

Test Booklet Code & Serial No.

प्रश्नपत्रिका कोड व क्रमांक

Paper-II

ENVIRONMENTAL SCIENCE

C

Signature and Name of Invigilator

Seat No.

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1. (Signature)

(In figures as in Admit Card)

(Name)

Seat No.

(In words)

2. (Signature)

(Name)

OMR Sheet No.

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(To be filled by the Candidate)

MAR - 31223

Time Allowed : 2 Hours]

[Maximum Marks : 200

Number of Pages in this Booklet : 20

Number of Questions in this Booklet : 100

Instructions for the Candidates

- Write your Seat No. and OMR Sheet No. in the space provided on the top of this page.
- This paper consists of **100** objective type questions. Each question will carry *two* marks. *All* questions of Paper II will be compulsory. At the commencement of examination, the question booklet will be given to the student. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as follows :
 - 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 or 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 missing pages/questions or questions repeated or not in serial order or any other discrepancy should not be accepted and correct booklet should be obtained from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given. The same may please be noted.
 - After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
- Each question 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 : where (C) is the correct response.

(A)	(B)	(C)	(D)
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
- Your responses to the items are to be indicated in the **OMR Sheet given inside the Booklet only**. If you mark 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 at the end of this booklet.
- If you write your Name, Seat 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, you will render yourself liable to disqualification.
- You have to return original OMR Sheet to the invigilator at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are, however, allowed to carry the Test Booklet and duplicate copy of OMR Sheet on conclusion of examination.
- Use only Blue/Black Ball point pen.
- Use of any calculator or log table, etc., is prohibited.
- There is no negative marking for incorrect answers.

विद्यार्थ्यांसाठी महत्वाच्या सूचना

- परीक्षार्थीनी आपला आसन क्रमांक या पृष्ठवरील वरच्या कोपऱ्यात लिहावा. तसेच आपणांस दिलेल्या उत्तरपत्रिकेचा क्रमांक त्याखाली लिहावा.
- सदर प्रश्नपत्रिकेत **100** बहुपर्यायी प्रश्न आहेत. प्रत्येक प्रश्नास **दोन** गुण आहेत. या प्रश्नपत्रिकेतील **सर्व** प्रश्न सोडविणे अनिवार्य आहे.
- परीक्षा सुरू झाल्यावर विद्यार्थ्याला प्रश्नपत्रिका दिली जाईल. सुरुवातीच्या 5 मिनिटांमध्ये आपण सदर प्रश्नपत्रिका उघडून खालील बाबी अवश्य तपासून घ्याव्यात.
 - प्रश्नपत्रिका उघडण्यासाठी प्रश्नपत्रिकेवर लावलेले सील उघडावे. सील नसलेली किंवा सील उघडलेली प्रश्नपत्रिका स्वीकारू नये.
 - पहिल्या पृष्ठावर नमूद केल्याप्रमाणे प्रश्नपत्रिकेची एकूण पृष्ठे तसेच प्रश्नपत्रिकेतील एकूण प्रश्नांची संख्या पडताळून घ्यावी. पृष्ठे कमी असलेली/कमी प्रश्न असलेली/प्रश्नांचा चुकीचा क्रम असलेली किंवा इतर त्रुटी असलेली सदोष प्रश्नपत्रिका सुरुवातीच्या 5 मिनिटातच पर्यवेक्षकाला परत देऊन दुसरी प्रश्नपत्रिका मागवून घ्यावी. त्यानंतर प्रश्नपत्रिका बदलून मिळणार नाही तसेच वेळही वाढवून मिळणार नाही याची कृपया विद्यार्थ्यांनी नोंद घ्यावी.
 - वरीलप्रमाणे सर्व पडताळून पाहिल्यानंतरच प्रश्नपत्रिकेवर ओ.एम.आर. उत्तरपत्रिकेचा नंबर लिहावा.
- प्रत्येक प्रश्नासाठी (A), (B), (C) आणि (D) अशी चार विकल्प उत्तरे दिली आहेत. त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळा/निळा करावा.
उदा. : जर (C) हे योग्य उत्तर असेल तर.

