

This question Paper consists of 39 questions and 7 printed pages.

इस प्रश्न-पत्र में 39 प्रश्न तथा 7 मुद्रित पृष्ठ हैं।

Roll No.

अनुक्रमांक

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Code No. 71/SS/333

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A

## ENVIRONMENTAL SCIENCE

(Theory)

पर्यावरण विज्ञान

(सिद्धान्त)

(333)

Day and Date of Examination

(परीक्षा का दिन व दिनांक)

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Signature of Invigilators :

1. ....

(निरीक्षकों के हस्ताक्षर)

2. ....

### General Instructions :

1. Candidate must write his/her Roll Number on the first page of the Question Paper.
2. Please check the Question Paper to verify that the total pages and total number of questions contained in the Question Paper are the same as those printed on the top of the first page. Also check to see that the questions are in sequential order.
3. Making any identification mark in the Answer-Book or writing Roll Number anywhere other than the specified places will lead to disqualification of the candidate.
4. Write your Question paper Code No. **71/SS/333, Set - [A]** on the answer-Book.
5. (a) The Question Paper is in English/Hindi medium only. However, if you wish, you can answer in any one of the languages listed below :  
English, Hindi, Urdu, Punjabi, Bengali, Tamil, Malayalam, Kannada, Telugu, Marathi, Odia, Gujarati, Konkani, Manipuri, Assamese, Nepali, Kashmiri, Sanskrit and Sindhi.  
You are required to indicate the language you have chosen to answer in the box provided in the Answer-Book.  
(b) If you choose to write the answer in the language other than Hindi and English, the responsibility for any errors/mistakes in understanding the question will be yours only.

**सामान्य अनुदेश :**

1. परीक्षार्थी प्रश्न-पत्र के पहले पृष्ठ पर अपना अनुक्रमांक अवश्य लिखें।
2. कृपया प्रश्न-पत्र को जाँच लें कि प्रश्न-पत्र के कुल पृष्ठों तथा प्रश्नों की उतनी ही संख्या है जितनी प्रथम पृष्ठ के सबसे ऊपर छपी है। इस बात की जाँच भी कर लें कि प्रश्न क्रमिक रूप में हैं।
3. उत्तर-पुस्तिका में पहचान-चिह्न बनाने अथवा निर्दिष्ट स्थानों के अतिरिक्त कहीं भी अनुक्रमांक लिखने पर परीक्षार्थी को अयोग्य ठहराया जायेगा।
4. अपनी उत्तर-पुस्तिका पर प्रश्न-पत्र का कोड नं. 71/SS/333, सेट - A लिखें।
5. (क) प्रश्न - पत्र केवल अंग्रेजी / हिंदी माध्यम में है। फिर भी, यदि आप चाहें तो नीचे दी गई किसी एक भाषा में उत्तर दे सकते हैं : अंग्रेजी, हिंदी, उर्दू, पंजाबी, बाँगला, तमिल, मलयालम, कन्नड़, तेलुगु, मराठी, उड़िया, गुजराती, कोंकणी, मणिपुरी, असमिया, पाली, कश्मीरी, संस्कृत और सिंधी।  
कृपया उत्तर-पुस्तिका में दिए गए बॉक्स में लिखें कि आप किस भाषा में उत्तर लिख रहे हैं।  
  
(ख) यदि आप हिंदी एवं अंग्रेजी के अतिरिक्त किसी अन्य भाषा में उत्तर लिखते हैं, तो प्रश्नों को समझने में होने वाली त्रुटियों / गलतियों की जिम्मेदारी केवल आपकी होगी।

# ENVIRONMENTAL SCIENCE

## (Theory)

### (333)

Time : 3 Hours ]

[ Maximum Marks : 80

- Notes :**
- (i) **All 39** questions are **compulsory**. Maximum marks of each question has been indicated against it.
  - (ii) There will be internal choice in some questions for core and optional modules related questions. Attempt only one part of these questions having internal choice.
  - (iii) Answer the questions from either **Optional Module - 8A** or **Optional Module - 8B** only.
  - (iv) Questions from **1** to **16** (13 Core Module and 3 Optional Module) are Objective Question Type - I questions (OB1)(MCQs) carrying **1** mark each.
  - (v) Questions from **17** to **24** (5 Core Module and 3 Optional Module) are Objective Question **Type - II** questions (OB2) (comprehensive questions with two subparts, Very short answer type, 1 word, fill in the blanks and True/False) carrying **1** mark each.
  - (vi) Questions from **25** to **32** are short Answer-type Questions from Core Module carrying **2** marks each with **40 - 50** words.
  - (vii) Questions from **33** and **34** are Long Answer Type-I questions from Core Module carrying **4** marks each with **80 - 100** words.
  - (viii) Questions from **35** and **36** are Long Answer Type-II questions from Core Module carrying **5** marks each with **100 - 150** words.
  - (ix) Questions from **37** to **39** are short Answer-Type questions from Optional Module carrying **2** marks each with **40 - 50** words.

