

**PAPER-II**  
**ENVIRONMENTAL SCIENCE**

**Signature and Name of Invigilator**

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

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

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

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

**J 8 9 1 4**

Time : 1 ¼ hours]

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)

[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 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.**
  - (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 such as change of response by scratching or using white fluid, you will render yourself liable to disqualification.
9. You have to return the test question booklet and 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 original question booklet and 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. इस 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 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 ।
  - (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 चिह्नानंकित 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, जैसे कि अंकित किये गये उत्तर को मिटाना या सफेद स्याही से बदलना तो परीक्षा के लिये अयोग्य घोषित किये जा सकते हैं ।
9. आपको परीक्षा समाप्त होने पर प्रश्न-पुस्तिका एवं मूल OMR पत्रक निरीक्षक महोदय को लौटाना आवश्यक है और परीक्षा समाप्त के बाद उसे अपने साथ परीक्षा भवन से बाहर न लेकर जायें । हालांकि आप परीक्षा समाप्ति पर मूल प्रश्न-पुस्तिका तथा 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 नकारात्मक अंक नहीं हैं ।



## ENVIRONMENTAL SCIENCE

### Paper – II

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

- For a clear night and with windspeeds  $< 3$  m/s, the atmosphere is
  - stable
  - slightly unstable
  - neutral
  - slightly stable
- Assertion (A) :** Chemosynthesis plays an important role in 'S' cycle.  
**Reason (R) :** In chemosynthesis, some sulphur compounds act as source of energy.  
**Codes :**
  - Both (A) and (R) are true and (R) is the correct explanation.
  - Both (A) and (R) are true and (R) is not the correct explanation.
  - (A) is true but (R) is false.
  - (A) is false but (R) is true.
- Which of the following is NOT a correct statement ?
  - Tropics are the warmest and wettest regions.
  - Subtropical high pressure zones create dry zones at about  $30^{\circ}$  N and S.
  - Temperature and precipitation are lowest at the poles.
  - Temperature is lowest and precipitation is highest at the poles.
- Protecting nature and the wilderness for its own sake is referred as
  - Deep ecology
  - Shallow ecology
  - Self ecology
  - Selfless ecology
- For the analysis of oxides of Nitrogen, which of the following set of reagents are used ?
  - Sulphanilic acid, NEDA,  $H_2O_2$ ,  $HNO_3$
  - Sulphamic acid, NEDA,  $H_2O_2$ ,  $HNO_3$
  - Sulphamic acid, Nicotine,  $H_2O$ ,  $HNO_3$
  - Sulphomolybdic acid, NEDA,  $H_2O_2$ ,  $H_2SO_4$
- Number of ions of cadmium present in  $3n$  moles of cadmium nitrate is
  - $18.069 \times 10^{23}$
  - $18.069 \times 10^{20}$
  - $18.069 \times 10^{17}$
  - $18.069 \times 10^{14}$
- Which one of the following organisms is a free living nitrogen fixer ?
  - Rhizobium
  - Azotobacter
  - Frankia
  - Dorylimes

8. Which one of the following has highest bioconcentration factor (BCF) ?
- (A) DDT  
(B) DDE  
(C) Chlordane  
(D) Heptachlor
9. Consider an Ocean Thermal Energy Conversion (OTEC) process operating between 30 °C and 5 °C. What would be the maximum possible efficiency for an electricity generator station operating with these temperatures ?
- (A) 8%                      (B) 15%  
(C) 25%                      (D) 40%
10. The process of 'Nebulisation' in Atomic Absorption Spectrophotometry is to
- (A) convert the liquid sample to gaseous form.  
(B) convert the liquid sample into small droplets.  
(C) sublimate the sample.  
(D) solubilization of the solute.
11. Individuals of a plant species occurring in a particular area constitute
- (A) fauna  
(B) flora  
(C) flora and fauna  
(D) population
12. A local population genetically, structurally and functionally adapted to its local environment is called
- (A) ecotype  
(B) ecophene  
(C) ecad  
(D) ecocline
13. Mycorrhizae is an example of
- (A) Ammensalism  
(B) Commensalism  
(C) Parasitism  
(D) Symbiosis
14. The entire series of communities of biotic succession from pioneer to climax community is known as
- (A) Troph  
(B) Sere  
(C) Population  
(D) Biome
15. In which of the following ecosystems the pyramid of biomass is inverted ?
- (A) Forest  
(B) Grassland  
(C) Pond  
(D) Desert
16. The first National Park established in India is
- (A) Kaziranga National Park  
(B) The Jim Corbett National Park  
(C) Hazaribagh National Park  
(D) Gir National Park

