

Test Booklet Code & Serial No.

प्रश्नपत्रिका कोड व क्रमांक

Paper-II**B****ENVIRONMENTAL SCIENCE****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)

JUN - 31220**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)
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- 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.

विद्यार्थ्यासाठी महत्वाच्या सूचना

- परिक्षार्थींनी 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 मिनीटांमध्ये आपण सदर प्रश्नपत्रिका उघडून खालील बाबी अवश्य तपासून पहाव्यात.
 - प्रश्नपत्रिका उघडण्यासाठी प्रश्नपत्रिकेवर लावलेले सील उघडावे. सील नसलेली किंवा सील उघडलेली प्रश्नपत्रिका स्विकारू नये.
 - पहिल्या पृष्ठावर नमूद केल्याप्रमाणे प्रश्नपत्रिकेची एकूण पृष्ठे तसेच प्रश्नपत्रिकेतील एकूण प्रश्नांची संख्या पडताळून पहावी. 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)
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- या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे ओ.एम.आर. उत्तरपत्रिकेतच दर्शवावीत. इतर ठिकाणी लिहिलेली उत्तरे तपासली जाणार नाहीत.
- आत दिलेल्या सूचना काळजीपूर्वक वाचाव्यात.
- प्रश्नपत्रिकेच्या शेवटी जोडलेल्या कोन्या पानावरच कच्चे काम करावे.
- जर आपण ओ.एम.आर. वर नमूद केलेल्या ठिकाणा व्यतिरिक्त 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.

JUN - 31220/II—B

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. Permanent hardness of water is caused due to :</p> <p>(A) Magnesium sulphate</p> <p>(B) Magnesium carbonate</p> <p>(C) Magnesium bicarbonate</p> <p>(D) Sodium chloride</p> <p>2. In the COD test of sewage, organic matter is oxidized by $K_2Cr_2O_7$ in the presence of :</p> <p>(A) HCl</p> <p>(B) H_2SO_4</p> <p>(C) HNO_3</p> <p>(D) HF</p> <p>3. Rate of water percolation is the lowest in :</p> <p>(A) Sandy soil</p> <p>(B) Clayey soil</p> <p>(C) Alluvial soil</p> <p>(D) Desert soil</p> | <p>4. Photomultiplier Tube (PMT) detector is used in :</p> <p>(A) Ion chromatograph</p> <p>(B) Gas chromatograph</p> <p>(C) Atomic absorption spectrometer</p> <p>(D) TOC analyzer</p> <p>5. Which one of the following is <i>not</i> a nitrogenous fertilizer ?</p> <p>(A) Urea</p> <p>(B) DAP</p> <p>(C) Ammonium sulphate</p> <p>(D) Superphosphate</p> <p>6. Which one of the following is <i>not</i> a micronutrient for plants ?</p> <p>(A) Zn</p> <p>(B) Cu</p> <p>(C) Mn</p> <p>(D) S</p> |
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| <p>7. Empirical formula CH_2O will give the following compound for four number of its empirical formula</p> <p>(A) $\text{C}_4\text{H}_{16}\text{O}_4$</p> <p>(B) $\text{C}_4\text{H}_8\text{O}_4$</p> <p>(C) $\text{C}_4\text{H}_6\text{O}_6$</p> <p>(D) $\text{C}_4\text{H}_{10}\text{O}_8$</p> <p>8. How many moles of iron are there in 122 of Fe ? (MW of iron is 55.858)</p> <p>(A) 1.28 mol Fe</p> <p>(B) 1.18 mol Fe</p> <p>(C) 2.18 mol Fe</p> <p>(D) 8.12 mol Fe</p> <p>9. The mass of an ice cube having each side of 3.0 cm and density 0.92 g/cm^3 will be :</p> <p>(A) 28.4 g</p> <p>(B) 84.28</p> <p>(C) 42.8</p> <p>(D) 24.88</p> | <p>10. Which of the following is <i>not</i> a flexible mechanism under the Kyoto Protocol ?</p> <p>(A) Joint implementation</p> <p>(B) Carbon trading</p> <p>(C) Clean development mechanism</p> <p>(D) Emissions trading</p> <p>11. The number of electrons in Fe^{++} is :</p> <p>(A) 26</p> <p>(B) 24</p> <p>(C) 18</p> <p>(D) 16</p> <p>12. Facultative ponds method used for treatment of organic waste involves :</p> <p>(A) Aerobic process</p> <p>(B) Anaerobic process</p> <p>(C) Aerobic and anaerobic process</p> <p>(D) All of the above</p> <p>13. Conversion of organic nitrogen into inorganic nitrates which plant can take up is known as :</p> <p>(A) Ammonification</p> <p>(B) Denitrification</p> <p>(C) Nitrification</p> <p>(D) Deeutrophication</p> |
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| <p>14. A progressive accumulation of toxic substances through food-chain result into :</p> <p>(A) Bioaugmentation</p> <p>(B) Biostimulation</p> <p>(C) Biofiltration</p> <p>(D) Biomagnification</p> | <p>17. One of the major criteria used in identification of biodiversity 'Hot spot' is :</p> <p>(A) Rare species</p> <p>(B) Endemic species</p> <p>(C) Area covered by vegetation</p> <p>(D) Area with economical species</p> |
| <p>15. There is a relationship of D.O. and free CO₂ in water, which one of the following is <i>correct</i> ?</p> <p>(A) Higher D.O. and high free CO₂</p> <p>(B) Lower free CO₂ and low D.O.</p> <p>(C) Both D.O. and free CO₂ equal</p> <p>(D) Low D.O. and high free CO₂</p> | <p>18. In India higher endemic species are reported from :</p> <p>(A) Desert</p> <p>(B) Western Ghats</p> <p>(C) Cold Himalayan region</p> <p>(D) Runn of Kutch</p> |
| <p>16. Plant species which have developed special adaptation such as pneumatophores for respiration are seen in :</p> <p>(A) Mangrove ecosystem</p> <p>(B) Lotic ecosystem</p> <p>(C) Lake ecosystem</p> <p>(D) Desert ecosystem</p> | <p>19. Fuel Bio-gas is predominantly :</p> <p>(A) Hydrogen</p> <p>(B) Carbon monoxide</p> <p>(C) Ethane</p> <p>(D) Methane</p> |
| | <p>20. In potable water analysis <i>Escherichia coli</i> is used as indicator because <i>E. coli</i> is :</p> <p>(A) Enteropathogen</p> <p>(B) Opportunistic pathogen</p> <p>(C) Common inhabitant of human intestine</p> <p>(D) Easily cultured and detected</p> |