(A)	(B)	(C)	(D)
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
- या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे ओ.एम.आर. उत्तरपत्रिकेतच दर्शवावीत. इतर ठिकाणी लिहिलेली उत्तरे तपासली जाणार नाहीत.
- आत दिलेल्या सूचना काळजीपूर्वक वाचाव्यात.
- प्रश्नपत्रिकेच्या शेवटी जोडलेल्या कोऱ्या पानावरच कच्चे काम करावे.
- जर आपण ओ.एम.आर. वर नमूद केलेल्या ठिकाणाव्यतिरिक्त इतर कोठेही नाव, आसन क्रमांक, फोन नंबर किंवा ओळख पटेल अशी कोणतीही खूण केलेली आढळून आल्यास अथवा असभ्य भाषेचा वापर किंवा इतर गैरमार्गांचा अवलंब केल्यास विद्यार्थ्याला परीक्षेस अपात्र ठरविण्यात येईल.
- परीक्षा संपल्यानंतर विद्यार्थ्याने मूळ ओ.एम.आर. उत्तरपत्रिका पर्यवेक्षकांकडे परत करणे आवश्यक आहे. तथापि, प्रश्नपत्रिका व ओ.एम.आर. उत्तरपत्रिकेची द्वितीय प्रत आपल्याबरोबर नेण्यास विद्यार्थ्यांना परवानगी आहे.
- फक्त निळ्या किंवा काळ्या बॉल पेनचाच वापर करावा.
- कॅलक्युलेटर किंवा लॉग टेबल वापरण्यास परवानगी नाही.
- चुकीच्या उत्तरासाठी गुण कपात केली जाणार नाही.

MAR - 31223/II—C

Environmental Science

Paper II

Time Allowed : 120 Minutes]

[Maximum Marks : 200

Note : This Paper contains **Hundred (100)** multiple choice questions. Each question carrying **Two (2)** marks. Attempt *All* questions.

