

Signature and Name of Invigilator

1. (Signature) _____

(Name) _____

2. (Signature) _____

(Name) _____

Roll No.

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(In figures as per admission card)

Roll No. _____

(In words)

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Test Booklet No.

Time : 2 1/2 hours]

PAPER-III

[Maximum Marks : 200

ENVIRONMENTAL SCIENCES

Number of Pages in this Booklet : 24

Number of Questions in this Booklet : 26

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- Answer to short answer/essay type questions are to be given in the space provided below each question or after the questions in the Test Booklet itself.

No Additional Sheets are to be used.

- At the commencement of examination, the question booklet will be given to you. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as below :

(i) To have access to the Question Booklet, tear off the paper seal on the edge of this cover page. Do not accept a booklet without sticker-seal and do not accept an open booklet.

(ii) **Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to pages/questions missing or duplicate or not in serial order or any other discrepancy should be got replaced immediately by a correct booklet from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given.**

- Read instructions given inside carefully.
- One page is attached for Rough Work at the end of the booklet before the Evaluation Sheet.
- If you write your name or put any mark on any part of the Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, you will render yourself liable to disqualification.
- You have to return the test booklet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the Examination Hall.
- Use only Blue/Black Ball point pen.
- Use of any calculator or log table etc., is prohibited.

परीक्षार्थियों के लिए निर्देश

- पहले पृष्ठ के ऊपर नियत स्थान पर अपना रोल नम्बर लिखिए ।
- लघु प्रश्न तथा निबंध प्रकार के प्रश्नों के उत्तर, प्रत्येक प्रश्न के नीचे या प्रश्नों के बाद में दिये हुए रिक्त स्थान पर ही लिखिये ।

इसके लिए कोई अतिरिक्त कागज का उपयोग नहीं करना है ।

- परीक्षा प्रारम्भ होने पर, प्रश्न-पुस्तिका आपको दे दी जायेगी । पहले पाँच मिनट आपको प्रश्न-पुस्तिका खोलने तथा उसकी निम्नलिखित जाँच के लिए दिये जायेंगे जिसकी जाँच आपको अवश्य करनी है :

(i) प्रश्न-पुस्तिका खोलने के लिए उसके कवर पेज पर लगी कागज की सील को फाड़ लें । खुली हुई या बिना स्टीकर-सील की पुस्तिका स्वीकार न करें ।

(ii) **कवर पृष्ठ पर छपे निर्देशानुसार प्रश्न-पुस्तिका के पृष्ठ तथा प्रश्नों की संख्या को अच्छी तरह चैक कर लें कि ये पूरे हैं । दोषपूर्ण पुस्तिका जिनमें पृष्ठ/प्रश्न कम हों या दुबारा आ गये हों या सीरियल में न हों अर्थात् किसी भी प्रकार की त्रुटिपूर्ण पुस्तिका स्वीकार न करें तथा उसी समय उसे लौटाकर उसके स्थान पर दूसरी सही प्रश्न-पुस्तिका ले लें । इसके लिए आपको पाँच मिनट दिये जायेंगे । उसके बाद न तो आपकी प्रश्न-पुस्तिका वापस ली जायेगी और न ही आपको अतिरिक्त समय दिया जायेगा ।**

- अन्दर दिये गये निर्देशों को ध्यानपूर्वक पढ़ें ।
- उत्तर-पुस्तिका के अन्त में कच्चा काम (Rough Work) करने के लिए मूल्यांकन शीट से पहले एक पृष्ठ दिया हुआ है ।
- यदि आप उत्तर-पुस्तिका पर अपना नाम या ऐसा कोई भी निशान जिससे आपकी पहचान हो सके, किसी भी भाग पर दर्शाते या अंकित करते हैं तो परीक्षा के लिये अयोग्य घोषित कर दिये जायेंगे ।
- आपको परीक्षा समाप्त होने पर उत्तर-पुस्तिका निरीक्षक महोदय को लौटाना आवश्यक है और इसे परीक्षा समाप्ति के बाद अपने साथ परीक्षा भवन से बाहर न लेकर जायें ।
- केवल नीले/काले बाल प्वाइंट पेन का ही इस्तेमाल करें ।
- किसी भी प्रकार का संगणक (कैलकुलेटर) या लाग टेबल आदि का प्रयोग वर्जित है ।