**NOTE :**

- (1) Answers of all questions are to be given in the Answer-Book given to you.
- (2) 15 minutes time has been allotted to read this question paper. The question paper will be distributed at 02 : 15 p.m. From 02 : 15 p.m. to 02 : 30 p.m., the students will read the question paper only and will not write any answer on the answer-book during this period.

**Core Module**  
**Objective Question Type - I**

1. The percentage of freshwater that remains frozen at mountains and higher altitude is : 1  
(A) 80 (B) 79 (C) 81 (D) 77
2. Correct order of Stages in human evolution is : 1  
(A) *Australopithecus, Homo erectus, Homo habilis*  
(B) *Australopithecus, Homo habilis, Homo erectus*  
(C) *Homo habilis, Homo erectus, Astralopithecus*  
(D) *Homo habilis, Australopithecus, Homo erectus*
3. Factors that led to growth of industrialization are : 1  
(A) Settled life and agriculture  
(B) Domestication of animals and agriculture  
(C) Invention of wheel and domestication of animals  
(D) Technical development and language
4. Pure rain has a  $p^H$  of : 1  
(A) 7.2 (B) 6.5 (C) 5.6 (D) 4.3
5. Ozone layer gets depleted due to : 1  
(A) Chlorofluorocarbons (B) Methane gas  
(C) Carbon-di-oxide (D) Ultraviolet rays
6. Deforestation leads to : 1  
(A) Shifting cultivation (B) Lack of development  
(C) Soil erosion (D) Acid rain
7. The impact of migration from village to cities at the origin is : 1  
(A) No land for farming (B) Unemployment  
(C) Pollution (D) All of the above
8. Providing habitat for various organisms is : 1  
(A) Proactive function of forests (B) Protective function of forests  
(C) Productive function of forests (D) Periodic function of forests
9. Tehri power project is situated at the junction of rivers : 1  
(A) Yamuna and Hindon (B) Bramhaputra and Bhagirathi  
(C) Bhagirathi and Bhilganga (D) Ganga and Yamuna
10. One of the major Pollutant in mining area is : 1  
(A) Smoke (B) Pesticides  
(C) Water Vapour (D) Suspended particulate matter
11. Industries that release a lot of foul smelling gases are : 1  
(A) Sugar mills (B) Cotton mills (C) Iron mills (D) Oil mills
12. Regions of the world that are very rich in biodiversity are called : 1  
(A) Forests (B) Biosphere  
(C) Hotspot (D) Delta

13. The most dangerous result of population explosion is : 1  
(A) Pollution (B) Poverty  
(C) Unemployment (D) Crime

**Optional Module 8A**  
**Water Resource Management**

14. The objective of Chlorination of water is : 1  
(A) Clarification (B) Sedimentation  
(C) Disinfection (D) Purification
15. Two main techniques of rainwater harvesting are : 1  
(A) Storage of rain water and treatment of collected water  
(B) Storage of rain water on surface and recharge to ground water  
(C) Collection of rain water on surface and treatment of collected rain water  
(D) Treatment of collected rain water and recharge to ground water
16. Untreated household waste water that has not come in contact with toilet waste is called : 1  
(A) Blue water (B) Green water (C) Black water (D) Gray water

**Optional Module 8B**  
**Energy and Environment**

14. Fourth largest source of commercial energy production and consumption globally is : 1  
(A) Wind energy (B) Tidal energy  
(C) Geothermal energy (D) Hydropower energy
15. Biomass energy is a form of : 1  
(A) Chemical energy (B) Potential energy  
(C) Biological energy (D) Physical energy
16. One of the impacts of energy use on environment is : 1  
(A) Lighting (B) Poverty  
(C) Pollution (D) Global Warming

**Core Module**  
**Objective Question Type - II**

17. (a) Name any two modes of transmission of diseases caused by pathogens. 2  
(b) Name the bacteria which cause following diseases - Cholera, typhoid.
18. Answer the following questions in one or two sentences. 1x6  
(a) What combines with Sea water to form oil Slick ?  
(b) Give two examples of biomass.  
(c) Define carrying capacity of environment.  
(d) How does biodiversity represent potential source of wealth ?  
(e) What is Carbon tax ?  
(f) What is the difference between a Protocol and a convention ?
19. Answer the following questions in one word only. 1x6  
(a) Name the chemical responsible for Minamata disease.  
(b) Name the form of energy that most fossil fuels release.  
(c) Name the type of agriculture that avoids the use of synthetic fertilizer.  
(d) Name the energy compound synthesized by humans.  
(e) Name the convention for the prevention of Ozone layer held in Vienna in 1985.  
(f) Since when India had a forest Policy ?