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| <p>1. Sludge from sewage treated plant is used to get methane using :</p> <p>(A) Sludge digester</p> <p>(B) Sludge vacuum filtration</p> <p>(C) Sludge drying beds</p> <p>(D) Sludge as compost</p> <p>2. Intertidal zone is :</p> <p>(A) A zone of deep water</p> <p>(B) A zone of sediment</p> <p>(C) A zone of open sea</p> <p>(D) A zone between low and high tides</p> <p>3. Role of detritus food chain in an ecosystem is :</p> <p>(A) Grazing</p> <p>(B) Transfer of food</p> <p>(C) Recycling of resources</p> <p>(D) Assimilation</p> | <p>4. Which air pollution control equipment works on the principle of centrifugal separation ?</p> <p>(A) Electrostatic precipitation</p> <p>(B) Cyclone</p> <p>(C) Wet scrubber</p> <p>(D) Bag filter</p> <p>5. On 1 : 50,000 scale survey of India, toposheet, 2 cm corresponds to</p> <p>(A) 1 km</p> <p>(B) 10 km</p> <p>(C) 20 km</p> <p>(D) 5 km</p> <p>6. An impermeable geologic formation that neither contains nor transmits water is called :</p> <p>(A) Aquifer</p> <p>(B) Aquiclude</p> <p>(C) Aquifuge</p> <p>(D) Aquitard</p> |
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| <p>7. A water body with low concentration (1 to 30%) saturation of dissolved oxygen is called</p> <p>(A) hypoxic</p> <p>(B) hyper anoxic</p> <p>(C) anoxic</p> <p>(D) hyperoxic</p> <p>8. is one of the natural hazards that involves mass movement of soil and/or rock down the slope.</p> <p>(A) Landslide</p> <p>(B) Subduction</p> <p>(C) Obduction</p> <p>(D) Snowfall</p> <p>9. What is the standard limit of pH of treated effluent ?</p> <p>(A) between 6.5 – 7.5</p> <p>(B) between 5.5 – 9.0</p> <p>(C) between 6.0 – 8.0</p> <p>(D) between 6.5 – 8.5</p> | <p>10. Living vegetation appears on false colour Infrared images.</p> <p>(A) red</p> <p>(B) black</p> <p>(C) white</p> <p>(D) blue</p> <p>11. streams are the streams that are neither controlled by dip nor by strike of rock formation but flows haphazardly.</p> <p>(A) Insequent</p> <p>(B) Resequent</p> <p>(C) Obsequent</p> <p>(D) Consequent</p> <p>12. The spectral region of electromagnetic radiation that passes through the atmosphere without much attenuation is known as :</p> <p>(A) ozone hole</p> <p>(B) atmospheric window</p> <p>(C) ozone window</p> <p>(D) black hole</p> |
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| <p>13. The first EIA notification was promulgated in India during :</p> <p>(A) 1986</p> <p>(B) 1994</p> <p>(C) 2006</p> <p>(D) 1973</p> <p>14. Which committee reviews EIA & EMP reports in Ministry of Environment Forests and Climate Change ?</p> <p>(A) Expert Appraisal Committee</p> <p>(B) Expert Assessment Committee</p> <p>(C) Project Evaluation Committee</p> <p>(D) Peer and Core Committee</p> <p>15. Which method for impact identification in EIA uses GIS ?</p> <p>(A) Checklists</p> <p>(B) Matrices</p> <p>(C) Overlays</p> <p>(D) Network</p> | <p>16. Which one of the following is <i>not</i> a part of the EIA scoping process ?</p> <p>(A) Describe the project area and area of project influence</p> <p>(B) Description of environmental impacts and creation of contingency plans</p> <p>(C) Defining a set of criteria to assess the project</p> <p>(D) Create a set of environmental and socio-economic areas that will be used in assessment</p> <p>17. The provision to establish or recognize laboratories for analysis is mentioned in :</p> <p>(A) The Water (Prevention and Control of Pollution) Act, 1974</p> <p>(B) The Air (Prevention and Control of Pollution) Act, 1981</p> <p>(C) The Environment (Protection) Act, 1986</p> <p>(D) All of the above</p> |
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| <p>18. Public Liability Insurance Act, 1991 provides relief for :</p> <ul style="list-style-type: none">(A) Victims of natural disasters(B) Victims of terrorist attacks(C) Victims of accidents occurring from handling of hazardous substances(D) Victims of accidents occurring from nuclear reactor failures <p>19. Basel convention is related to :</p> <ul style="list-style-type: none">(A) Transboundary movement of hazardous waste(B) Safe disposal of nuclear waste(C) Animal trafficking(D) Marine pollution control <p>20. What does (P & CP) stand for in Air (P & CP) Act and Water (P & CP) Act ?</p> <ul style="list-style-type: none">(A) Protection and control of pollution(B) Prevention and conservation practices(C) Prevention and control of pollution(D) Protection and conservation program | <p>21. What is the first stage in EMS process ?</p> <ul style="list-style-type: none">(A) Assign environmental responsibility(B) Establish environmental policy(C) Set environmental objectives and targets(D) Review the implementation <p>22. Part B of Environment Statement Report in Form V consists of :</p> <ul style="list-style-type: none">(A) Water and raw material consumption(B) Pollution discharged to environment(C) Hazardous waste(D) Solid waste <p>23. Grit removal in a waste water treatment plant :</p> <ul style="list-style-type: none">(A) Prevents wear and tear of pumps(B) Reduces potential for pip plugging(C) Settles heavy inert material in waste water(D) All of the above |
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| <p>24. What type of micro-organisms are found useful in activated sludge process ?</p> <p>(A) Chemoautotrophs</p> <p>(B) Photoautotrophs</p> <p>(C) Chemoheterotrophs</p> <p>(D) Photoheterotrophs</p> <p>25. The typical characteristics of tropical evergreen rainforest is</p> <p>(A) Grasses with few hardwood trees</p> <p>(B) Short, softwood trees</p> <p>(C) Tall, hardwood evergreen trees</p> <p>(D) Short, hardwood trees</p> <p>26. The logo for 'Eco-mark' scheme in India is :</p> <p>(A) Plastic Jar</p> <p>(B) Rubber Pot</p> <p>(C) Earthen Pot</p> <p>(D) Earthen Jar</p> | <p>27. Foliated and non-foliated categories are given for :</p> <p>(A) Sedimentary rock classification</p> <p>(B) Igneous rock classification</p> <p>(C) Metamorphic rock classification</p> <p>(D) Schist rock classification</p> <p>28. GRIHA stands for :</p> <p>(A) Green Rating for International Housing Assessment</p> <p>(B) General Rating for Integrated Housing Assessment</p> <p>(C) Green Rating for Integrated Habitat Assessment</p> <p>(D) General Rating for Integrated Habitat Assessment</p> <p>29. Which layer of the soil horizon is rich in inorganic nutrients as well as humus ?</p> <p>(A) D</p> <p>(B) C</p> <p>(C) B</p> <p>(D) A</p> |
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| <p>30. The most abundant element on the Earth's crust is</p> <p>(A) Aluminium</p> <p>(B) Silicon</p> <p>(C) Oxygen</p> <p>(D) Iron</p> <p>31. The range of the diameter of sand particles is :</p> <p>(A) 2.00 – 0.06 mm</p> <p>(B) 0.05 – 0.002 mm</p> <p>(C) < 0.002 mm</p> <p>(D) > 2.0 mm</p> <p>32. The equilibrium model of an ecosystem states that :</p> <p>(A) An ecosystem does not tend towards stability</p> <p>(B) An ecosystem does not return to its original state</p> <p>(C) An ecosystem will perish due to external environmental change</p> <p>(D) An ecosystem always tends towards stability</p> | <p>33. Species that occur in different geographical regions or separated by a spatial barrier are called as :</p> <p>(A) Sympatric</p> <p>(B) Allopatric</p> <p>(C) Ecological equivalents</p> <p>(D) Ecotypes</p> <p>34. "White Alkali" soils are :</p> <p>(A) Saline soil</p> <p>(B) Acid soil</p> <p>(C) Sodic soil</p> <p>(D) Saline sodic soil</p> <p>35. Organisms predominantly found on, in or near bed sediment of freshwater resources are known as :</p> <p>(A) Neuston</p> <p>(B) Plankton</p> <p>(C) Benthic</p> <p>(D) Nekton</p> |
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36. The term ISWM refers to :