J-8910**P.T.O.**

ENVIRONMENTAL SCIENCE
PAPER – III

Note : This paper is of **two hundred (200)** marks containing **four (4)** sections. Candidates are required to attempt the questions contained in these sections according to the detailed instructions given therein.

SECTION – I

Note : This section consists of **two** essay type questions of **twenty (20)** marks each, to be answered in about **five hundred (500)** words each. **(2 × 20 = 40 marks)**

1. How do you differentiate in vitro and in vivo conservation of biodiversity ? Explain the main steps involved in cryopreservation of a particular genome through micro propagation.

OR

Compare & contrast the availability of ground water in hard rocks & in sedimentary rock region with suitable example from India.

OR

Explain the techniques of nuclear power generation. Add a note on various methods of radioactive waste disposal.

OR

Estimation of iron (5-10 ppm) from a waste water sample can be achieved by any of the following techniques.

- volumetric titration with external indicator.
- volumetric titration involving potentiometry.
- spectro photometry.
- atomic absorption spectrometry.

Identify the most suitable techniques keeping in mind the selectivity and sensitivity of the technique. Justify your answer.

2. Describe the impacts of noise pollution on human health. Add a note on noise standards.

OR

Principal component analysis is used for certain types of environmental statistical interpretation. Explain PCA, the eigen values & factors that is part of data calculations. Explain these values with suitable examples.

OR

Define wildlife. Name five wildlife sanctuaries of India. What major steps can be adopted to save mangrove ecosystem of the country ?

OR

Describe methods enumerating the reasons in site selection and the parameters adopted in assessing the water quality.

SECTION – II

Note : This section contains **three (3)** questions of **fifteen** marks each to be answered in about **three hundred (300)** words. **(3 × 15 = 45 marks)**

3. Describe Carbon & Nitrogen Cycles in the Environment.
4. Discuss scope & content of EIA of any river valley project.
5. Discuss linkages between ‘Green-House effect’, ‘Ozone depletion’ and ‘Global Climate Change’.

SECTION – III

Note : This section contains **nine (9)** questions of **ten (10)** marks, each to be answered in about **fifty (50)** words. **(9 × 10 = 90 marks)**

6. The ionization constant of water, K_w at $37\text{ }^\circ\text{C}$ is 2.42×10^{-14} mole² lit⁻². Calculate the pH for a neutral solution at the normal temperature of the human body.

7. In a pond ecosystem, the pyramid of number and energy are upright whereas that of biomass is inverted. Explain it.

8. Describe the principle of photovoltaic cell. Add a note on various types of photovoltaic cells.

9. Describe the effects of particulate matters of various sizes in our atmosphere on plants and human health.

10. Differentiate clay and clay minerals. What are their major properties that are important to environment ?

11. Radioactive decay equation is similar to some aspects of Lodka-Volterra equation. Examine the comparison and explain your observation.

12. Describe the principle of electrophoresis. Why does SDS-PAGE used to identify the effects of any hazardous chemical ?

13. Explain the concept of 'Gondwana Pond' and discuss the economic importance.

15. Define hazardous waste. Describe various types of hazardous waste.

16. Explain colour coding for segregation of biomedical waste.

17. What are the steps involved in management of chemical hazardous waste ?

18. Describe rules & regulations in safe disposal of hazardous waste.

19. List the categories of industries based on generation of hazardous waste.

FOR OFFICE USE ONLY	
Marks Obtained	
Question Number	Marks Obtained
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Total Marks Obtained (in words)

(in figures)

Signature & Name of the Coordinator

(Evaluation)

Date