

PAPER - II SUBJECT/CODE : Environmental Science / 23

Signature and Name of Invigilator

Serial No.

1. (Signature) _____
(Name) _____

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

2. (Signature) _____
(Name) _____

Roll No.

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(In figures as per admission card)

Time : 1¼ hours]

Test Booklet Code

A

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	परीक्षार्थियों के लिए निर्देश
1. Write your roll number in the space provided on the top of this page. 2. This paper consists of Fifty (50) multiple-choice type questions. All questions are compulsory. Each question carries 2 marks. 3. At the commencement of examination, the question booklet will be given to you. In the first five (5) minutes, you are requested to open the booklet and compulsorily examine it as below : (i) To have access to the Question Booklet, open the seal on the booklet. 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 a 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 Test Booklet Code should be entered in the OMR Sheet and 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 on the OMR Sheet given with 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 space provided in the 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 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 marking for incorrect answers. 13. In case of any discrepancy in English or Hindi version, English version will be taken as final.	1. इस पृष्ठ के ऊपर नियत स्थान पर अपना रोल नम्बर लिखिए। 2. इस प्रश्न-पत्र में पचास (50) बहुविकल्पीय प्रश्न हैं। सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न दो (2) अंक का है। 3. परीक्षा प्रारम्भ होने पर, प्रश्न-पुस्तिका आपको 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 सील निकालें। सील खुली हुई प्रश्न 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 दोबारा 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 प्राप्त कर लें। इसके लिए आपको पाँच मिनट दिये जायेंगे। उसके बाद न तो आपसे प्रश्न-पुस्तिका वापस ली जायेगी और न ही आपको अतिरिक्त समय दिया जायेगा। (iii) इस जाँच के बाद प्रश्न-पुस्तिका का कोड OMR पत्रक पर अंकित करें और OMR पत्रक की क्रम संख्या इस प्रश्न-पुस्तिका पर अंकित कर दें। 4. प्रत्येक प्रश्न के उत्तर के चार विकल्प (A), (B), (C) तथा (D) दिये गये हैं। आपको सही विकल्प 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 साथ दिये गये OMR पत्रक पर ही अंकित करने हैं। यदि आप OMR पत्रक पर दिये गये वृत्त के अलावा किसी अन्य स्थान पर उत्तर चिह्नित करते हैं, तो उसका मूल्यांकन नहीं होगा। 6. अन्दर दिये गये निर्देशों को ध्यानपूर्वक पढ़ें। 7. कच्चा काम (Rough Work) के लिए इस पुस्तिका में स्थान उपलब्ध है। 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 किसी अन्य अनुचित साधन का प्रयोग करते हैं, जैसे कि अंकित किये गये उत्तर को मिटाना या सफेद स्याही से बदलना तो आप परीक्षा के लिये अयोग्य घोषित किये जा सकते हैं। 9. आपको परीक्षा समाप्त होने पर मूल OMR पत्रक निरीक्षक महोदय को लौटाना आवश्यक है। परीक्षा समाप्ति के बाद उसे अपने साथ परीक्षा भवन से कदापि 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 उत्तर के लिए कोई नकारात्मक अंक नहीं है। 13. यदि अंग्रेजी या हिंदी विवरण में कोई विसंगति हो, तो अंग्रेजी विवरण अंतिम माना जाएगा।

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	☒	D
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 where (C) is the correct response.

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SET-A

1. Environment can be defined as—
(A) The conditions that surrounds an organism or group of organisms
(B) Relationship between human and ecosystems
(C) Conditions of climate around us
(D) Interaction between plants and animals
2. The gaseous material which is used for the synthesis of Methyl isocyanate is—
(A) Chloranil
(B) Sevin
(C) Phosgene
(D) Chlorine
3. Which year was declared as International Year of Biodiversity ?
(A) 2002
(B) 2010
(C) 2020
(D) 1972
4. During the determination of COD, sulphanilic acid is added, because—
(A) It maintains the acidic nature
(B) It precipitates the mercury ions
(C) It oxidises nitrites to nitrates
(D) It reacts with ferrous ammonium sulphate
5. Ecological Footprint is—
(A) Consumption of ecological resources
(B) The demand placed on nature by individuals or nations
(C) Total harvest of ecological/natural resources in a year
(D) Percentage of forests in an ecological region
6. Per capita biologically productive land on the planet earth is about—
(A) 5 ha
(B) 2.5 ha
(C) 3.2 ha
(D) 1.9 ha
7. A population (X) in an ecosystem follows logistic growth curve. If the carrying capacity of the system is K, the growth realisation factor is—
(A) $\frac{K - X}{X}$
(B) $\frac{K - X}{K}$
(C) $\frac{K - X}{K^2}$
(D) (K - X)
8. Which one of the following conditions would indicate that the dataset is not bell shaped ?
(A) The mean is much smaller than median
(B) The range is equal to five times the standard deviation
(C) The range is larger than interquartile range
(D) The range is double the standard deviation
9. On burning a certain amount of fuel a total of 500 million tonnes of CO₂ is released into the atmosphere. If the entire amount of CO₂ remains in the atmosphere, what will be the rise in the concentration of CO₂ in ppm ?
(A) ~ 0.236 ppm
(B) ~ 0.128 ppm
(C) ~ 2.312 ppm
(D) ~ 1.216 ppm

