

PAPER-II
ENVIRONMENTAL SCIENCES

Signature and Name of Invigilator

1. (Signature) _____
(Name) _____
2. (Signature) _____
(Name) _____

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

Roll No.

--	--	--	--	--	--	--	--

(In figures as per admission card)

Roll No. _____
(In words)

J 8916

Time : 1 ¼ hours]

[Maximum Marks : 100

Number of Pages in this Booklet : 12

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 on the OMR Sheet and the OMR Sheet Number should be entered on this Test Booklet.
- Each item has four alternative responses marked (1), (2), (3) and (4). You have to darken the circle as indicated below on the correct response against each item.
Example : ① ② ● ④
where (3) is the correct response.
- Your responses to the items are to be indicated in the **OMR Sheet given inside the Booklet only**. If you mark your response at any place other than in the circle in the OMR 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, 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.
- 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.
- Use only **Black Ball point pen provided by C.B.S.E.**
- Use of any calculator or log table etc., is prohibited.
- There is no negative marks for incorrect answers.

परीक्षार्थियों के लिए निर्देश

- इस 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 पुस्तिका 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 चेक 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 का नंबर OMR पत्रक पर अंकित करें और OMR पत्रक का नंबर इस प्रश्न-पुस्तिका पर अंकित कर दें ।
- प्रत्येक प्रश्न के लिए चार उत्तर विकल्प (1), (2), (3) तथा (4) दिये गये हैं । आपको सही उत्तर के वृत्त को पेन से भरकर काला करना है जैसा कि नीचे दिखाया गया है :
उदाहरण : ① ② ● ④
जबकि (3) सही उत्तर है ।
- प्रश्नों के उत्तर केवल प्रश्न पुस्तिका 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 ।
- अन्दर दिये गये निर्देशों को ध्यानपूर्वक पढ़ें ।
- कच्चा काम (Rough Work) इस पुस्तिका के अन्तिम पृष्ठ पर करें ।
- 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 ।
- 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 । हालाँकि आप परीक्षा समाप्ति पर मूल प्रश्न-पुस्तिका तथा OMR पत्रक की डुप्लीकेट प्रति अपने साथ ले जा सकते हैं ।
- केवल C.B.S.E. द्वारा प्रदान किये गये काले बाल प्वाइंट पेन का ही इस्तेमाल करें ।
- किसी भी प्रकार का संगणक (कैलकुलेटर) या लाग टेबल आदि का प्रयोग वर्जित है ।
- गलत उत्तरों के लिए कोई नकारात्मक अंक नहीं हैं ।



ENVIRONMENTAL SCIENCES

Paper – II

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

1. Photoionization of gas molecules maintain the temperature profile of which atmospheric layer ?
 - (1) Troposphere
 - (2) Stratosphere
 - (3) Mesosphere
 - (4) Thermosphere

2. Around the mid latitude, the surface winds are generally
 - (1) Gradient
 - (2) Geostrophic
 - (3) Subgeostrophic
 - (4) Cyclonic

3. How many biogeographic regions are reported to exist in India ?
 - (1) Five
 - (2) Seven
 - (3) Ten
 - (4) Three

4. Energy transfer and nutrient flow through various trophic levels can be described as
 - (1) Linear
 - (2) Cyclic
 - (3) Linear and cyclic respectively
 - (4) Cyclic and linear respectively

5. The highest rate at which individuals can be harvested without reducing the population size is called maximum sustainable yield of a
 - (1) Population
 - (2) Community
 - (3) Ecosystem
 - (4) Landscape

6. Leslie matrix population model is generally used to determine
- the growth of population.
 - the age distribution within population over time.
 - the prey-predator interactions.

Choose the correct answer :

- | | |
|------------------|------------------|
| (1) a only | (2) a and c only |
| (3) b and c only | (4) a and b only |

7. If ΔN_n is equal to production of new individual in the population, Δt and N represent time and initial number of individuals of a population, then natality rate per unit of population is

- | | |
|-----------------------------------|------------------------------------|
| (1) $\frac{\Delta N_n}{\Delta t}$ | (2) $\frac{\Delta N_n}{N\Delta t}$ |
| (3) $\Delta N_n - N\Delta t$ | (4) $\frac{N\Delta t}{\Delta N_n}$ |

8. In a health survey, 38 of 120 men and 24 of 80 women are found to be affected by nicotine by smoking. What is the probability of a randomly selected male being a smoker ?

