

**PAPER-II**  
**ENVIRONMENTAL SCIENCES**

**Signature and Name of Invigilator**

1. (Signature) \_\_\_\_\_

(Name) \_\_\_\_\_

2. (Signature) \_\_\_\_\_

(Name) \_\_\_\_\_

**S 8913**

OMR Sheet No. : .....  
(To be filled by the Candidate)

Roll No. 

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(In figures as per admission card)

Roll No. \_\_\_\_\_  
(In words)

Time : 1 ¼ hours]

[Maximum Marks : 100

Number of Pages in this Booklet : 8

Number of Questions in this Booklet : 50

**Instructions for the Candidates**

1. Write your roll number in the space provided on the top of this page.
2. This paper consists of fifty multiple-choice type of questions.
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 Question Booklet, tear off the paper seal / polythene bag on the booklet. Do not accept a booklet without sticker-seal / without polythene bag 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.**
  - (iii) After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
4. Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.  
**Example :** (A) (B) (C) (D)  
where (C) is the correct response.
5. Your responses to the items are to be indicated in the **OMR Sheet given inside the Paper I Booklet only**. If you mark at any place other than in the circle in the OMR Sheet, it will not be evaluated.
6. Read instructions given inside carefully.
7. Rough Work is to be done in the end of this booklet.
8. If you write your Name, Roll Number, Phone Number or put any mark on any part of the OMR Sheet, except for the space allotted for the relevant entries, which may disclose your identity, or use abusive language or employ any other unfair means, you will render yourself liable to disqualification.
9. You have to return the original OMR Sheet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are however, allowed to carry duplicate copy of OMR Sheet on conclusion of examination.
10. Use only Blue/Black Ball point pen.
11. Use of any calculator or log table etc., is prohibited.
12. There is no negative marks for incorrect answers.

**परीक्षार्थियों के लिए निर्देश**

1. पहले पृष्ठ के ऊपर नियत स्थान पर अपना रोल नम्बर लिखिए ।
2. इस प्रश्न-पत्र में पचास बहुविकल्पीय प्रश्न हैं ।
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 पुस्तिका पर लगी कागज की सील / पोलिथीन बैग को फाड़ लें । खुली हुई या बिना स्टीकर-सील / बिना पोलिथीन बैग 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 आपकी अतिरिक्त समय दिया जायेगा ।**
  - (iii) इस जाँच के बाद OMR पत्रक की क्रम संख्या इस प्रश्न-पुस्तिका पर अंकित कर दें ।
4. प्रत्येक प्रश्न के लिए चार उत्तर विकल्प (A), (B), (C) तथा (D) दिये गये हैं । आपको सही उत्तर के वृत्त को पेन से भरकर काला करना है जैसा कि नीचे दिखाया गया है ।  
**उदाहरण :** (A) (B) (C) (D) जबकि (C) सही उत्तर है ।
5. प्रश्नों के उत्तर केवल प्रश्न पत्र I के अन्दर दिये गये OMR पत्रक पर ही अंकित करने हैं । यदि आप OMR पत्रक पर दिये गये वृत्त के अलावा किसी अन्य स्थान पर उत्तर चिह्नांकित करते हैं, तो उसका मूल्यांकन नहीं होगा ।
6. अन्दर दिये गये निर्देशों को ध्यानपूर्वक पढ़ें ।
7. कच्चा काम (Rough Work) इस पुस्तिका के अन्तिम पृष्ठ पर करें ।
8. यदि आप OMR पत्रक पर नियत स्थान के अलावा अपना नाम, रोल नम्बर, फोन नम्बर या कोई भी ऐसा चिह्न जिससे आपकी पहचान हो सके, अंकित करते हैं अथवा अभद्र भाषा का प्रयोग करते हैं, या कोई अन्य अनुचित साधन का प्रयोग करते हैं, तो परीक्षा के लिये अयोग्य घोषित किये जा सकते हैं ।
9. आपको परीक्षा समाप्त होने पर मूल OMR पत्रक निरीक्षक महोदय को लौटाना आवश्यक है और परीक्षा समाप्ति के बाद उसे अपने साथ परीक्षा भवन से बाहर न लेकर जायें । हालांकि आप परीक्षा समाप्ति पर OMR पत्रक की डुप्लीकेट प्रति अपने साथ ले जा सकते हैं ।
10. केवल नीले/काले बाल प्वाइंट पेन का ही इस्तेमाल करें ।
11. किसी भी प्रकार का संगणक (कैलकुलेटर) या लाग टेबल आदि का प्रयोग वर्जित है ।
12. गलत उत्तरों के लिए कोई अंक काटे नहीं जाएँगे ।

