

Signature and Name of Invigilator

1. (Signature) _____

(Name) _____

2. (Signature) _____

(Name) _____

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)

D-8909**Test Booklet No.**

Time : 1 ¼ hours]

PAPER-II

[Maximum Marks : 100

ENVIRONMENTAL SCIENCE

Number of Pages in this Booklet : 8

Number of Questions in this Booklet : 50

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of fifty multiple-choice type of questions.
- 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 :
 - 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.
 - 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.**
 - After this verification is over, the Test Booklet Number should be entered in the OMR Sheet and the OMR Sheet Number should be entered on this Test Booklet.
- Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the oval as indicated below on the correct response against each item.
Example :

(A)	(B)	(C)	(D)
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 where (C) is the correct response.
- Your responses to the items are to be indicated in the **Answer Sheet given inside the Paper I Booklet only**. If you mark at any place other than in the ovals in the Answer Sheet, it will not be evaluated.
- Read instructions given inside carefully.
- Rough Work is to be done in the end of this booklet.
- If you write your name or put any mark on any part of the test booklet, except for the space allotted for the relevant entries, which may disclose your identity, you will render yourself liable to disqualification.
- You have to return the test question booklet and OMR Answer sheet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the Examination Hall.
- Use only Blue/Black Ball point pen.
- Use of any calculator or log table etc., is prohibited.
- Negative Marking :- For each incorrect answer, 0.5 marks shall be deducted.

परीक्षार्थियों के लिए निर्देश

- पहले पृष्ठ के ऊपर नियत स्थान पर अपना रोल नम्बर लिखिए ।
- इस प्रश्न-पत्र में पचास बहुविकल्पीय प्रश्न हैं ।
- 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 :
 - 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 ।
 - 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 ।
 - इस जाँच के बाद प्रश्न-पुस्तिका की क्रम संख्या OMR पत्रक पर अंकित करें और OMR पत्रक की क्रम संख्या इस प्रश्न-पुस्तिका पर अंकित कर दें ।
- प्रत्येक प्रश्न के लिए चार उत्तर विकल्प (A), (B), (C) तथा (D) दिये गये हैं । आपको सही उत्तर के दीर्घवृत्त को पेन से भरकर काला करना है जैसा कि नीचे दिखाया गया है ।
उदाहरण :

(A)	(B)	(C)	(D)
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 जबकि (C) सही उत्तर है ।
- प्रश्नों के उत्तर केवल प्रश्न पत्र I के अन्दर दिये गये उत्तर-पत्रक पर ही अंकित करने हैं । यदि आप उत्तर पत्रक पर दिये गये दीर्घवृत्त के अलावा किसी अन्य स्थान पर उत्तर चिह्नानंकित करते हैं, तो उसका मूल्यांकन नहीं होगा ।
- अन्दर दिये गये निर्देशों को ध्यानपूर्वक पढ़ें ।
- कच्चा काम (Rough Work) इस पुस्तिका के अन्तिम पृष्ठ पर करें ।
- 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 ।
- आपको परीक्षा समाप्त होने पर प्रश्न-पुस्तिका एवं OMR उत्तर-पत्रक निरीक्षक महोदय को लौटाना आवश्यक है और परीक्षा समाप्ति के बाद उसे अपने साथ परीक्षा भवन से बाहर न लेकर जायें ।
- केवल नीले/काले बाल प्वाइंट पेन का ही इस्तेमाल करें ।
- किसी भी प्रकार का संगणक (कैलकुलेटर) या लाग टेबल आदि का प्रयोग वर्जित है ।
- नेगेटिव अंक प्रणाली : प्रत्येक गलत उत्तर के लिए 0.5 अंक काटे जाएँगे ।

ENVIRONMENTAL SCIENCE

Paper – II

Note : This paper contains **fifty (50)** objective type questions, each question carrying **two (2)** marks. Attempt **all** the questions.

- The use of anthropoid hazard chemicals like DDT causes reduction in fish population because the chemical mimics the effect of
(A) Luteinizing hormone (B) Testosterone
(C) Estrogen (D) All of the above
- The ionizing radiation, which affects the activities of most of the enzymes is due to
(A) Photoemission of electron
(B) Interaction of α -particles, β -and γ -rays with enzymes
(C) Interaction of electron with body.
(D) Interaction of radiation with tissues.
- SDS-PAGE of tissue proteins under denaturation determines the
(A) Hydrogen bond breakage (B) Sulfide bridge breakage
(C) Subunits of protein (D) None of the above
- Intake of lead may primarily cause the damage of
(A) Brain (B) Lung
(C) Liver (D) Kidney
- Parallelism among the standard curves can be determined by one of the following.
(A) ANOVA (B) Student's-t test
(C) Chi square (D) ANCOVA
- Liquid ammonia can be used in refrigeration because of its
(A) High basicity (B) High dipole moment
(C) High heat of vaporization (D) Non-toxic nature
- The pair of molecules forming strongest intermolecular hydrogen bonds are
(A) H_2O and H_2 (B) $HCOOH$ and CH_3COOH
(C) CH_3COCH_3 and $CHCl_3$ (D) SiH_4 and SiF_6
- Which of these requires quantum nature of light for their explanation ?
(A) Diffraction (B) Polarisation
(C) Black body spectrum (D) Interference

