ICSE

YEAR 2027

INDIAN CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

ENVIRONMENTAL SCIENCE (82)

February 2025

© Copyright, Council for the Indian School Certificate Examinations

All rights reserved. The copyright to this publication and any part thereof solely vests in the Council for the Indian School Certificate Examinations. This publication and no part thereof may be reproduced, transmitted, distributed or stored in any manner whatsoever, without the prior written approval of the Council for the Indian School Certificate Examinations.

Council for the Indian School Certificate Examinations (CISCE)

MISSION STATEMENT

The Council for the Indian School Certificate Examinations is committed to serving the nation's children, through high quality educational endeavours, empowering them to contribute towards a humane, just and pluralistic society, promoting introspective living, by creating exciting learning opportunities, with a commitment to excellence.

ETHOS OF CISCE

- Trust and fair play.
- Minimum monitoring.
- Allowing schools to evolve their own niche.
- Catering to the needs of the children.
- Giving freedom to experiment with new ideas and practices.
- Diversity and plurality - the basic strength for evolution of ideas.
- Schools to motivate pupils towards the cultivation of:
  Excellence - The Indian and Global experience.
  Values - Spiritual and cultural - to be the bedrock of the educational experience.
- Schools to have an 'Indian Ethos', strong roots in the national psyche and be sensitive to national aspirations.

CLASS X

*There will be **one** paper of **two hours** duration carrying 80 marks and Internal Assessment of 20 marks.*

1. Controlling Air Pollution

(a) From domestic combustion.

Reducing pollution from domestic cooking; clean cooking - kerosene as a desirable cooking fuel in rural areas.

(b) From industries.

Measures for controlling industrial air pollution - technological measures (energy efficient devices, clean technologies), meteorological controls; zoning strategy; penalties and subsidies;

Case Study: the Taj Trapezium.

(c) From vehicles.

Vehicle emission control - modify engine design (catalytic converters, four stroke engines), clean fuels, public transport options, traffic management, economic policy measures.

2. Addressing Population

(a) The link between growing population and environmental degradation.

UN's population projections for 2050, the climate link, the choice of alternative futures. Growing population in the developing countries and rising consumption in the developed countries.

(b) The demographic transition.

Stages of transition, transition stages of certain developed nations and developing nations (such as India, China, Korea, Malaysia). ***Not to be tested, for knowledge and understanding only.***

(c) Strategies for controlling growth of population.

Strategies to include family planning and birth control, health care, education, economic development; women-centered human development.

(d) Development framework for poverty alleviation.

Social mobilisation, agricultural development, small-scale industries, human development. ***Not to be tested, for knowledge and understanding only.***

3. Managing the Urban environment

(a) Urbanisation - a challenge to the future.

Sustainable cities: the need of the hour.

(b) Planning environmental improvement.

Efficient land use, planning energy, shelter and transport; water supply management, wastewater and sanitary waste management, construction activities.

(c) Rural development to counter migration.

Self-explanatory.

(d) Development of secondary cities to counter migration.

Self-explanatory.

(e) Community participation and contribution of private enterprises.

Community participation in keeping surroundings clean, participation of private enterprises in city improvement, measures to increase private enterprise participation.

4. Managing Soil and Land

(a) Conserving soil.

Erosion control techniques - terracing, contour ploughing, dry farming, tree planting, bunds, gullies, wind-breaks, use of organic fertilisers.

Soil conservation techniques - land-use management, vegetative and mechanical practices, conserving soil and water together; appropriate cropping systems – cropping patterns (strip cropping), tree crops, and foliage crops.

(b) Land reforms.

Meaning, measures enforced in India to give land to the landless.

(c) Integrated rural development.

Objectives, self-help schemes like social and community forestry.

(d) Role of women and community in conservation.

Self-explanatory.

(e) Combating deforestation.

Reforestation, energy plantations, forest harvesting of non-timber forest products, exploring alternative sources of livelihood, change in consumption patterns.

(f) Managing forest grazing.

Causes and consequences of overgrazing, controlled forest grazing as in National Forest Policy, 1988.

(g) Alternatives to timber.

Recycling of timber and paper.

5. Food

(a) Sustainable agriculture.

Integrated pest management – understanding the term, aims, advantages, disadvantages.

Genetically modified organisms, application in plants and animals and environmental risks.

New crop strains – high yielding varieties and their viability, hybrid varieties.

Mixed cropping – advantages and disadvantages; regenerative farming techniques - intercropping, crop rotation, agroforestry, polyvarietal cultivation and polyculture.

Conservation tillage farming - meaning of conservation tillage, advantages and disadvantages.

Trickle drip irrigation – need for a trickle drip irrigation system; operation of a drip irrigation system; advantages and disadvantages.

New organic fertilizers – integrated nutrient supply programme, organic fertilizers - bulky organic manures, green manures, bio-fertilizers, and sewage sludge.

Gene banks – what are gene banks; objectives of maintaining gene banks.

(b) Problem of global food security, food aid.

Global food imbalance, distributional inequality; role of food aid in achieving global food security.

6. Biodiversity

(a) Biodiversity at risk due to human actions.

Reasons for loss of biodiversity; Man - the super consumer: impact of his actions on the earth's resources; reasons for concern: economic, ecological and aesthetic.

(b) Conserving our genetic resource: in-situ and ex-situ; harvesting wildlife.

In-situ - wildlife sanctuaries, national parks and biosphere reserves.

Ex-situ – zoological parks, botanical gardens, gene banks in agricultural research centres and forestry institutions.

Harvesting wildlife to meet commercial needs.

(c) Conservation strategies at national and international levels.