20. Fill in the blank by using appropriate words given below. 1x4  
 (methemoglobinemia or blue baby disease, Mercury, Village forests, ionizing)  
 (a) Large amount of nitrates lead to \_\_\_\_\_.  
 (b) Risk of leukemia increases with increased level of \_\_\_\_\_ radiation.  
 (c) \_\_\_\_\_ is an important element in operation of fluorescent lighting.  
 (d) Reserved forests assigned to a village community are called \_\_\_\_\_.
21. Write the following Statements as True or False. 1x3  
 (a) The transport sector is fastest growing sources of green house gases.  
 (b) Forests, rivers and air are common properties.  
 (c) EIA serves as a primary environmental tool with clear provisions.

**Optional Module 8A**  
**Water Resource Management**

22. How does Salinity increase in ground water ? 1
23. List any two benefits of rain water harvesting. 1
24. What is the role of anti transpirants ? 1

**Optional Module 8B**  
**Energy and Environment**

22. Diagrammatically explain a Tidal power station in both incoming tide and outgoing tide. 1
23. What is methanogenesis ? 1
24. Explain the role of an energy audit of a factory. 1

**Core Modules**  
**Subjective Questions**

25. What is the impact of industrialization on nature ? List any four. 2
- OR**
- What led to formation of primitive agriculture societies ? How did they evolve to agro horticulture societies ?
26. Give two examples of environmental backlash due to human activities. 2
27. Write four characteristics of rural settlement. 2
28. Classify the following species an endangered, rare, depleted and intermediate - 2  
 Lion - tailed monkey, Great Indian bustard, clouded leopard, snow leopard.
29. Explain ex-situ conservation strategy. How does it differ from in-situ strategy ? Give one 2  
 example for each type.
30. Match the items given in **Column (I)** with the items of **Column (II)**. 1/2x4=2

| <b>Column (I)</b>    | <b>Column (II)</b> |
|----------------------|--------------------|
| (a) Red Spider mite  | (i) Cassava plant  |
| (b) Mealy bug        | (ii) Citrus fruits |
| (c) Scale insect     | (iii) Legume       |
| (d) <i>Rhizobium</i> | (iv) Cucumber      |

31. List four human activities that require energy. 2  
**OR**  
 List any four ways of conservation of water.
32. List all the main players of EIA. 2  
**OR**  
 What are various environmental components of EIA ?
33. Define population. Why is study of population important ? Name major periods of human population growth. 4  
**OR**  
 State two points of difference between the following terms :  
 (a) Birth rate and growth rate  
 (b) Mortality and Natality
34. Biodiversity is essential for the maintenance of ecological system. Explain various ecological services provided by an ecosystem. 4
35. What is the impact of modern agriculture on environment ? Explain in detail. 5  
**OR**  
 What is Urbanisation ? Explain the changes due to growth of cities leading to increased demand of environmental resources.
36. What is Soil pollution ? What are various sources of Soil pollution ? How can it be controlled ? 5

**Optional Module 8A**  
**Water Resource Management**

37. Name the categories in which use of water in India is divided and give one example for each. 2
38. Write four reasons for water shortage in the World. 2  
**OR**  
 Water harvesting existed in ancient India. Mention two examples.
39. What is a watershed ? What are its benefits ? 2  
**OR**  
 List four ways by which an individual can conserve water.

**Optional Module 8B**  
**Energy and Environment**

37. Give one point of difference between conventional and non-conventional sources of energy. 2
38. How is energy obtained from hydrogen ? Write two benefits of hydrogen energy. 2  
**OR**  
 Mention one advantage and one disadvantage of geothermal energy. Where is India's most promising geothermal field located ?
39. List the technologies and equipments used during the construction of Auroville visitor centre that won it the Hasan Fathy International award in 1992. 2  
**OR**  
 What are alternate sources of energy ? What is their need ?

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