- | | |
|----------|----------|
| (1) 0.32 | (2) 0.19 |
| (3) 0.38 | (4) 0.12 |

9. If for a sample size (N) of 64, the mean (\bar{X}) and standard deviation (SD) are found to be 82 and 6. Then standard error (SE) for the mean is

- | | |
|----------|----------|
| (1) 0.75 | (2) 0.14 |
| (3) 10.4 | (4) 2.2 |

10. 'Public hearing' is not mandatory for project like

- building construction project
- mining project
- oil refinery project
- river valley project

16. The committee, which reviews the EIA and EMP reports of developmental projects in Ministry of Environment, Forest and Climate Change, is called

- (1) Project Assessment Committee
- (2) Environment Appraisal Committee
- (3) Project Evaluation Committee
- (4) Environmental Clearance Committee

17. In EIA, after official notification, time given to hold public hearing is

- (1) 10 days
- (2) 15 days
- (3) 30 days
- (4) 50 days

18. The corporate social responsibility has been made mandatory since

- (1) 2010
- (2) 2014
- (3) 2015
- (4) 2013

19. The guiding principles for the National Land Utilization Policy are as follows :

- a. Inclusive growth, poverty eradication and gender equality – equal opportunities.
- b. Balanced development and intergenerational justice.
- c. Efficient utilization of resources and mitigation of impacts.
- d. Integrated and comprehensive development planning.

Choose the correct answer :

- (1) a and b only
- (2) a, b and c only
- (3) b, c and d only
- (4) a, b, c and d

20. Degradation of different categories of pesticides by soil microorganism is called

- (1) Biotransformation
- (2) Biomineralization
- (3) Bioaugmentation
- (4) Biomagnification

21. Given below are two statements. One labelled as Assertion (A) and the other labelled as Reason (R) :

Assertion (A) : CO can contribute to the photochemical smog problem in cities.

Reason (R) : It aids in formation of surface ozone.

Choose the correct answer :

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are correct and (R) is not the correct explanation of (A).
- (3) (A) is true but (R) is false.
- (4) (A) is false but (R) is true.

22. For spherical aerosol particles smaller than about 30 μm and with density much greater than air, their settling velocity varies with their size (d) as

- (1) $\propto d$
- (2) $\propto d^{-1}$
- (3) $\propto d^{-2}$
- (4) $\propto d^2$

23. Given below are two statements. One labelled as Assertion (A) and the other labelled as Reason (R) :

Assertion (A) : Sound barriers alongside motorways in urban areas are very effective in controlling noise.

Reason (R) : They act as reflectors of sound back into motorways and upwards.

Choose the correct answer :

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are correct and (R) is not the correct explanation of (A).
- (3) (A) is true but (R) is false.
- (4) (A) is false but (R) is true.

24. The effect of sulphate aerosol in the Earth's atmosphere is to

- (1) decrease precipitation
- (2) destroy ozone
- (3) cool global climate
- (4) warm global climate

25. Solar radiation of average energy ~ 1.25 eV and intensity 500 W/m^2 are incident on the surface of a solar flat plate collector. What is the approximate photon flux density impinging on the surface of the collector ?
- (1) $\sim 5 \times 10^{22}$ photons $\text{m}^{-2}\text{s}^{-1}$
 - (2) $\sim 2 \times 10^{22}$ photons $\text{m}^{-2}\text{s}^{-1}$
 - (3) $\sim 2.5 \times 10^{20}$ photons $\text{m}^{-2}\text{s}^{-1}$
 - (4) $\sim 2.5 \times 10^{21}$ photons $\text{m}^{-2}\text{s}^{-1}$
26. A solar pond based electricity generation plant has an efficiency of 5% and power output of 500 mW. If the solar insolation is 1000 W/m^2 , what is the area of solar pond ?
- (1) 5 km^2
 - (2) 10 km^2
 - (3) 1.0 km^2
 - (4) 20 km^2
27. Intended nationally determined contribution of India envisages reduction in carbon intensity by 2030 below 2005 level by what percentage ?
- (1) 22 – 25 %
 - (2) 33 – 35 %
 - (3) 35 – 40 %
 - (4) 40 – 50 %
28. By the year 2022, India's target of producing power from wind energy is
- (1) 50 GW
 - (2) 60 GW
 - (3) 75 GW
 - (4) 120 GW
29. Which among the following surfaces has maximum albedo ?
- (1) Leafy crops
 - (2) Dry sand
 - (3) Calm sea water
 - (4) Dark asphalt
30. A wetland ecosystem has a very high Biological Oxygen Demand (BOD). Which of the following statement about such a wetland is correct ?
- (1) It has high level of microbial pollution.
 - (2) It has very low level of microbial pollution.
 - (3) There is no microbial pollution.
 - (4) It is highly turbid.

