecology [Marxist environmentalism and socialist ecology (Barry Commoner)].
- (v) Feminism.
- (vi) Green Politics (e.g., Germany and England).
- (vii) Sustainable Development: basic concepts, Brundtland Commission report, Sustainable Development Goals, Mission LiFE.

Unit 2: Population and Conservation Ecology

I. Population Dynamics

- Factors causing population change: birth, death, immigration and emigration; relation between the factors.
- Age structure and its significance; Population Pyramids – interpretation and implications.
- Rate of change of population – the three general shapes of Survivorship Curves, r and K strategies and differences between the two.

II. Human Populations (Malthusian Model and Demographic Transition)

- Definition of Carrying Capacity.
- Malthusian view: concept of "over-population" and shortage of resources; Questioning Malthus.
- Population Growth vs. Disparate Consumption of resources within and amongst nations.
- Definition and understanding of Demographic Transition; Factors influencing demographic transition.

III. Population Regulation

- Growth without regulation (exponential); simple population regulation (logistic growth curve).
- Basic understanding of the Exponential growth curve (J-shaped) and Logistic growth curve (S-shaped).
- Factors regulating population size: space, food and water, territories, predators, weather and climate, parasites and diseases, disasters and self-regulation.

IV. Threats to the Ecosystem

- Habitat destruction; genetic erosion; biodiversity loss; expanding agriculture; impounded water; waste from human societies; increasing human consumption.
- Brief understanding of causes and consequences of threats to provisioning and regulatory functions of the ecosystem with suitable examples.

V. Conservation

- Importance; the critical state of Indian forests.
- Conflicts surrounding forested areas: populations and tribals and their rights, tourism, poaching, roads, development projects, dams.
- Scientific forestry and its limitations; social forestry; role of the forest department; NGOs; Joint Forestry Management (JFM).
- Wildlife sanctuaries, conservation and management in India; Project Tiger as a case study in conservation.
- In-situ conservation: Wildlife sanctuaries, National Parks, Biosphere Reserves (definition, objectives, features, advantages and disadvantages).

- Ex-situ conservation: Zoos, aquaria, plant collection (objectives, features, advantages and disadvantages).
- Conflicts in managing and conserving forests: India's forest cover, issues concerning people living in and around forests with particular reference to tribal rights.
- Threats to forests: poaching, developmental projects like roads and dams, over exploitation of forest resources (direct and indirect).
- Some management measures: scientific forestry, social forestry (various types), Joint Forestry Management (JFM), ecotourism.
- Case study – Project Tiger: origin, aims and objectives, successes, failures.
- Acts and rules related to ecology, forest and biodiversity conservation.

Unit 3: Environmental Pollution

Definition and concepts of pollutants, contaminant sources, sink, receptor. Impacts of air/water/soil pollution on human health and ecosystem. Different acts/rules related to prevention and control of air/water/soil/noise pollution in India.

I. Air Pollution and Its Monitoring

- Structure, temperature profile and composition of the atmosphere.
- Primary and secondary pollutants; National Ambient Air Quality Standards (NAAQS).
- Industrial and vehicular pollution; steps taken to regulate pollution – emission standards, implementation of CNG programme.
- Acid rain formation and its impact; Smog; photochemical smog; Ozone in troposphere.
- Monitoring at emission source and of ambient air quality: criteria for monitoring stations, types of stations, number of stations, frequency of data collection, characteristics of ambient air sampling, basic considerations for sampling.
- Classification of techniques – manual and instrumental. Manual: Passive samplers, High Volume Samplers and Bubbler Systems. Instrumental: photometric techniques – NDIR, Chemiluminescence – principle and use.
- Ambient Air Quality Index; National Ambient Air Quality Monitoring (NAAQM) programme.
- Main functions of the Central Pollution Control Board and State Pollution Control Boards; National Air Monitoring Programme (NAMP) and its objectives.

II. Water Pollution and Its Monitoring

- Distribution of water on the earth.
- Sources (quantitative/qualitative, bio vs. non-biodegradable, point vs. non-point sources) of pollution in surface and ground water, ponds/lakes/rivers.
- Water quality indicators: pH, electrical conductivity, turbidity, salinity, alkalinity, hardness, dissolved oxygen, temperature, nitrates and sulphates, metals and pesticides, BOD and COD.
- Lake stratification; Eutrophication.

III. Soil Pollution and Its Monitoring

- Sources of soil pollution: industries, mining, agriculture run-off, sewage water, etc.
- Soil Characteristics: physical, chemical and biological attributes of soil; soil types; soil moisture; soil pH; soil acidity.
- Experimental details for assessing soil respiration, soil pH, soil aggregate, infiltration rate.

Unit 4: Development and Environment

I. Urbanisation

- Push and pull factors; consequences on rural and urban sectors; future trends and projections.

II. Critical Appraisal of Conventional Development Paradigm

- Definition of economic development, natural resources.
- Relationship between development and environment.
- Overuse and exploitation of resources; diversion of scarce resources; disparate access to resources; increasing wastes and pollution.
- Viewpoints of sustainability, environmental impact and equity.

III. Gandhian Approach to Development and Environment

- Local self-governance – basic principles behind village policy, Antoday, Sarvoday, Panchayati Raj.
- Local self-sufficiency, local markets and environmental sustainability.
- Village as the basis of development; promotion of cottage industries and intermediate technologies; focus on employment.
- India's way of life and concerns for environment.