- (A) International Solid Waste Management
- (B) Integrated Solid Waste Management
- (C) Integrated Solid Waste Mechanism
- (D) Integrated Solid Waste Machine

37. Match the following :

**Composition % by weight
of Garbage**

- | | |
|-------------------------|------------|
| (a) Vegetables & leaves | (i) 3.8 |
| (b) Paper | (ii) 0.62 |
| (c) Glass | (iii) 40.2 |
| (d) Plastics | (iv) 0.81 |

Codes :

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|-----------|-------|-------|------|
| (a) | (b) | (c) | (d) |
| (A) (i) | (ii) | (iii) | (iv) |
| (B) (iii) | (iv) | (i) | (ii) |
| (C) (iv) | (iii) | (ii) | (i) |
| (D) (iii) | (ii) | (iv) | (i) |

38. The sound waves collected by inner ear are transmitted to the middle ear by

- (A) Semicircular canals
- (B) Sensory cells
- (C) Tympanic membrane
- (D) Tiny bones

39. Match the following :

**Area Day Time
Limits dBC(A)**

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|-----------------|-----------------|
| (a) Industrial | (i) 55 |
| (b) Commercial | (ii) 75 |
| (c) Residential | (iii) 65 |
| (d) Silent | (iv) 50 |
| (a) | (b) (c) (d) |
| (A) (i) | (ii) (iii) (iv) |
| (B) (ii) | (iii) (i) (iv) |
| (C) (iii) | (ii) (iv) (i) |
| (D) (iv) | (iii) (i) (ii) |

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| <p>40. Which of the following energy transmitted through vacuum ?</p> <ul style="list-style-type: none">(A) Sound(B) Light(C) Electric(D) Heat <p>41. Which of the following situations represent the discharge of surplus water as surface runoff ?</p> <ul style="list-style-type: none">(A) Precipitation > Evapotranspiration ($PT > ET$)(B) Precipitation < Evapotranspiration ($PT < ET$)(C) Precipitation = Evapotranspiration ($PT = ET$)(D) Effective precipitation = Evapotranspiration ($EPT = ET$) <p>42. Which component of EIA is significant throughout life-cycle of a project ?</p> <ul style="list-style-type: none">(A) Impact identification(B) Baseline studies(C) Impact prediction(D) Impact evaluation | <p>43. Which one of the following components of solid waste has the highest heating value ?</p> <ul style="list-style-type: none">(A) Food(B) Plastics(C) Paper(D) Wood <p>44. Coliform bacteria in water are the indicators of the presence of :</p> <ul style="list-style-type: none">(A) Radioactive wastes(B) Excess fertiliser(C) Decaying organic matter(D) Human faeces <p>45. Low BOD and high COD value for a waste-water sample is the indication of :</p> <ul style="list-style-type: none">(A) higher content of biodegradable matter in waste-water(B) higher content of non-biodegradable matter in waste-water(C) higher content of chemical matter in waste-water(D) higher content of matter of biological origin |
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46. The following are the plant nutrients :

P, B, Cu, Mg, Mn, N

Select the micronutrients out of the list given below :

- (A) P, B, Cu, N
(B) B, Cu, Mn
(C) B, Cu, Mg
(D) Cu and Mn only
47. Analysis to assess burden created by a product or process on the environment is :
- (A) Life-cycle assessment
(B) Toxicity studies
(C) Chronic toxicity
(D) Acute toxicity
48. A committee of 4 people is to be appointed from 3 officers of the production department, 4 officers of the purchase department, 2 officers of the sales department and one chartered accountant. What is the probability of forming the committee that there must be one from each category ?

