PAPER-II
ENVIRONMENTAL SCIENCE

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)

D 8 9 1 3

Time : **1 $^{1}/_{4}$** 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 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) ● (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 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) ● (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, 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 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 प्वाईंट 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.

1. Mesoscale Meteorological Phenomena occur over areas of horizontal distance in the range (km)

(A) 100 – 200 km

(B) 1 – 100 km

(C) 10 – 50 km

(D) 1 – 10 km

2. The Indian monsoon period is from

(A) October to November

(B) December to February

(C) June to September

(D) March to May

3. Which of the following is <u>not</u> a reactive oxygen species ?

(A) Hydrogen peroxide

(B) Hydroxyl ion

(C) Singlet oxygen

(D) Superoxide anion

4. If air quality standard for carbon monoxide is 9.0 ppmV, the percentage as in mg/m^3 at 1 atm. at 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

5. Azaridine, Ethylene dibromide, Bis(chloromethyl) ether are

(A) Alkylating agents

(B) Hydrocarbons

(C) Hydrazines

(D) Aromatic amines

6. Normality of 0.25 M phosphoric acid is

(A) 0.25 (B) 0.50

(C) 0.75 (D) 2.50

7. Match List – I with List – II and choose the correct answer from the codes given below :

List – I (Air Pollutants)	**List – II (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 Plant

Codes :

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

8. The gaseous material which is used for the synthesis of Methyl isocyanate is

(A) Chloranil

(B) Sevin

(C) Phosgene

(D) Chlorine

9. 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

10. Which year was declared as International Year of Biodiversity ?

(A) 2002 (B) 2010

(C) 2020 (D) 1972

11. The forest biome characterised by 3-4 tree species/km^2 is

(A) Tropical (B) Temperate

(C) Boreal (D) Taiga

12. 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

13. The chemical used in a fermenter with molasses as a substrate is

(A) Diammonium sulphate

(B) Diammonium phosphate

(C) Diammonium nitrate

(D) Diammonium chloride

14. Which of the following is an example of lotic ecosystem ?

(A) Stream ecosystem

(B) Pond ecosystem

(C) Bog ecosystem

(D) Wetland ecosystem

15. Which pyramid is always straight ?

(A) Pyramid of biomass

(B) Pyramid of number

(C) Pyramid of energy

(D) Pyramid of number and biomass

16. Which of the following type of materials present in a landslide suggest that the movement was rotational ?

(A) Rockflow, Debris flow, Earthflow

(B) Rock slump, Debris slump, Earth slump

(C) Rockfall, Debris fall, Earth fall

(D) Rock topple, Debris topple, Earth topple

17. Which of the following parameters is not a good indicator of contamination in ground water ?

(A) BOD (B) Nitrates

(C) Silica (D) Chlorides

18. On an aerial photograph, the distance between the principal point and the conjugate principal point is called

(A) Relief

(B) Tilt

(C) Photo-base

(D) Focal length

19. An equatorial west to east remote sensing satellite 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

20. Which state of Cr (Chromium) is most toxic ?

(A) Cr^{4+} (B) Cr^{3+}

(C) Cr^{5+} (D) Cr^{6+}

21. **Assertion (A) :** Groundwater may get seriously contaminated in coastal areas.

Reason (R) : Groundwater overdrafts near coastal areas can contaminate groundwater supplies by allowing salt water to intrude into freshwater aquifers.

Codes :

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

(B) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

(C) (A) is true and (R) is false.

(D) (A) is false and (R) is true.

22. **Assertion (A) :** Tropical and subtropical seas are most suitable for OTEC.

Reason (R) : There is a certain minimum vertical gradient (> 25 °C/km) required for OTEC to become feasible.

Codes :

(A) Both (A) and (R) are true and (R) is the correct explanation .

(B) Both (A) and (R) are true, but (R) is not the correct explanation.

(C) (A) is true, but (R) is false.

(D) (A) is false, but (R) is true.

23. On burning a certain amount of fuel a total of 500 million tonnes of CO_2 is released to the atmosphere. If the entire amount of CO_2 remains in the atmosphere, what will be the rise in the concentration of CO_2 in ppm ?