IV. Urban Environmental Planning and Management

- Problems of sanitation; water management; transport; energy; air quality; housing; constraints (economic, political).
- Indigenous approaches: rainwater harvesting, garbage segregation, composting, energy from solid and liquid wastes, sewage management (dry toilets, DEWATS).
- Features of new urbanism; goals of smart growth.
- Case studies: Bogota – Bolivia (Traffic Management); Cuba (Urban agriculture using organic methods); Curitiba – Brazil (Traffic planning and urban renewal); Cochabamba (Water management and protests against privatisation of water supply).

Unit 5: Sustainable Agriculture in India

Crop varieties; techniques for maintaining soil fertility.

I. Pre-Colonial Agriculture and Colonial Influence

- Features of pre-colonial agriculture: growing for sustenance rather than market; multi-cropping, management of soil health, diversity in seed.
- Colonial influence: punitive taxation, commercial crops for export and British industry, devaluation of sustainable traditional practices, Bengal famine.
- Comparative study of pre-colonial, colonial and post-colonial agriculture and their impact.

II. Irrigation Systems

- Macro vs. micro irrigation systems – canal irrigation/dam vs. sprinkler/drip/trickle drip/dug wells.
- Basic features, advantages and disadvantages of each kind.
- Traditional rainwater harvesting: tankas, khadins, ahar, pynes, zings, johads and eris in different parts of India.

III. Green Revolution

- Origin and basic principles; development of High Yielding Varieties (HYV); introduction of fertilisers and pesticides; mono-cropping.
- Environmental, social and economic impacts – advantages and disadvantages: agro-biodiversity, soil health, ecological impact of pesticides, energy use, input costs, benefits to small and medium farmers, food security.

IV. Elements of Sustainable Agriculture

- Mixed farming, mixed cropping, inter-cropping, crop rotation.
- Sustainable water, soil and pest management: organic fertilisers, bio-fertilisers, green manure (with two examples), bio-pesticides.
- Integrated Pest Management (IPM); eating local foods.

- Traditional agriculture, natural farming, organic agriculture, modern agriculture (hybrid seeds, HYVs, chemical fertilisers and pesticides), gene revolution (GM seeds) and sustainable agriculture.

V. Management of Agricultural Produce

- Storage; food preservation methods: low temperatures, high temperatures, drying, canning, preservation by salt and sugar; packaging, grading, transportation.
- Food adulteration and food additives: definitions, types and harmful effects.
- Quality Marks: ISI (Indian Standard Institute); AGMARK (Agricultural Marketing); FPO (Fruit Product Order).

VI. Food Security

- Meaning and need; issues related to food production, storage and access.
- Integrated and sustainable approach to food security for the Third World.
- Land reform, credit support, market support to farmers, improving marketing system, improving access to food, ownership of seeds.
- National Food Security Act 2013.

Unit 6: Environmental and Natural Resource Economics

(i) Classification of Natural Resources

- Abiotic and biotic, renewable and non-renewable, stock, potential and actual, ubiquitous and localised.
- Scarcity and growth; natural resource accounting.
- Definition, basic principles, advantages and disadvantages of physical accounting.

(ii) GNP vs. Other Measures

- GDP, GNP – definitions, advantages and disadvantages as tools for measuring growth.

(iii) Environmental Economics Overview

- Broad purpose of environmental economics.
- Definition and classification: defensive expenditure; natural/ecological capital; carbon footprint and carbon credit.

(iv) Externalities

- Definition and types (positive and negative) with examples and impacts.

(v) Cost-Benefit Analysis and EPR

- Definition, process, advantages and disadvantages of cost-benefit analysis.
- Extended Producer Responsibility (EPR): definition, examples, advantages.

(vi) Natural Capital Regeneration

- Concept of natural capital; ecosystem services and types with examples.
- Causes of environmental degradation (forest/biodiversity loss).
- Ecological footprint and disproportionate use of natural resources.
- Importance of preserving and regenerating natural capital.

Unit 7: International Relations and the Environment

I. Global Impacts of Pollution

- Ozone depletion: Chapman's cycle, potential effects, ozone depleting substances (halons, CCl4, CFCs, methyl chloroform, methyl bromide, HCFCs), ozone thinning over Antarctica and Arctic.

- Steps taken to control ozone depletion; waste dumping; persistent organic pollutants.
- Global warming; greenhouse gases; carbon footprint.
- Climate change: indicators and causes.
- Montreal Protocol, Kyoto Protocol, Bamako Convention, Paris Agreement, Conference of Parties, carbon credits system.
- Case study – Amazonia: causes of forest exploitation, deforestation, government policies, ecological value of rainforests and possible solutions.
- Case study – Ivory trade in Africa: reasons for flourishing trade, steps taken to curb trade, consequences of the ban.

II. International Trade

- Theoretical perspective; free trade vs. protectionism; import barriers; domestic industry vs. free trade.
- Transnational companies (TNCs) – historical perspective; India's international trade – characteristics, terms of trade, major imports and exports, foreign exchange crises.
- Export imperative and its environmental impact; case study of aquaculture in India.
- Toxic waste trade – definition, origin, factors sustaining, impact on third world countries; Bamako and Basel Conventions.
- GATT and its metamorphosis into WTO; Principles and functions of WTO: Most Favoured Nation, tariff and non-tariff barriers, comparative advantages.
- Definition of IPR and its categories: copyrights, patents, trademarks, industrial design rights, geographical indicators and trade secrets.
- Globalization – definition, advantages and disadvantages; TRIPS, TRIMS and their impact on third world.
- Impact of trade agreements on India's trade, food security, economic well-being and environmental sustainability.

III. International Aid

- Agencies; types of aid: tied and untied aid, advantages and disadvantages of each.

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