- (A) $\frac{2}{70}$
(B) $\frac{4}{70}$
(C) $\frac{6}{70}$
(D) $\frac{8}{70}$

49. If a certain species, say fish, reproduces only during the third year and then dies. Let an initial population of $n^\circ = n = (1000, 0, 0)$ that is of 1000 newborns, and no other fishes. Now during the first year, 25% of fish survived and then 50% of those make it to reproduction age. Then the Leslie's matrix of this situation is :

(A)
$$\begin{bmatrix} f_1 & f_2 & f_3 \\ 0.25 & 0 & 0 \\ 0 & 0.5 & 0 \end{bmatrix}$$

(B)
$$\begin{bmatrix} 0 & f_1 & f_3 \\ 0.25 & 0 & 0 \\ 0 & 0.5 & 0 \end{bmatrix}$$

(C)
$$\begin{bmatrix} 0 & 0 & f_3 \\ 0.25 & 0 & 0 \\ 0 & 0.5 & 0 \end{bmatrix}$$

(D)
$$\begin{bmatrix} 0 & 0 & f_3 \\ 0 & 0.25 & 0 \\ 0 & 0 & 0.5 \end{bmatrix}$$

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| <p>50. The forecasts on the basis of a time series are :</p> <p>(A) 100% true</p> <p>(B) True to some extent</p> <p>(C) Never true</p> <p>(D) All of the above</p> <p>51. Asbestos refers to a family of naturally occurring :</p> <p>(A) Fibrous selenium</p> <p>(B) Silicon-based minerals</p> <p>(C) Carbon-based minerals</p> <p>(D) Telerium-based minerals</p> <p>52. Which of the following is <i>not</i> an example of non-sampling risk ?</p> <p>(A) Failing to evaluate results properly</p> <p>(B) Use of an audit procedure inappropriate to achieve to a given audit objective</p> <p>(C) Obtaining an unrepresentative sample</p> <p>(D) Failure to recognize an error</p> | <p>53. Which species of mosquito is responsible for the spread of dengue ?</p> <p>(A) Aedes</p> <p>(B) Anopheles</p> <p>(C) Culex</p> <p>(D) Plasmodium</p> <p>54. The variance of a Chi-square distribution with n degrees of freedom is :</p> <p>(A) $2n$</p> <p>(B) n</p> <p>(C) n^2</p> <p>(D) \sqrt{n}</p> <p>55. If two dice are thrown, what is the probability that the sum is greater than 10 ?</p> <p>(A) $\frac{1}{6}$</p> <p>(B) $\frac{1}{36}$</p> <p>(C) $\frac{2}{12}$</p> <p>(D) $\frac{1}{24}$</p> |
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56. A continuous random variable X follows the probability law :

$$f(x) = E.x^2; 0 \leq x \leq 1$$

What is the value of E ?

- (A) 1
 - (B) 6
 - (C) 2
 - (D) 3
57. Let the value of correlation coefficient is greater than zero, the arithmetic mean of the regression coefficient is :
- (A) Greater than the correlation coefficient
 - (B) Less than the correlation coefficient
 - (C) Equal to the correlation coefficient
 - (D) All of the above

58. Wetlands occurring between terrestrial (land) on one side and deep water on another side is an example of :

- (A) Ecotone
- (B) Ecological pyramid
- (C) Ecological race
- (D) Ecological niche

59. Kaziranga National Park is in the state of :

- (A) Assam
- (B) Meghalaya
- (C) Arunachal Pradesh
- (D) Uttarakhand

60. How much will be the increase in noise when two equal intensity sound mix together ?

- (A) 2 dB(A)
- (B) 5 dB(A)
- (C) 3 dB(A)
- (D) 6 dB(A)