## ENVIRONMENTAL SCIENCES

### Paper – II

**Note :** This paper contains **fifty (50)** objective type questions, each question carrying **two (2)** marks. **All** questions are compulsory.

1. National Land Reform Policy stresses on
  - (A) Restoration of ecological balance
  - (B) Natural regeneration
  - (C) Tenancy reforms
  - (D) Watershed approach
2. Nalgonda technique of fluoride removal involves the use of
  - (A) Aluminium salts
  - (B) Sodium salts
  - (C) Potassium salts
  - (D) Magnesium salts
3. In which years the Ramsar Convention on Wetlands was held and came into force ?
  - (A) 1951, 1955
  - (B) 1961, 1965
  - (C) 1971, 1975
  - (D) 1981, 1985
4. The Stockholm Convention is a global treaty to protect humans from
  - (A) toxic gases
  - (B) hospital acquired infections
  - (C) persistent organic pollutants
  - (D) carbon monoxide
5. Which of the following is not a Millennium Development Goal ?
  - (A) Ensuring environmental sustainability
  - (B) Eradicating extreme poverty and hunger
  - (C) Developing global partnership for development
  - (D) Achieving universal energy security
6. In turbidity analysis, formazin is used
  - (A) to stabilize the samples
  - (B) to preserve the samples
  - (C) to make turbidity standards
  - (D) to remove colour interferences
7.  $p^E$  values in water range from approximately
  - (A) – 1 to 14
  - (B) – 12 to 25
  - (C) 1 to 12
  - (D) 0 to 14
8. Point out the right match concerning the toxic metal and associated adverse impact.
  - (A) Zn – Brain tissue damage
  - (B) Ni – Keratosis
  - (C) Ar – Renal poisoning
  - (D) Hg – Pulmonary disease

9. Amount of 8-hydroxyquinoline (M.W. 145.16) required for preparing 1000 ml of 5 ppm solution is
- (A) 1.45 mg  
(B) 5 mg  
(C) 7.25 mg  
(D) 14.5 mg
10. What is  $\text{OH}^-$  ion concentration of HCl whose pH is 3 ?
- (A)  $-3$   
(B) 3  
(C)  $10^{-3}$   
(D)  $10^{-11}$
11. Radioactive waste management in our country is governed under :
- (A) Hazardous Waste (Management, Handling and Transboundary Movement)  
(B) Atomic Energy Act, 1962  
(C) Environment (Protection) Act, 1986  
(D) Biomedical Waste (Management & Handling) Rules 1998
12. Which of the following parameters is not an indicator of water vapour present in a certain quantity of air ?
- (A) Virtual temperature  
(B) Potential temperature  
(C) Wet bulb temperature  
(D) Dew point
13. The background noise level in an area is represented by which of the following noise indices ?
- (A)  $L_{10}$   
(B)  $L_{50}$   
(C)  $L_{90}$   
(D) TNI
14. The chemical formula for CFC-11 is
- (A)  $\text{CF}_2\text{Cl}_2$   
(B)  $\text{CFCl}_3$   
(C)  $\text{CHFCl}_2$   
(D)  $\text{CHCl}_3$
15. Match the List – I with List – II and choose the correct answer from the codes given below :
- | List – I                  | List – II               |
|---------------------------|-------------------------|
| a. Mollisol               | 1. Tundra               |
| b. Oxisol                 | 2. Tropical rain forest |
| c. Soils of high altitude | 3. Prairie soil         |
| d. Soils of low altitude  | 4. Rich in iron oxide   |
- Codes :**
- |     | a | b | c | d |
|-----|---|---|---|---|
| (A) | 3 | 4 | 1 | 2 |
| (B) | 3 | 4 | 2 | 1 |
| (C) | 1 | 2 | 3 | 4 |
| (D) | 2 | 3 | 4 | 1 |

