Signature and Name of Invigilator

1. (Signature) _____

   (Name) _____

2. (Signature) _____

   (Name) _____

Roll No. | | | | | | | | |

(In figures as per admission card)

Roll No. _____

(In words)

Test Booklet No.

D—8906

PAPER—III

ENVIRONMENTAL SCIENCE

Time : 2½ hours] **[Maximum Marks : 200**

Number of Pages in this Booklet : **32** Number of Questions in this Booklet : **26**

Instructions for the Candidates

1. Write your roll number in the space provided on the top of this page.
2. Answers 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.
3. 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 Test 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.**
4. Read instructions given inside carefully.
5. One page is attached for Rough Work at the end of the booklet before the Evaluation Sheet.
6. 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.
7. 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.
8. **Use only Blue/Black Ball point pen.**
9. **Use of any calculator or log table etc. is prohibited.**
10. **There is NO negative marking.**

परीक्षार्थियों के लिए निर्देश

1. पहले पृष्ठ के ऊपर नियत स्थान पर अपना रोल नज़्बर लिखिए।
2. लघु प्रश्न तथा निबंध प्रकार के प्रश्नों के उज़र, प्रत्येक प्रश्न के नीचे या प्रश्नों के बाद में दिये हुये रिज़्त स्थान पर ही लिखिये।

   इसके लिए कोई अतिरिज़्त कागज का उपयोग नहीं करना है।
3. परीक्षा प्रारज़्भ होने पर, प्रश्न-पुस्तिका आपको दे दी जायेगी। पहले पाँच मिनट आपको प्रश्न-पुस्तिका खोलने तथा उसकी निज़्नलिखित जाँच के लिए दिये जायेंगे जिसकी जाँच आपको अवश्य करनी है :
   (i) प्रश्न-पुस्तिका खोलने के लिए उसके कवर पेज पर लगी 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 संज़्या 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 अर्थात किसी भी प्रकार की त्रुटिपूर्ण पुस्तिका स्वीकार न करें तथा उसी समय उसे लौटाकर उसके स्थान पर दूसरी सही प्रश्न-पुस्तिका ले ले। 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।**
4. अन्दर दिये गये निर्देशों को ध्यानपूर्वक पढ़ें।
5. उज़र-पुस्तिका के अन्त में कच्चा काम (Rough Work) करने के लिए मूल्यांकन शीट से पहले एक पृष्ठ दिया हुआ है।
6. यदि आप उज़र-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।
7. आपको परीक्षा समाप्त होने पर उज़र-पुस्तिका निरीक्षक महोदय को लौटाना आवश्यक है और इसे परीक्षा समाप्ति के बाद अपने साथ परीक्षा भवन से बाहर न लेकर जायें।
8. **केवल नीले / काले बाल प्वाईंट पैन का ही इस्तेमाल करें।**
9. **किसी भी प्रकार का संगणक (कैलकुलेटर) या लाग टेबल आदि का प्रयोग वर्जित है।**
10. **गलत उज़र के लिए अंक नहीं काटे जायेंगे।**

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 contains five (5) questions based on the following paragraph. Each question should be answered in about thirty (30) words and each carries five (5) marks.

(5x5=25 marks)

Read the passage below, and answer the questions that follow based on your understanding of the passage :

In air quality impact assessment, meteorological characteristics like diurnal, seasonal and annual with particular reference to wind speeds and directions; temperature inversions, incidence type and depth; both horizontal and vertical turbulence; mixing heights and mean layer winds are utilized. Macro-, meso-, and micro-meteorological characteristics are also to be noted.

The atmosphere has always been polluted to some extent through natural phenomenon and/or human activities. In recent times, technological advancement, industrial expansion and urbanization have been the major contributors to global air pollution. Air pollution adversely affects human health and property. The major sources of air pollutants are from transportation, fuel combustion, industrial processes, non-transportation fuel combustion and some natural sources such as wild fires.

The pollution of air we breathe, ironically enough, is an indirect result of our pursuit of an even higher standards of living. Air pollution is caused by the burning of fuel for heat and power, the processing of material, and the disposal of wastes. Air pollution, in short, comes from those every day activities, which are so integral part of this modern advance society.