SET-A

10. Which of the following is a type of biodiversity extinction caused primarily due to anthropogenic activities ?
 (A) Carboniferous rain forest collapse
 (B) Permian – Triassic extinction
 (C) Cretaceous paleogene extinction
 (D) Holocene extinction
11. A thermal power station has a heat rate of 12 mJ/kWh. Its thermal efficiency is—
 (A) 30%
 (B) 36%
 (C) 40%
 (D) 25%
12. The chemical used in a fermenter with molasses as a substrate is—
 (A) Diammonium sulphate
 (B) Diammonium phosphate
 (C) Diammonium nitrate
 (D) Diammonium chloride
13. Photosynthesis can be summarized as—
 (A) $6\text{H}_2\text{O} + 6\text{CO}_2 + \text{Potential energy}$
 $\xrightarrow{\text{Chlorophyll}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
 (B) $6\text{H}_2\text{O} + 6\text{CO}_2 + \text{Chemical energy}$
 $\xrightarrow{\text{Chlorophyll}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
 (C) $6\text{H}_2\text{O} + 6\text{CO}_2 + \text{Solar energy}$
 $\xrightarrow{\text{Chlorophyll}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
 (D) $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \longrightarrow 6\text{H}_2\text{O} + 6\text{CO}_2 + \text{energy}$
14. In a salt gradient solar pond, the salinity generally varies from top to bottom of the pond as—
 (A) <5% to ~ 20%
 (B) ~ 10% to ~ 30%
 (C) ~ 20% to ~ 35%
 (D) ~ 20% to ~ 40%
15. For degrees of freedom (df) > 1, the mean (μ) of the t-distribution is—
 (A) Zero
 (B) 1
 (C) Depends on df
 (D) 2
16. The efficiency of removing SO_2 from the flue gas by limestone in wet scrubbers can be as high as—
 (A) 30%
 (B) 50%
 (C) 70%
 (D) 90%
17. Which country is reported to have highest biological diversity—
 (A) Ecuador
 (B) India
 (C) Indonesia
 (D) Brazil
18. Which of the following is an example of lotic ecosystem ?
 (A) Stream ecosystem
 (B) Pond ecosystem
 (C) Bog ecosystem
 (D) Wetland ecosystem
19. If air quality standard for carbon monoxide is 9.0 ppm V, the percentage as in mg/m^3 at 1 atm. and 25°C is—
 (A) 10.3 mg/m^3
 (B) 15.2 mg/m^3
 (C) 20.0 mg/m^3
 (D) 5.6 mg/m^3

20. Which of the following is an eigen value of

the matrix $\begin{bmatrix} 3 & -1 \\ 4 & -2 \end{bmatrix}$?

- (A) 2 (B) 0
(C) 1 (D) 3

21. Azaridine, Ethylene dibromide and Bis(chloromethyl) ether are—

- (A) Alkylating agent
(B) Hydrocarbons
(C) Hydrazines
(D) Aromatic amines

22. Environmental justice is—

- (A) Implementation of conservation policies in forest areas
(B) Sustainable development of tribal population living in the forests
(C) Civil rights with environmental protection to demand a safe and healthy environment for all
(D) Conflicts resolution between people and conservationists

23. Normality of 0.25 M phosphoric acid is—

- (A) 0.25
(B) 0.50
(C) 0.75
(D) 2.50

24. The depth of the oxidation ponds is typically—

- (A) 1 - 2 m (B) 2 - 5 m
(C) 5 - 10 m (D) 10 - 20 m

25. Ecological niche is defined as—

- (A) Environmental factors that determine a species distribution
(B) Ecological surroundings of a particular species
(C) Transition zone between two ecosystems
(D) Boundaries of an ecosystem

SET-A

26. Match List - I with List - II and choose the correct answer from the codes given below—

List - I

List - II

(Air Pollutants)

(Sources/Activities)

- (a) Carbon monoxide (1) Coal burning
(b) Nitrogen oxide (2) Cigarette smoking
(c) Sulphur dioxide (3) Chemical reaction with VOCs
(d) Ozone (4) Power and Industrial Plants

Code—

	(a)	(b)	(c)	(d)
(A)	2	4	1	3
(B)	1	2	3	4
(C)	3	1	4	2
(D)	4	3	2	1

27. Dependent variables are known as—

- (A) Rarely independent
(B) Explanatory variables
(C) Random quantification of datasets
(D) Response variable, is affected by independent variables

28. What is Ecomark ?

- (A) Label given to recycled products
(B) Label given to an environment friendly product
(C) Land mark indicating the boundaries of bioparks
(D) Label given to non-recyclable products

29. In EIA the baseline data describes—

- (A) The environmental consequences by mapping
(B) Existing environmental status of the identified study area
(C) Assessment of risk on the basis of proposal
(D) Demographic and socioeconomic data

SET-A

30. Which of the following parameters is not a good indicator of contamination of ground water ?
- (A) BOD
 - (B) Nitrates
 - (C) Silica
 - (D) Chlorides