61. Arrange these precipitation types in increasing order of their drop size :
- Rain drizzle shower
 - Drizzle rain shower
 - Shower rain drizzle
 - Drizzle shower rain
62. Aeroallergens result in manifestation of allergic reactions group of antibodies attach to these allergens and release inflammable chemicals such as histamine from mast cells.
- IgM
 - IgG
 - IgE
 - IgA
63. Arrange the following gases in decreasing order of their concentration in atmosphere :
- CH₄ CO₂ O₃
 - CO₂ CH₄ O₃
 - O₃ CO₂ CH₄
 - CH₄ O₃ CO₂
64. 'Superbug' was a term coined for micro-organism engineered for :
- Antibiotic production
 - Probiotic production
 - Hydrocarbon degradation
 - Insulin production
65. The tropopause is located at the lowest level over (height) :
- Equator
 - Subtropics
 - High latitude and polar region
 - Mid-latitude
66. Equation of state for dry atmosphere is given by :
- $p = \frac{\rho R}{m} T$
 - $p = \frac{\alpha R}{m} T$
 - $p\alpha = \frac{R}{m}$
 - $p = \alpha RT$
67. During winter season (Jan.-Feb.) the rainfall due to NE monsoon is confined to of India.
- SE Peninsula and Kerala
 - Konkan
 - Gujarat and Rajasthan
 - Bihar and U.P.

68. Western disturbances which move in west to east direction affect the temperature, rainfall and weather of India in the following areas :
- (A) J & K and Himachal Pradesh
 - (B) Konkan
 - (C) Karnataka
 - (D) Kerala
69. Monsoon depression travelling in a N Wly direction from the Bay of Bengal produce high rainfall ?
- (A) In NW sector of the track
 - (B) In SW sector of the track
 - (C) West of the track
 - (D) East of the track
70. The gases responsible for green-house effect resulting in global warming are :
- (A) Nitrogen and Ozone
 - (B) Oxygen and Ammonia
 - (C) Methane and Carbon dioxide
 - (D) Carbon monoxide
71. Tropical Easterly Jet stream is :
- (A) Present throughout the year in tropics
 - (B) Present only during Northern Summer season over subtropics
 - (C) Present during Northern winter season over subtropics
 - (D) Present during summer monsoon season over SE Asia and India
72. Why does one need protection of ozone layer in the Stratosphere ?
- (A) To reduce UV radiation reaching earth
 - (B) To enhance UV radiation reaching ground
 - (C) To reduce visible radiation received
 - (D) To enhance visible radiation received

73. Reaction $O_3 + h\nu \rightarrow O_2 + O(^1D)$ is called as :
- (A) First order reaction
(B) Second order reaction
(C) Third order reaction
(D) All of the above
74. Psychrometer is an instrument used to measure :
- (A) Relative humidity
(B) Atmospheric pressure
(C) Relative density of liquid
(D) Amount of actual evapo-transpiration
75. What is the *correct* order of the Earth's atmospheric layers from bottom to top ?
- (A) Troposphere \rightarrow Stratosphere \rightarrow Mesosphere \rightarrow Thermosphere \rightarrow Exosphere
(B) Exosphere \rightarrow Thermosphere \rightarrow Mesosphere \rightarrow Stratosphere \rightarrow Troposphere
(C) Troposphere \rightarrow Stratosphere \rightarrow Thermosphere \rightarrow Mesosphere \rightarrow Exosphere
(D) Stratosphere \rightarrow Troposphere \rightarrow Mesosphere \rightarrow Thermosphere \rightarrow Exosphere
76. Which one of the following is the *correct* chemical formula for PAN (Peroxyacetyl nitrates)
- (A) $C_2H_6O_5N$
(B) $CO_2H_5NO_2$
(C) CH_4O_5N
(D) $C_2H_3O_5N$
77. Stratospheric ozone is known to protect the life on the earth from radiation.
- (A) Visible
(B) Ultraviolet
(C) Infrared
(D) Microwave
78. Arrange the following gases in the increasing order of their life-time in the atmosphere :
- (A) $CO_2 < CH_4 < CO$
(B) $CO_2 < CO < CH_4$
(C) $CH_4 < CO_2 < CO$
(D) $CO < CH_4 < CO_2$

