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.

J–8908

PAPER – III

Time : 2½ hours] # ENVIRONMENTAL SCIENCE **[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 नम्बर लिखिए।
2. लघु प्रश्न तथा निबंध प्रकार के प्रश्नों के उत्तर, प्रत्येक प्रश्न के नीचे या प्रश्नों के बाद में दिये हुये रिक्त स्थान पर ही लिखिये।

   इसके लिए कोई अतिरिक्त कागज का उपयोग नहीं करना है।
3. 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 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 अर्थात 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।**
4. अन्दर दिये गये निर्देशों को ध्यानपूर्वक पढ़ें।
5. उत्तर-पुस्तिका के अन्त में कच्चा काम (Rough Work) करने के लिए मूल्यांकन शीट से पहले एक पृष्ठ दिया हुआ है।
6. 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।
7. 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।
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 उत्तर 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.

Biodiversity refers to the number variety and population sizes of living species in their various physical habitats. It is mainly of three types viz., genetic biodiversity, species biodiversity and ecosystem biodiversity.

Biodiversity is partly a function of the process of evolution by natural selections. These ensure that the ecological niches are colonised by population of organisms that are best adapted to survive in the face of climatic extremes, predators and competition from other species. The constant process of mutation and selection guarantee the production of new species. However, the evolution of species is tempered by fluctuations in numbers of organisms including population explosion, where conditions are exceptionally favourable to reproduction, survival and population 'overshoot', and die-back when numbers start exceeding the carrying capacity of a species habitat. Environmental stress and many forms of exploitation and predation can also regulate the numbers or cause them to fluctuate over time.

In natural world and in pre-history large scale reduction in biodiversity have resulted from climatic and geological extremes that have ended in loss, fragmentation as sterilization of habitats and the collapse of food chain and webs. In the modern era, the principle cause of biodiversity loss is human activity. Land is being transformed at an ever increasing rate and usually towards the simplification and uniformitization of ecosystems. As population size and living standards rise, pollution, industrialisation of agriculture and forestry tend to affect the species negatively, while overharvesting has had devastating effects on fisheries, marine products, wild animals and plants. The accidental and deliberate introduction of exotic species has often led to a reduction in the diversity of indegenous organisms which are outcompeted by the newcomers. The tendency of humans to treat exotic species as commodities has caused the demise of the more prominent reptiles, amphibians, pachyderms, birds and flowering plants. Poaching, smuggling and trade of ivory and furs has depleted stocks of rare animals at an accelerated rate.

Many ways have been suggested to conserve the biodiversity. It can be maintained by identifying species in danger of loss and protecting their population and habitats. One alternative is the biosphere reserve concept in which protected core area is separated from unprotected area with buffer zone where limited activity is allowed. To address the problem of loss of biodiversity, scientific, political and administrative actions are necessary alongwith local participation of communities.

1. The author is primarily concerned with :

(A) How biodiversity came into existence on earth ?

(B) Loss and conservation of biodiversity

(C) Distribution of species

(D) Number of threatened species

2. According to the passage, which of the most important points are being discussed :

(i) Origin of biodiversity

(ii) Effect of loss of biodiversity on humans

(iii) Rapid rate of extinction of species due to anthropogenic activities

(iv) Biodiversity and its inter-relation with economic aspects

(A) (i), (iii) and (iv) only (B) (i), (ii) and (iii) only

(C) (iv) only (D) (ii) and (iii) only

3. The material in the passage could best be used in an argument for :

(A) Boosting the economic growth of the country

(B) Sustainable existence of humans on the earth

(C) Proving the supremacy of humans

(D) Fullfilling the needs of humans on the earth

4. The author strongly advocates which of the following ways to conserve the biodiversity ?

(A) Biotechnology

(B) Ex-situ protection methods

(C) Formulation of laws to protect certain species

(D) Identification of endangered species and protecting their habitats and creation of biosphere reserve

5. Which is the basic reason that is responsible for loss of biodiversity :

(A) Ecotourism
(B) Construction of dams
(C) Agricultural activity
(D) Rise in living standards of humans and population growth

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)

6. Deltic Environment.

7. Aerosols.

8. Biopesticides.

9. Air quality index.

10. Endangered species.

11. Primary productivity.

12. Trophic level.

13. BOD.

14. Ecological succession.

15. Wet and dry deposition.

16. Biofuels.

17. Saturation mixing ratio.

18. Radionuclides.

19. Coefficient of determination (R^2).

20. Carbon credits.

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. Noise indices.

22. Energy flow in ecosystems.

23. Bio fertilizers.

24. Hazardous waste management.

25. Rainwater harvesting.

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) Discuss various methods of solid waste management.

OR

(b) Use of plant biomass for biofuel production.

OR

(c) "Hotspots" of biodiversity with special reference to India.

OR

(d) Environmental priorities in India and sustainable development.

OR

(e) Salient features of Kyoto protocol and various mechanisms for its implementation.

OR

(f) Toxic chemicals in air and water. Methodologies of Environmental Impact Assessment.

OR

(g) Remote sensing and its application to Environmental Sciences.

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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 .....