31. Match List - I with List - II and choose the correct answer from the codes given below—

List - I	List - II
(a) Abundance	(1) Competition among members of the same species
(b) Diversity	(2) Total number of organisms in a biological community
(c) Intraspecific Competition	(3) Competition between members of different species
(d) Interspecific Competition	(4) Number of different species, ecological niche or genetic variation

Code—

	(a)	(b)	(c)	(d)
(A)	2	4	1	3
(B)	1	2	3	4
(C)	3	1	4	2
(D)	4	3	2	1

32. Chemosynthesis is—
- (A) The process in which inorganic chemicals provide energy for synthesis of organic molecules
 - (B) The process in which organic molecules provide energy for synthesis of inorganic chemicals
 - (C) Synthesis of inorganic chemicals within a short span of time
 - (D) Mixing of inorganic chemicals with organic molecules

33. Adaptation is—
- (A) The acquisition of traits that allow a species to survive in an environment
 - (B) Changing behaviour of species
 - (C) Movement of species from one ecosystem to the other ecosystem for survival
 - (D) Change in species composition due to climate

34. Which of the following is not a nonformal Environment Education and Awareness Programme ?
- (A) Global Learning and Observations to Benefit the Environment (GLOBE)
 - (B) National Environment Awareness Campaign (NEAC)
 - (C) Eco-clubs
 - (D) Environmental Education in School System

SET-A

35. An equatorial west to east remote sensing orbiting the earth at an altitude of 36,000 km is called—

(A) Sun-synchronous satellite

(B) Geostationary satellite

(C) Space shuttle

(D) Stereo imager
36. Which state of Cr (Chromium) is most toxic ?

(A) Cr_4^+

(B) Cr_3^+

(C) Cr_5^+

(D) Cr_6^+
37. Match List - I with List - II and choose the correct answer from the codes given below—

List - I	List - II
(a) Symbiosis	(1) Cooperative, mutualistic relationship for mutual benefit
(b) Mutualism	(2) Two or more species live intimately together, with their fates linked
(c) Commensalism	(3) Dependence of the parasite on its host
(d) Parasitism	(4) In which one member clearly benefits and the other apparently is neither benefited nor harmed

Code—

	(a)	(b)	(c)	(d)
(A)	2	1	4	3
(B)	1	2	3	4
(C)	3	1	4	2
(D)	4	3	2	1
38. Trophic level is defined as—

(A) Accumulation of biomass by organisms that eat plants

(B) An organism's 'feeding status' in an ecosystem

(C) The lowest layer of earth's atmosphere

(D) Ecosystem of tropical region
39. Potential energy is—

(A) Ability to do work

(B) Stored in food that we eat

(C) Stored energy that is latent but available for use

(D) The energy contained in moving object
40. The EIA report of a hydropower project would be valid upto how many years after the environmental clearance of the project ?

(A) 5 years

(B) 6 years

(C) 30 years

(D) 10 years
41. Second law of thermodynamics states that—

(A) With each successive energy transfer or transformation in a system less energy is available to do work

(B) Energy is conserved

(C) Energy is neither created nor destroyed under normal conditions

(D) Energy may be transformed but total amount does not change
42. If in the screening stage of EIA, the impact level of a developmental project is not discernible, then what step should be adopted ?

(A) Scoping stage is to be followed

(B) A rapid EIA study is to be conducted

(C) Detailed EIA study is to be conducted

(D) The project should be given Environmental Clearance

SET-A

43. Prolonged exposure to high levels of noise causes—
(i) Hearing loss
(ii) Constriction of blood vessels
(iii) Gastric ulcers
(iv) Toxicity
Identify the correct answer—
(A) (i), (ii) and (iv) only
(B) (i), (iii) and (iv) only
(C) (i), (ii) and (iii) only
(D) (i), (ii), (iii) and (iv)
44. Habitat is—
(A) Nature of species
(B) Set of environmental conditions in which a particular organism lives
(C) Climatic conditions of an area
(D) A unique ecosystem of a specific region
45. *Azolla pinnata* is a—
(A) Blue green algae
(B) Green algae
(C) Red algae
(D) Fern
46. In a typical municipal solid waste, least percentage of ash is found in—
(A) Textiles
(B) Plastic
(C) Leather
(D) Rubber
47. Which one of the following does not contribute to climatic change ?
(A) NO
(B) O₃
(C) SF₆
(D) HFCs
48. The term species refers to—
(A) All living organisms on planet earth
(B) Diversity of particular ecosystem
(C) Sum of the total richness of living beings in an ecosystem
(D) Genetically similar enough to breed in nature and produce live, fertile offsprings
49. Highly inflammable liquid/chemicals have flash point—
(A) Lower than 23°C
(B) Between 23 and 26°C
(C) Between 27 and 31°C
(D) Between 32 and 40°C
50. Photolysis of NO₂ occurs due to radiations of wavelength—
(A) < 600 nm
(B) < 550 nm
(C) < 480 nm
(D) < 390 nm

[SPACE FOR ROUGH WORK /

]

SET-A