Most of the air pollution comes from economically advanced countries, combustion of fuels which leads to produce heat and work. Thus energy use is clearly related to standard of living and a comparison of the Gross National Production (GNP) per capita to the energy use per capita, shows a positive correlation.

An important air pollutant such as sulfur dioxide needs to be considered specially. The toxic action of sulfur dioxide arises partly from the direct effects of its solubility products e.g. SO_3^{-2} and HSO_3^- on photosynthetic process of photophosphorylation and ATP synthesis. But further toxic effects of SO_2 arises from the free radicals, which generate the chain reactions. Exposure of relatively higher concentrations of SO_2 and NO_2 together is more detrimental than each of them alone, because SO_2 inhibits the normal NO_2 detoxification pathway, accumulating NO_2^- and NO_3^- in the chloroplasts, affecting the photosynthetic ability of the plant.

1. Which meteorological characteristics adversely affect the air quality ?

2. What are the major factors that contribute to air pollution ?

3. How the greed of mankind is responsible for the increase in air pollution ?

4. How economically advanced countries are responsible for air pollution ?

5. Write the toxic effects of sulfur dioxide ?

SECTION - II

Note : This section contains fifteen (15) questions each to be answered in about thirty (30) words. Each question carries five (5) marks.

(5x15=75 marks)

Write short notes on the following :

6. Composition of Atmosphere.

7. Wind roses.

8. Bioindicator.

9. Cost benefit analysis with respect to EIA.

10. Desertification.

11. Estuary.

12. Probability.

13. Air - borne diseases.

14. EIA guidelines (1994).

15. Principles of coagulation in water treatment.

16. El Nino.

17. Box Model.

18. Quadrat Method.

19. Wetlands.

20. 'Chi' square.

SECTION - III

Note : This section contains five (5) questions. Each question carries twelve (12) marks and is to be answered in about two hundred (200) words.

(12x5=60 marks)

21. Why students 't' test is necessary to analyse various parameters of environment ? Write briefly about the test of hypothesis and its significance.

22. "Global Warming is due to burning of fossil fuel" - Comment on the statement. What is the current trend in Global Warming ?

23. Describe the phenomenon of biomagnification. Elucidate your answer with suitable example from pesticide group of Chemicals.

24. Why is Environmental Management Plan (EMP) necessary ? Discuss various aspects of EMP to minimise environmental costs.

25. Describe various methods of enumeration of bacteria in soil.

SECTION - IV

Note : This section consists of one essay type question of forty (40) marks to be answered in about one thousand (1000) words on any of the following topics.

(40x1=40 marks)

26. Write on ***any one*** of the following :

(a) Describe various causes of Depleting Biodiversity. Discuss strategies for conservation of biodiversity.

OR

(b) Discuss various natural hazards commonly encountered in the Indian sub-continent.

OR

(c) Why is Environmental Education necessary in the present day curriculum ? Discuss different methods that may be adopted for successful implementation of Environmental Education in India.

OR

(d) What is Hazardous Waste ? Discuss various methods of safe disposal of these wastes. Enumerate the difficulties in actual implementation of the same.

OR

(e) "Overexploitation of natural resources leads to environmental pollution". - Comment on the above statement and justify your views.

OR

(f) Define EIA. Discuss in detail EIA for a mining industry.

OR

(g) What are the sources of Noise Pollution ? Describe different methods of measurement of noise levels. Enumerate the impact of noise on human health.

OR

(h) What is the principle of generation of Hydroelectric Power. What are the environmental impacts of mega hydroelectric power projects ? How they can be mitigated ?

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Marks Obtained							
Question Number	Marks Obtained	Question Number	Marks Obtained	Question Number	Marks Obtained	Question Number	Marks Obtained
1		26		51		76	
2		27		52		77	
3		28		53		78	
4		29		54		79	
5		30		55		80	
6		31		56		81	
7		32		57		82	
8		33		58		83	
9		34		59		84	
10		35		60		85	
11		36		61		86	
12		37		62		87	
13		38		63		88	
14		39		64		89	
15		40		65		90	
16		41		66		91	
17		42		67		92	
18		43		68		93	
19		44		69		94	
20		45		70		95	
21		46		71		96	
22		47		72		97	
23		48		73		98	
24		49		74		99	
25		50		75		100	

Total Marks Obtained (in words) .....

(in figures) .....

Signature & Name of the Coordinator .....

(Evaluation) Date .....