16. Particles which have maximum ability to attract and hold  $K^+$ ,  $Ca^{++}$  and  $NH_4^+$  ions on their surface are
- (A) Clay
  - (B) Sand
  - (C) Loam
  - (D) Loamy sand
17. Compared to  $CO_2$ , methane has global warming potential of
- (A) 5 – 10 times more
  - (B) 20 – 25 times more
  - (C) 40 – 45 times more
  - (D) 60 – 65 times more
18. Laterite soil contains more of
- (A) Iron and Aluminium
  - (B) Magnesium and Boron
  - (C) Manganese and Silicate
  - (D) Potassium and Lead
19. Universally accepted method for isolating semivolatile organic compounds from their matrices is
- (A) Double infiltration
  - (B) Solvent extraction
  - (C) Sedimentation technique
  - (D) Permeation
20. The relationship between two organisms in which one receives benefit at the cost of other is known as
- (A) Predation
  - (B) Parasitism
  - (C) Scavenging
  - (D) Symbiosis
21. Species diversity increases as one proceeds from
- (A) higher to lower altitude and higher to lower latitude
  - (B) lower to higher altitude and higher to lower latitude
  - (C) lower to higher altitude and lower to higher latitude
  - (D) higher to lower altitude and lower to higher latitude
22. Which of the following is not an IUCN-designated threatened species found in India ?
- (A) Asiatic Lion
  - (B) Bengal Tiger
  - (C) Indian White rumped vulture
  - (D) Mountain gorilla
23. Which of the following ecosystems has the lowest net primary production per square metre ?
- (A) A grassland
  - (B) A coral reef
  - (C) An open ocean
  - (D) A tropical rain forest

24. The rate of energy at consumer's level is called  
(A) Primary productivity  
(B) Gross primary productivity  
(C) Net primary productivity  
(D) Secondary productivity
25. Peaty soil is found more in  
(A) Kerala  
(B) Uttar Pradesh  
(C) Maharashtra  
(D) Gujarat
26. Brown forest soil is also known as  
(A) Entisols  
(B) Altisols  
(C) Spodosols  
(D) Mollisols
27. Establishment of a species in a new area is referred to as  
(A) Stabilization  
(B) Aggregation  
(C) Ecesis  
(D) Migration
28. The Zooplankton of continental shelf are generally the same as in  
(A) Neritic region  
(B) Pelagic region  
(C) Estuary region  
(D) Benthic region
29. 'Mesothelioma' is caused by toxicity of  
(A) Mercury  
(B) Lead  
(C) Arsenic  
(D) Carbon monoxide
30. Algal biofertilizer consists of  
(A) Blue green algae and earthworm  
(B) Algal biomass and Mycorrhiza  
(C) Blue green algae and Azolla  
(D) Green algae and Rhizobia
31. A volcanic eruption will be violent if there is  
(A) High silica and low volatiles  
(B) High silica and high volatiles  
(C) Low silica and low volatiles  
(D) Low silica and high volatiles
32. Which of the following is the satellite for measuring precipitation ?  
(A) GRACE  
(B) TRMM  
(C) ASTER  
(D) SPOT
33. Clay minerals are  
(A) Tectosilicates  
(B) Sorosilicates  
(C) Inosilicates  
(D) Phyllosilicates
34. Vertical dimensions can be obtained from  
(A) DEM  
(B) SRTM  
(C) Topographic Sheets  
(D) All the above