*Wildlife (Protection) Act 1972, Project Tiger 1973, IUCN, the Ramsar Convention on Wetlands, 1971, CITES, The Convention on Biologi*cal Diversity.

7. Energy

(a) Fossil fuels used to produce electricity.

Electricity: energy on demand; dwindling supplies of fossil fuels; renewable and non-renewable energy resources. ***Not to be tested, for knowledge and understanding only.***

(b) Nuclear energy.

Nuclear fission, advantages and disadvantages of nuclear energy; safety concerns (the Chernobyl disaster); nuclear fusion.

(c) A sustainable energy future.

Energy conservation; alternative energy sources - solar energy, wind energy, hydroelectricity, geothermal energy, biomass, liquid fuels from biomass- methanol, ethanol, gasohol, CNG, hydrogen.

8. Waste

(a) Solid waste: the throwaway society.

Solid waste, biodegradable and non-biodegradable materials; where does the trash go - landfills and incinerators.

(b) Solid waste: options for the future.

Producing less waste, reusing, recycling, composting, vermiculture, biotechnology; finding alternatives to materials we use.

9. Environment and Development

(a) Global environmental pollution.

Who is responsible - developed or developing countries? Need for mutual cooperation.

(b) Economic development and environmental degradation.

Role of developed and developing countries; contrasting views of developed and developing countries; debt trap.

(c) International trade.

Its link to environmental deterioration – unfair trade practices.

(d) Role of multinational corporations.

Definition of MNCs, their contribution to development and debatable contribution to environment; case study - Bhopal gas tragedy; measures to regulate activities of MNCs in developing countries.

10. Towards a Sustainable Future

(a) Global interdependence – economic and environmental.

Concept of economic and environmental global interdependence; global environmental health – the shared responsibility of nations; trade and aid as ways of reducing world inequalities.

(b) International cooperation.

The Montreal Protocol; the Global Environmental Facility (GEF) support; the Earth Summit, UN's International Conference on Population and Development (Cairo); the Kyoto Treaty.

(c) Sustainable development.

The concept of sustainable development, sustainable development and developed countries; sustainable development and developing countries.

(d) Role of non-governmental organisations.

Self-explanatory.

(e) Technology that sustains.

Satellite imagery as a means of monitoring the global environment: satellite remote sensing, advantages in collecting environmental data, applying data in areas of environmental damage as deforestation, desertification, land degradation, wastelands, mining, ozone layer depletion and predicting droughts and floods.

The concept of alternate technology, adopting alternate technology to create self-sustaining societies in the developed and developing world.

Role of biotechnology in achieving global food security.

INTERNAL ASSESSMENT

A minimum of three assignments as prescribed by the teacher, need to be completed.

Suggested Assignments

1. Make a field study of the effect of human interaction on the natural environment and write a project report (1500 words) on the likely impact of the interaction on the global environment.
2. Prepare an original study/essay (2000 words) on an area of the prescribed curriculum that is indicative of his/her appreciation/concern for environmental issues and make a functional model to support the above.

EVALUATION

The assignments/project work are to be evaluated by the subject teacher and by an External Examiner. (The External Examiner may be a teacher nominated by the Head of the school, who could be from the faculty, **but not teaching the subject in the section/class**. For example, a teacher of Environmental Science of Class XI may be deputed to be an External Examiner for Class X, Environmental Science projects.)

The Internal Examiner and the External Examiner will assess the assignments independently.

Award of Marks	**(20 Marks)**
Subject Teacher (Internal Examiner)	10 marks
External Examiner	10 marks

The total marks obtained out of 20 are to be sent to CISCE by the Head of the school.

The Head of the school will be responsible for the online entry of marks on CISCE's CAREERS portal by the due date.

INTERNAL ASSESSMENT IN ENVIRONMENTAL SCIENCE - GUIDELINES FOR MARKING WITH GRADES

Criteria	Preparation	Investigation/ Gathering Data	Analysis/Inference	Solutions Alternatives/ Innovations	Presentation	Marks
Grade I	Follows instructions with understanding, modifies if needed. Background information correct. Level of awareness high.	Is able to ask right questions. Knows whom to ask, when and how. Can deal with more than one variable.	Analyses systematically. Can see sequences or correlation. Can segregate fact from opinion.	Innovative ideas presented. Alternatives suggested.	Accurate. Feasible, neat, well labelled diagrams. Index and references given.	4 marks
Grade II	Follows instructions step-by-step. Awareness is good. Background information correct.	Is able to ask questions and identify whom to ask when and how. Can handle two variables only.	Makes observations correctly. Analysis fair.	Alternatives presented. Innovative but not practical.	Accurate. Neat, well labelled diagrams, index and references given.	3 marks
Grade III	Follows simple instructions only. Awareness basic. Background information sketchy.	Needs help with the investigations. Has suggestions but cannot decide.	Observation - help needed. Needs guidance to see correlations or sequence.	Obvious solutions presented. Not innovative.	A bit disorganised, but neat and accurate. Either index or references missing.	2 marks
Grade IV	Follows some instructions but confused. Has to be made aware. Background information incorrect in places.	Needs to be told what questions to be asked, whom to ask or where to gather the data from.	Detailed instructions required to draw inferences. Charts have to be made.	Thinks of solutions under guidance.	Poorly organised. Some things missing. Index and references missing.	1 mark
Grade V	Confused about instructions. Has to be made aware. Needs help with background information.	Gets stuck at every step. Questionnaire has to be formulated.	Even with help, analysis is not clear. Takes teacher's word for it.	Solutions not forthcoming.	Overall impression very poor. Not very accurate.	0 mark