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| <p>21. Which of these bacteria do <i>not</i> produce insecticidal proteins ?</p> <p>(A) <i>Bacillus spherices</i></p> <p>(B) <i>Paenibacillus popillae</i></p> <p>(C) <i>Bacillus thuringiensis</i></p> <p>(D) <i>Bacillus stearrowthermophilus</i></p> <p>22. Green India Mission is a part of :</p> <p>(A) Millennium Development Goals</p> <p>(B) National Action Plan for Climate Change</p> <p>(C) River Action Plan</p> <p>(D) Swatch Bharat Abhiyan</p> <p>23. Influenza, measles and mumps are borne infections.</p> <p>(A) Air</p> <p>(B) Water</p> <p>(C) Soil</p> <p>(D) Food</p> <p>24. Electrical output of a solar cell depends on :</p> <p>(A) Intensity of solar radiation</p> <p>(B) Heat component of solar radiation</p> <p>(C) UV component of solar radiation</p> <p>(D) MIR component of solar radiation</p> | <p>25. Nuclear fusion requires high temperature because :</p> <p>(A) All nuclear reactions absorb energy</p> <p>(B) The binding energy must be supplied from an external source</p> <p>(C) The mass defect must be supplied</p> <p>(D) All nuclear reaction release energy</p> <p>26. Series of waves that propagate at high speeds, travel great distances, which occurs when a body of water such as an ocean gets rapidly displaced is termed as</p> <p>(A) Storm</p> <p>(B) Tsunami</p> <p>(C) Flood</p> <p>(D) Hurricane</p> |
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27. A is an equatorial orbit of satellite at approximately 36000 km altitude, which completes one orbit around the earth in the same time needed for earth to rotate about its axis.
- (A) Sunynchronous orbit
 - (B) Geostationary orbit
 - (C) Low earth orbit
 - (D) Elliptical orbit
28. are basic and still widely used form of Remote Sensing.
- (A) Radar data
 - (B) MSS data
 - (C) Aerial photographs
 - (D) Hyperspectral data
29. Remote sensing techniques make use of properties of emitted, reflected or diffracted by sensed objects.
- (A) Electric waves
 - (B) Sound waves
 - (C) Electromagnetic waves
 - (D) Wind waves
30. Baseline data in EIA describes :
- (A) Cost Benefit analysis
 - (B) Assessment of risk
 - (C) Environmental consequences
 - (D) Existing environmental status of the identified study area
31. Public hearing is conducted :
- (A) Prior to site selection
 - (B) Prior to approval of terms of reference
 - (C) After environmental clearance
 - (D) After preparation of Draft EIA
32. Which method for impact identification in EIA links action to impact ?
- (A) Overlays
 - (B) Matrices
 - (C) Checklists
 - (D) Ad hoc
33. What is the first step in environmental clearance ?
- (A) Project appraisal
 - (B) Project identification
 - (C) Project monitoring
 - (D) Project implementation