35. In biogeochemical cycle, a chemical element or molecule moves through
- Biosphere and lithosphere
  - Biosphere, lithosphere and atmosphere
  - Biosphere, lithosphere, atmosphere and hydrosphere
  - Lithosphere and atmosphere
36. Which of the following is not considered as a major type of seashore ?
- Rocky shore
  - Sandy shore
  - Muddy shore
  - Clayey shore
37. Low-high tides are called
- Spring tide
  - Neap tide
  - Perigean tide
  - Apogean tide
38. Consider an ideal wind mill. For following parameters :
- Vane cross-sectional area =  $30 \text{ m}^2$ ;  
 wind speed =  $10 \text{ m/s}$ ; density of air =  $1.29 \text{ kg/m}^3$  and conversion efficiency =  $0.4$
- What is the power output of the wind mill ?
- $\sim 5.24 \text{ kW}$
  - $\sim 8.21 \text{ kW}$
  - $\sim 10.25 \text{ kW}$
  - $\sim 7.74 \text{ kW}$
39. Biogas produced by anaerobic bacterial activity is a mixture of
- $\text{CH}_3\text{OH}$ ,  $\text{CO}_2$ ,  $\text{NH}_3$  and  $\text{H}_2\text{O}$
  - $\text{CH}_4$ ,  $\text{CO}_2$ ,  $\text{NH}_3$ ,  $\text{H}_2\text{S}$  and  $\text{H}_2\text{O}$
  - $\text{H}_2\text{S}$ ,  $\text{CO}_2$ ,  $\text{CO}$ ,  $\text{CH}_4$  and LPG
  - $\text{CO}_2$ ,  $\text{SO}_2$ ,  $\text{NO}_2$ ,  $\text{CH}_4$  and  $\text{H}_2\text{O}$
40. At present, what is the share of renewable energy in the total energy production of India ?
- $\sim 11 - 12\%$
  - $\sim 2 - 3\%$
  - $\sim 20\%$
  - $\sim 25 - 30\%$
41. If all of the atmosphere were at standard temperature and pressure, then present day  $\text{CO}_2$  concentration of  $392 \text{ ppm}$  would correspond to how much carbon in the atmosphere ?
- $\sim 415 \text{ Gt}$
  - $\sim 831 \text{ Gt}$
  - $\sim 1245 \text{ Gt}$
  - $\sim 1620 \text{ Gt}$
42. Risk assessment is different from Environmental Impact Assessment in terms of
- Hazard identification
  - Disaster management
  - Probability expression
  - Consideration of human environment

43. Reliable, quantitative and verifiable data used in Environmental Impact Assessment study are called
- (A) Hard data  
(B) Soft data  
(C) Continuous data  
(D) Discrete data
44. Which category of projects do not require Environmental Impact Assessment in accordance with the Indian EIA Notification 2006 ?
- (A) Category A  
(B) Category B<sub>1</sub>  
(C) Category B<sub>2</sub>  
(D) None of the above
45. Environmental Protection Act was enacted in India during
- (A) 1986  
(B) 1984  
(C) 1994  
(D) 1987
46. Minimum Stock height of incinerators should be
- (A) 10 m  
(B) 15 m  
(C) 30 m  
(D) 60 m
47. Basal convention on transboundary movement of hazardous waste was implemented in the year
- (A) 1969  
(B) 1979  
(C) 1989  
(D) 1999
48. The events A and B are mutually exclusive. If  $P(A) = 0.5$  and  $P(B) = 0.2$ , then what is  $P(A \& B)$  ?
- (A) 0.5  
(B) 0.1  
(C) 0.7  
(D) 0.3
49. A population, from where samples are drawn, is called
- (A) Total population  
(B) Target population  
(C) Accessible population  
(D) Universal population
50. The rate of variation of population (N) with time (t) represented by equation  $\frac{dN}{dt} = \gamma N$ , follows
- (A) J-shaped curve  
(B) S-shaped curve  
(C) Z-shaped curve  
(D) Parabolic curve

**Space For Rough Work**