79. Photovoltaic cells are used to convert energy into electrical energy.
(A) Tidal
(B) Hydro
(C) Solar
(D) Wind
80. Tropical cyclones occur on :
(A) Meso-scale
(B) Micro-scale
(C) Planetary-scale
(D) Synoptic-scale
81. An aerosol having dry aerodynamic diameter of $3.8 \mu\text{m}$ falls in the :
(A) Aitken mode
(B) Nucleation mode
(C) Coarse mode
(D) All of the above
82. What is expanded form of CPCB ?
(A) Central Pollution Control Board
(B) Central Public Control Board
(C) Central Pollution Control Bureau
(D) Commission for Pollution Control Board
83. How many bromine atoms are there in 2.44 mol Br :
(A) 14.69×10^{22} atoms
(B) 146.9×10^{24} atoms
(C) 14.69×10^{23} atoms
(D) 1.46×10^{23} atoms
84. Which of the following is *not* a nuclear disaster ?
(A) Chernobyl
(B) Love Canal
(C) Three Mile Island
(D) Fukushima
85. The mass of 10 litres of oxygen which has density of 1.43 g/L, will be :
(A) 10 g
(B) 1.43 g
(C) 14.3 g
(D) 1 g
86. Number of unpaired electrons in Fe^{++} is :
(A) 2
(B) 3
(C) 4
(D) 5

87. The correct order of increasing half-life of radioactive isotopes of ${}_{93}\text{Np}^{239}$, ${}_{90}\text{Th}^{232}$, ${}_{88}\text{Ra}^{226}$ and ${}_{6}\text{C}^{14}$ is :
- (A) ${}_{6}\text{C}^{14} < {}_{93}\text{Np}^{239} < {}_{88}\text{Ra}^{226} < {}_{90}\text{Th}^{232}$
- (B) ${}_{90}\text{Th}^{232} < {}_{88}\text{Ra}^{226} < {}_{93}\text{Np}^{239} < {}_{6}\text{C}^{14}$
- (C) ${}_{93}\text{Np}^{239} < {}_{88}\text{Ra}^{226} < {}_{6}\text{C}^{14} < {}_{90}\text{Th}^{232}$
- (D) ${}_{88}\text{Ra}^{226} < {}_{90}\text{Th}^{232} < {}_{6}\text{C}^{14} < {}_{93}\text{Np}^{239}$
88. Feldspar is :
- (A) $\text{Al}_2\text{SiO}_4(\text{OH})_2$
- (B) SiO_2
- (C) KAlSi_3O_8
- (D) Al_2O_3
89. Quarry is an :
- (A) Open coal mine
- (B) Underground coal mine
- (C) Open pit for rock mining
- (D) Explosive mine
90. Change of haematite to limonite $\text{Fe}_2\text{O}_3 \rightleftharpoons \text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$ is an example of :
- (A) Hydrolysis
- (B) Hydration
- (C) Carbonation
- (D) Chelation
91. One ppm is equal to :
- (A) 0.01%
- (B) 0.1%
- (C) 0.0001%
- (D) 0.001%
92. One Tg is equal to :
- (A) 10^6 g
- (B) 10^9 g
- (C) 10^{12} g
- (D) 10^{15} g
93. Unit of turbidity of water is :
- (A) NTU
- (B) FTU
- (C) JTU
- (D) All of the above

94. Which is the most common in the sea water ?
(A) Calcium chloride
(B) Magnesium chloride
(C) Ammonium chloride
(D) Sodium chloride
95. If the wet weight of the waste was 102.2 kg and the dry weight is 81.4 kg, calculate the percent of moisture content of the waste :
(A) 5.1%
(B) 10.15%
(C) 20.35%
(D) 25.22%
96. What is the temperature required to have fusion reaction in the Sun ?
(A) 10^{10} °K
(B) 10^8 °K
(C) 10^6 °K
(D) 10^4 °K
97. The solar radiation incident on a surface per unit time is termed as :
(A) Insolation
(B) Irradiance
(C) Radiation
(D) Conduction
98. Which one of the following is a lotic ecosystem ?
(A) Lake
(B) Pond
(C) Pool
(D) River
99. Excess level of nitrate in the drinking water causes to human infants.
(A) Itai-Itai
(B) Blue baby syndrome
(C) Fluorosis
(D) Nerve damage
100. Which one of the following is observed when analysed organically polluted water ?
(A) low D.O. and low BOD
(B) high D.O. and high BOD
(C) low D.O. and high BOD
(D) both D.O. and BOD equal

MAR - 31223/II—C

ROUGH WORK