9. The mass of 1 mole of electron is equal to
 (A) $9.1094 \times 6.16 \times 10^{-28}$ g
 (B) $9.1094 \times 10^{-31} \times 6.023 \times 10^{23}$ kg
 (C) $(9.1094 \times 10^{-31}) / 6.023 \times 10^{23}$ kg
 (D) $(6.023 \times 10^{23}) / 6.1094 \times 10^{-28}$ gm
10. Which set of stoichiometric coefficient correctly balance the equation
 a. $\text{H}_2\text{O}_2 + \text{b. KMnO}_4 + \text{c. H}_2\text{SO}_4 \rightarrow \text{d. K}_2\text{SO}_4 + \text{e. Mn SO}_4 + \text{f. H}_2\text{O} + \text{g. O}_2$
- | | | | | | | | |
|-----|---|---|---|---|---|---|---|
| | a | b | c | d | e | f | g |
| (A) | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| (B) | 1 | 2 | 3 | 1 | 2 | 4 | 3 |
| (C) | 2 | 5 | 3 | 2 | 1 | 8 | 5 |
| (D) | 5 | 2 | 3 | 1 | 2 | 8 | 5 |
11. Which of the transmutation does not take place by α -decay ?
 (A) $^{238}\text{U}_{92} \longrightarrow ^{234}\text{Th}_{90}$ (B) $^{213}\text{Bi}_{83} \longrightarrow ^{213}\text{Po}_{84}$
 (C) $^{226}\text{Ra}_{88} \longrightarrow ^{222}\text{Rn}_{86}$ (D) $^{227}\text{Ac}_{89} \longrightarrow ^{223}\text{Fr}_{87}$
12. Which radioactive element is considered under Indoor pollutants category ?
 (A) O -16 (B) N -13
 (C) Carbon 14 (D) Radon
13. Industries generating hazardous waste are classified as
 (A) Brown (B) Green
 (C) Yellow (D) Red
14. One of the following methods for disposal of municipal solid waste known to be scientific is
 (A) Open land disposal (B) Incineration
 (C) Landfill method (D) Sanitary landfill method
15. One of the following is not an In situ conservation for biological resources.
 (A) Biosphere reserve (B) National Parks
 (C) Protected areas (D) Breeding under confined areas
16. Solar ponds are used for
 (A) Salt production (B) Aquaculture
 (C) Power generation (D) All of the above

17. Biodiesel is produced in India presently from
(A) Calotropis sp (B) Catharanthus sp
(C) Jatropha sp (D) Delonix sp
18. Ozone depletion is caused by the increase in the level of
(A) Water vapour (B) Chlorofluoro carbon
(C) Oxygen (D) Carbon monoxide
19. Thermal power generation in India is carried out by burning
(A) Natural gas (B) Coal
(C) Oil (D) All of the above
20. Biogas production is the outcome of
(A) Methanogenesis (B) Pyrolysis
(C) Methanogenesis and Gasification (D) Gasification
21. Mauna Loa, in Hawaii is famous for
(A) Botanical Garden
(B) Monitoring sea level rise since 1950
(C) Biggest collection of mammals fossils
(D) Continuous monitoring of atmospheric CO₂ since 1957.
22. To generate environmental awareness Paryavaran Vahini Scheme was launched in
(A) 1998 (B) 1968
(C) 1992 (D) 1994
23. General Circulation Model (GCM's) are used to
(A) predict climate (B) predict cyclones
(C) study ocean currents (D) study temperature on wind
24. Among the following which country has lowest per capita green house gas emission ?
(A) France (B) India
(C) China (D) Mexico
25. Water (Prevention & Control of Pollution) Act 1974, industries are allowed to release waste in inland water having BOD level
(A) 100 mg/l (B) 30 mg/l
(C) 150 mg/l (D) 80 mg/l
26. Richael Carsson in her book Silent Spring has raised concern on
(A) Economical & social impacts
(B) Deforestation
(C) Climate change
(D) Impacts of agro-chemicals on ecological functions