(A) ~ 0.236 ppm (B) ~ 0.128 ppm

(C) ~ 2.312 ppm (D) ~ 1.216 ppm

24. A thermal power station has a heat rate of 12 mJ/kWh. Its thermal efficiency is

(A) 30% (B) 36%

(C) 40% (D) 25%

25. Assume that world coal production is 6.1 billion tons per year and estimated total recoverable resources of coal is 1.1 trillion tons. How long it would take to use up those reserves at current rate of production ?

(A) ~ 180 years (B) ~ 150 years

(C) ~ 120 years (D) ~ 90 years

26. 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%

27. Which region among the following is not Atmospheric Brown Cloud (ABC) hotspot ?

(A) East-Asia

(B) South Africa

(C) Amazon Basin in South America

(D) Australia

28. 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)

29. *Azolla pinnata* is a

(A) Blue green algae

(B) Green algae

(C) Red algae

(D) Fern

30. **Assertion (A) :** Eruption of the volcano Mt. Pinatobu in 1991 spewed sulphur clouds into the upper reaches of the atmosphere. The following three years were cooler.

Reason (R) : Sulphate aerosols reflect sunlight away from the Earth.

Codes :

(A) Both (A) and (R) are correct and (R) is correct explanation of (A).

(B) Both (A) and (R) are correct and (R) is not correct explanation of (A).

(C) (A) is correct (R) is incorrect.

(D) Both (A) and (R) are incorrect.

31. Photolysis of NO_2 occurs due to radiations of wavelength

(A) < 600 nm

(B) < 550 nm

(C) < 480 nm

(D) < 390 nm

32. 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%

33. The depth of the oxidation ponds is typically

(A) 1 – 2 m

(B) 2 – 5 m

(C) 5 – 10 m

(D) 10 – 20 m

34. 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 socio-economic data

35. Which one of the following does not belong to EIA methods used for assessing the impacts of developmental activities on the environment ?

(A) Checklist (B) Adhoc

(C) Network (D) Flexible

36. 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

37. 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) Detail EIA study is to be conducted.

(D) The project should be given Environmental Clearance.

38. The Committee which reviews the Environmental Impact Assessment and Environmental Management plan reports of a developmental project in Ministry of Environment and Forest is called

(A) Project Assessment Committee

(B) Project Appraisal Committee

(C) Project Evaluation Committee

(D) Project Estimate Committee

39. In a typical municipal solid waste, least percentage of Ash is found in

(A) Textiles (B) Plastic

(C) Leather (D) Rubber

40. 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

41. Which one of the following does not contribute to climate change ?

(A) NO (B) O_3

(C) SF_6 (D) HFCs

42. 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) $(K - X)$

43. 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 twice the standard deviation.

44. For degrees of freedom (df) > 1, the mean (μ) of the t-distribution is

(A) Zero

(B) 1

(C) depends on df

(D) 2

45. 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

46. Suppose a 70 kg person drinks 2L of water everyday for 70 years with a chloroform concentration of 0.10 mg/L (the drinking water standard), upper bound cancer risk for these individual will be

(A) 17 in 1 million

(B) 25 in 1 million

(C) 37 in 1 million

(D) 5 in 1 million

47. What is Ecomark ?

(A) Label given to recycled products

(B) Label given to an environment friendly products

(C) Land mark indicating the boundaries of bioparks

(D) Label given to non-recyclable products

48. An important source of Arsenic in Municipal Solid Water (MSW) is

(A) Pigments in plastics

(B) Rubber products

(C) Batteries

(D) Household pesticides

49. Which of the following is not a non-formal 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

50. REDD stands for

(A) Recurring Emission from Deforestation and Forest Degradation

(B) Reducing Environmental Degradation and Forest Degradation

(C) Reducing Emissions from Deforestation and Forest Degradation

(D) Reducing Emissions from Degradable Deposits of Wastes

UGC – NET EXAM DECEMBER 2013
KEYS – PAPER 2

Subject (89) ENVIRONMENTAL SCIENCE

Qno	Answer
1	B
2	C
3	B
4	A
5	A
6	C
7	A
8	C
9	C
10	B
11	B
12	D
13	B
14	A
15	C
16	B
17	C
18	C
19	B
20	D
21	A
22	A
23	A
24	A
25	A
26	A
27	D
28	C
29	D
30	A
31	D
32	D
33	A
34	B
35	D
36	D
37	B
38	B
39	A
40	A
41	A
42	B
43	A
44	A
45	A
46	A
47	B
48	D
49	D
50	C