17. The animals that rest or swim on the surface of the lakes are called
- Nektons
  - Neustons
  - Benthos
  - Peritons
18. Which of the following is an example of in situ conservation of biodiversity ?
- Captive breeding
  - Seed bank
  - National park
  - Pollen bank
19. A biome contains
- many ecosystems
  - many communities
  - many populations
  - a single ecosystem
20. In Bhopal gas tragedy, the quantity of Methyl Isocyanate leaked into the atmosphere was around
- ~ 180 tonnes
  - ~ 60 tonnes
  - ~ 112 tonnes
  - ~ 40 tonnes
21. What is the sequence of arrival of seismic waves at a recording station ?
- P-wave, S-wave, L-wave, R-wave.
  - S-wave, P-wave, R-wave, L-wave.
  - R-wave, L-wave, P-wave, S-wave.
  - S-wave, L-wave, R-wave, P-wave.
22. The presence of ammonia in groundwater may indicate a nearby
- coal mine
  - municipal solid waste dumping site
  - thermal power plant
  - granite quarry
23. Given below are statements in the context of a truly vertical aerial photograph :
- The principal point, nadir point and isocentre coincide.
  - Isocentre is the centre from where the radial displacements of images take place.
  - Tilt is a character of vertical aerial photograph.
- Identify the correct answer from the codes given below :
- (i) only
  - (i) & (ii) only
  - (i) & (iii) only
  - (ii) & (iii) only
24. Kaolinite is a type of clay Mineral with layers of silicon and aluminium in the ratio of
- |           |           |
|-----------|-----------|
| (A) 1 : 1 | (B) 1 : 2 |
| (C) 2 : 1 | (D) 3 : 1 |
25. In an ideal Magneto Hydro Dynamic Power Generator, the separation between the plates = 0.5 m, magnetic flux density =  $2 \text{ Wb/m}^2$  and average fuel velocity = 500 m/sec. The voltage developed across the plates will be
- |            |            |
|------------|------------|
| (A) 500 V  | (B) 1000 V |
| (C) 2000 V | (D) 5000 V |

26. If the wind speed in a certain area increases by a factor of 2 from 4 m/s to 8 m/s, the power output from an ideal wind mill will increase by a factor of
- (A) 4 (B) 8  
(C) 16 (D) 2
27. Under Jawaharlal Nehru Solar Mission of Government of India, a total of 20,000 MW of utility Grid Power (including roof to solar power) is sought to be installed by the year
- (A) 2020 (B) 2022  
(C) 2025 (D) 2030
28. In which country dry steam deposits have been used as such for electricity generation ?
- (A) Italy  
(B) Iceland  
(C) Austria  
(D) New Zealand
29. The resources which are unlimited and where quality is not degraded are termed as
- (A) renewable  
(B) reusable  
(C) immutable  
(D) exhaustible
30. The most toxic form of mercury in water is
- (A)  $2\text{Hg}^+$  (B)  $\text{Hg}^{2+}$   
(C)  $\text{H}_3\text{C}-\text{Hg}^+$  (D)  $\text{Hg}^0$
31. Hardness of water is due to the presence of
- (A) Calcium and Magnesium ions  
(B) Strontium and Nitrate ions  
(C) Sodium and Chloride ions  
(D) Potassium and Nitrite ions
32. Principal constituents of atmospheric brown clouds are
- I. Soot  
II. Soil dust  
III. Fly ash  
IV. Sulphates and nitrates
- Identify the correct code :
- (A) I & II only  
(B) I & IV only  
(C) II, III and IV only  
(D) I, II, III and IV
33. The famous 'London Smog' was observed in the year
- (A) 1750  
(B) 1952  
(C) 1972  
(D) 2000
34. The permissible limit of day time industrial noise as recommended by WHO is
- (A) 80 dB  
(B) 75 dB  
(C) 90 dB  
(D) 76 dB