27. The term oligotrophic refers to
 (A) Higher nutrients in water (B) High aquatic productivity
 (C) Low nutrients and low productivity (D) Algal blooms
28. Following initiative under International efforts made to have household eco-friendly refrigerators :
 (A) Kyoto Protocol (B) Basal Convention
 (C) Montreal Protocol (D) CITES
29. The 'mean' that stands for relative importance of different items in a data set is
 (A) Weighted mean (B) Harmonic mean
 (C) Arithmetic mean (D) Geometric mean
30. In symmetrical distribution pattern
 (A) Median, Mean and Mode coincide (B) Mean & Median coincide
 (C) Mean & Mode coincide (D) Mode & Median coincide
31. Which statistical device helps in analysing the co-variation of two or more variables ?
 (A) Regression (B) Correlation
 (C) Standard deviation (D) Mean of the variables
32. Stoke's Law of Settling Velocity is represented by
 (A) $V \propto d$ (B) $V \propto \frac{1}{a} n$
 (C) $V = \frac{1}{d}$ (D) $V = cd$
33. Correct arrangement in order of decreasing soil particle size
 (A) Sand, clay, silt (B) Silt, sand, clay
 (C) Sand, silt, clay (D) Clay, silt, sand
34. Comparing continental and oceanic crust
 (A) the chemical composition of crust does not vary.
 (B) the Fe content in continental crust is more than that of oceanic crust.
 (C) the Si and Al content in continental crust is more than that of oceanic crust.
 (D) the Na, Ca, Al content in oceanic crust is more than that of continental crust.
35. The size distribution of particles in soil and sediments generally follow
 (A) binomial distribution (B) normal distribution
 (C) linear distribution (D) log-normal distribution

36. Maximum density of water is at
 (A) 0 °C (B) 100 °C
 (C) -4 °C (D) 4 °C
37. The geochemical weathering process can be viewed as
 (A) Clay minerals + CO₂ \rightleftharpoons Quartz + Al₂O₃
 (B) Primary silicate + CO₂ + H₂O \rightleftharpoons clay minerals + cations + HCO₃⁻ + H₄SiO₄ + H⁺
 (C) Primary silicate + H₂O \rightleftharpoons Al₂O₃ + SiO₂ + CaO + H⁺
 (D) Clay minerals + H₂O \rightleftharpoons Fe₂O₃ + Al₂O₃ + SiO₂ + CaO
38. Which group of minerals represent
 (A) Polymorphic transformation
 (B) Non-substitutional representation
 (C) Isomorphic substitution
 (D) Unmixed presence of different non silicates
39. Garnet is a metamorphic product of
 (A) Feldspar (B) Quartzite
 (C) Mica (D) Serpentine
40. Formation of marble can be represented by
 (A) CaSiO₃ \rightleftharpoons Ca⁺² + SiO₃⁻² (B) CaO + CO₂ \rightleftharpoons CaCO₃
 (C) CaCO₃ \rightleftharpoons CaO + CO₂ (D) CaCO₃ + SiO₂ \rightleftharpoons CaSiO₃ + CO₂
41. For the precipitation of CaCO₃ from water

$$\text{Ca}^{+2} + \text{CO}_3^{-2} \rightleftharpoons \text{CaCO}_3$$
 the equilibrium constant K is 10^{-8.3}. This indicates that
 (A) Ca⁺² & CO₃⁻² concentration are equal in water
 (B) m_{CO₃⁻²} >> m_{Ca⁺²}
 (C) m_{Ca⁺²} < m_{CO₃⁻²}
 (D) m_{Ca⁺²} = $\frac{1}{m_{\text{CO}_3^{-2}}}$
42. How many sites as potential areas for biosphere reserves have been identified by the National MAB Committee for the Department of Environment ?
 (A) 13 (B) 23
 (C) 33 (D) 43

43. Which one of the following is not a permitting cryoprotectant ?
 (A) Glycerol (B) DMSO
 (C) Sucrose (D) 1, 2 – propanediol
44. The aggregation of all eco systems on the earth is referred to as
 (A) Atmosphere (B) Ecosphere
 (C) Stratosphere (D) Ionosphere
45. Which one of the following is not a biofertilizer ?
 (A) Aquatic ferns
 (B) Blue-green algae
 (C) Phosphate-Solubilising micro-organisms
 (D) Vermicompost
46. Who first used and defined “Ecology” in 1866 ?
 (A) H. Reiter (B) Haeckel
 (C) Charles Elton (D) Odum
47. CITES has following schedules in order of priority to protect animals and plants from trade :
 (A) Schedule I, II, III (B) Schedule I, I, III
 (C) Schedule III, III, I (D) Schedule II, I, III
48. Methamoglobinemia is actually caused by water pollution containing
 (A) NO_2 (B) NO_3^-
 (C) NH_4^+ (D) NO_2^-
49. Environmental Impact Assessment is mandatory for certain developmental project under one of the following legislation :
 (A) The Factories’ Act (B) Forest Act
 (C) Environment (Protection) Act (D) Air (Pollution and Control) Act
50. Which one of the following air pollution control device has highest efficiency in controlling dust ?
 (A) Wet Scruber (B) Electrostatic precipitator
 (C) Venturi Scruber (D) Cyclonic spray scruber

Space for Rough Work