31. Desertification is the process of

- (1) increase in desert area
- (2) sand dune movement
- (3) land degradation
- (4) arid zone management

32. Ecological restoration is the process of rebuilding a degraded ecosystem till

- (1) it becomes pollution free and provides solace to the people.
- (2) it becomes free of disturbance.
- (3) its structure and functions are restored.
- (4) it starts providing some ecosystem services.

33. Consider the following four statements about wetland ecosystems :

- a. They are the transitional zones between terrestrial and aquatic ecosystems.
- b. They are highly productive.
- c. They are the source of greenhouse gases.
- d. They normally occur in the floodplain of rivers.

Choose the correct answer :

- (1) a and b only
- (2) a, b and c only
- (3) b, c and d only
- (4) a, b, c and d

34. In soil conservation programme, the tillage where residues of previous crops are left in the soil is called

- (1) Reduced tillage
- (2) No tillage
- (3) Conservation tillage
- (4) Contour plowing

35. Which of the following will provide the most valuable information for determining risk of mass wasting of an area ?

- (1) Seismometer
- (2) Analysis of stereo satellite data
- (3) Measurement of acceleration due to gravity
- (4) Geological map of the region

36. The rapid downslope movement of ice or snow is called as

- (1) Mudflow
- (2) Solifluction
- (3) Lahars
- (4) Avalanches

37. The landform created by subglacial meltwater is known as

- (1) Moraine
- (2) Eskers
- (3) Cirques
- (4) Kames

38. Among the following gases, which is not emitted by volcano ?

- (1) NO_x
- (2) SO_x
- (3) CO_2
- (4) H_2S

39. In remote sensing, ground truth data is generally required for

- a. calibration of sensor
- b. analysis of remotely sensed data
- c. accuracy assessment

Choose the correct answer :

- (1) a only
- (2) b and c only
- (3) a, b and c
- (4) a and b only

40. A species the population of which is low enough for it to be at risk of becoming extinct, but not low enough that it is in imminent danger of extinction is called

- (1) Endangered species
- (2) Threatened species
- (3) Vulnerable species
- (4) Rare species

41. Landscape mosaic comprises

- (1) matrices and patches
- (2) patches and corridors
- (3) matrices, patches and corridors
- (4) matrices and corridors

42. Which of the following country is not a megadiversity centre of biodiversity ?

- (1) Columbia
- (2) India
- (3) Brazil
- (4) Argentina

43. Sclerophyllous leaves are the characteristic features of

- (1) Chaparral Vegetation
- (2) Grassland Vegetation
- (3) Tropical Vegetation
- (4) Alpine Vegetation

44. Among the plants listed below, which is not producing allergenic pollen grain ?

- (1) Mango
- (2) Neem
- (3) Fan Palm
- (4) Pine

45. A species having a dominating influence on the structure and function of a community or ecosystem is known as
- (1) Fundamental species
 - (2) Functional species
 - (3) Keystone species
 - (4) Indicator species
46. Which of the following trace atmospheric gases is not an acid rain precursor ?
- (1) Dimethyl sulfide
 - (2) Hydrogen sulfide
 - (3) Nitrous oxide
 - (4) Nitric oxide
47. According to WHO report 2015, out of 20 most polluted cities of the world, India has
- (1) 12
 - (2) 18
 - (3) 10
 - (4) 13
48. With respect to sea, increase in CO₂ abundance is not responsible for which of the following ?
- (1) Increase in pH of sea water.
 - (2) Increase in concentration of bicarbonate ions.
 - (3) Coral bleaching.
 - (4) Enhanced dissolution of calcareous materials.
49. Elements that cycle in the environment and that also have a gaseous phase at some point in their cycle include which of the following ?
- a. Phosphorus
 - b. Sulphur
 - c. Carbon
- Choose the correct answer :
- (1) a only
 - (2) b only
 - (3) b and c only
 - (4) a and c only
50. Poor aeration and high water holding capacity are characteristic features of
- (1) Sandy soil
 - (2) Loam soil
 - (3) Clay soil
 - (4) Sandy Loam soil

Space For Rough Work