35. Surface litter layer on ground soil is also known as
- 'O' horizon
  - 'A' horizon
  - 'B' horizon
  - 'C' horizon
36. Which one of the following represents the correct Uranium decay series ?
- Uranium → Radium → Radon → Polonium
  - Uranium → Radon → Radium → Polonium
  - Uranium → Radium → Polonium → Radon
  - Uranium → Radon → Polonium → Radium
37. Hydropower projects with large reservoirs affect the environment by release of
- CO
  - CO<sub>2</sub>
  - CH<sub>4</sub>
  - NO<sub>2</sub>
38. Terms of reference is fixed at which stage of EIA process ?
- Screening stage
  - Scoping stage
  - Detailed EIA stage
  - Project Appraisal stage
39. Arrange the functions associated with EIA in a sequential manner
- Identification
  - Prediction
  - Defining the scope
  - Impact evaluation and analysis
- Codes :**
- (i) (iii) (iv) (ii)
  - (ii) (iv) (i) (iii)
  - (iii) (i) (ii) (iv)
  - (iv) (ii) (iii) (i)
40. The role of State Pollution Control Board in EIA is
- Public hearing / consultation
  - Issue of NOC
  - Collecting environmental data
  - Survey of fauna and flora
- Codes :**
- (i) and (iii) only
  - (i) and (ii) only
  - (iii) and (iv) only
  - (ii) and (iii) only
41. Percentage of carbon in a typical municipal solid waste ranges from
- 50 – 60 %
  - 40 – 50 %
  - 30 – 40 %
  - 20 – 30 %
42. Which one of the following has maximum destruction and removable efficiency ?
- Incineration
  - Biological Treatment
  - Chemical Treatment
  - Landfill

43. Wastes are known to be corrosive if the pH is  
 (A)  $\leq 2$   
 (B)  $\leq 3$   
 (C)  $\leq 4$   
 (D)  $\leq 5$
44. Hazardous Waste Management and Handling Rule was enacted in the year  
 (A) 1989  
 (B) 1979  
 (C) 1969  
 (D) 1999
45. For a given set of data 5, 8, 12, 15 and 20, the comparison of geometric ( $\bar{G}$ ), harmonic ( $\bar{H}$ ) and arithmetic mean ( $\bar{X}$ ) will be  
 (A)  $\bar{H} > \bar{G} > \bar{X}$   
 (B)  $\bar{H} > \bar{G} < \bar{X}$   
 (C)  $\bar{H} < \bar{G} < \bar{X}$   
 (D)  $\bar{H} < \bar{G} > \bar{X}$
46. Algal bloom follows a population growth pattern, which is  
 (A) J – shaped  
 (B) S – shaped  
 (C) Exponential  
 (D) Linear
47. t-distribution is approximately normal for sample size  $n$   
 (A)  $\geq 30$   
 (B)  $\geq 10$   
 (C)  $\geq 15$   
 (D)  $\geq 20$

48. Two sets of data consisting of 10 and 20 observations have same mean 8 with standard deviations of 1 and 2, respectively. If the two data sets are combined, then the variance is  
 (A) 3  
 (B) 2  
 (C) 5  
 (D) 1.5
49. Match the List – I with List – II and choose the correct answer from the given codes :
- | List – I (Event)         | List – II (Date)               |
|--------------------------|--------------------------------|
| a. Earth Day             | i. 5 <sup>th</sup> June        |
| b. World Environment Day | ii. 3 <sup>rd</sup> October    |
| c. Ozone Day             | iii. 22 <sup>nd</sup> April    |
| d. World Nature Day      | iv. 16 <sup>th</sup> September |
- Codes :**
- |     | a   | b   | c   | d   |
|-----|-----|-----|-----|-----|
| (A) | i   | ii  | iv  | iii |
| (B) | iii | i   | iv  | ii  |
| (C) | ii  | i   | iii | iv  |
| (D) | iv  | iii | ii  | i   |
50. CBD stands for  
 (A) Convention on Biological Diversity  
 (B) Conservation Biodiversity Development  
 (C) Conservation Association for Biodiversity and Management  
 (D) Cumulative Plan for Biological Diversity

**Space For Rough Work**