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| <p>34. Extended Producer Responsibility is covered in :</p> <ul style="list-style-type: none">(i) Construction and Demolition Waste Management Rules, 2016.(ii) Plastic Waste Management Rules, 2016.(iii) E-Waste (Management) Rules, 2016. <p>(A) (i) and (ii)</p> <p>(B) (i) and (iii)</p> <p>(C) (ii) and (iii)</p> <p>(D) All of the above</p> <p>35. Contaminated waste (recyclable) is to be stored in which colour coded container as per the Biomedical Waste (Management and Handling) Rules, 2016 :</p> <p>(A) Yellow</p> <p>(B) Red</p> <p>(C) White</p> <p>(D) Blue</p> | <p>36. Which of the following is <i>not</i> an objective of the National Forest Policy ?</p> <ul style="list-style-type: none">(A) Maintenance of environmental stability(B) Checking soil erosion and denudation in catchment areas of rivers(C) Conservation and protection of wildlife(D) Increasing the forest/tree cover substantially in the country <p>37. Which Act led to the constitution of CPCB/SPCB's ?</p> <ul style="list-style-type: none">(A) Air (P & CP) Act 1981(B) Water (P & CP) Act 1974(C) Wildlife Protection Act 1972(D) Environmental Protection Act 1986 <p>38. Which of the following standards from the ISO 14000 series is a normative standard ?</p> <ul style="list-style-type: none">(A) ISO 14001(B) ISO 14020(C) ISO 14040(D) ISO 14015 |
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| <p>39. What is the last date for submission of ESR to SPCB every year ?</p> <p>(A) 30 June</p> <p>(B) 31 August</p> <p>(C) 31 January</p> <p>(D) 30 September</p> <p>40. Anaerobic treatment of effluents has the following advantage :</p> <p>(A) Reduction of COD/BOD</p> <p>(B) Generation of methane</p> <p>(C) Low power requirement</p> <p>(D) All of the above</p> <p>41. Which of the following sequences of unit operations in waste water treatment is <i>correct</i> ?</p> <p>(A) Grit removal → Screening → Clarification → Biological treatment</p> <p>(B) Screening → Grit removal → Biological treatment → Clarification</p> <p>(C) Biological treatment → Screening → Grit removal → Clarification</p> <p>(D) Screening → Grit removal → Clarification → Biological treatment</p> | <p>42. The largest scale of biogeographic division of the land surfaces of the earth based on evolutionary distribution patterns of terrestrial plants and animals is</p> <p>(A) Biogeographic realms</p> <p>(B) Oriental realm</p> <p>(C) Ethiopian realm</p> <p>(D) Neotrophic realm</p> <p>43. Which is a decentralised system set up created by MOEFCC using distributed network of databases for collection of environmental information ?</p> <p>(A) ENVIS</p> <p>(B) NEAC</p> <p>(C) NCERT</p> <p>(D) NMNH</p> |
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| <p>44. Why is it good to buy Eco-marked products, because ?</p> <p>(i) These products have lower environmental impact.</p> <p>(ii) Their production involves the use of non-renewable energy.</p> <p>(iii) Buying such products makes a commitment to the future environment.</p> <p>(iv) Products cannot be recycled.</p> <p>(A) (i), (iv)</p> <p>(B) (iii), (iv)</p> <p>(C) (i), (iii)</p> <p>(D) (ii), (iii)</p> <p>45. The soil is a result of the actions and reciprocal influence of parent rocks, climate, topography, plants, animals and age of the land. It can be represented by the formula where S-soil, g-geology, e-environment, b-biological influence and t-time :</p> <p>(A) $S = \frac{(g.b)}{e} \Delta t$</p> <p>(B) $S = \frac{(e.b)}{g} \Delta t$</p> <p>(C) $S = (g.e.t) \Delta b$</p> <p>(D) $S = (g.e.b) \Delta t$</p> | <p>46. The plants growing on soils with high salt concentrations are called</p> <p>(A) Cryptophytes</p> <p>(B) Hemi-cryptophytes</p> <p>(C) Halophytes</p> <p>(D) Pteridophytes</p> <p>47. Brown soils are generally associated with areas originally covered by :</p> <p>(A) Ice</p> <p>(B) Water</p> <p>(C) Deciduous forest</p> <p>(D) Mangrove forest</p> <p>48. The addition of lime into the soil will :</p> <p>(A) Increase porosity of soil</p> <p>(B) Change soil texture</p> <p>(C) Reduce soil acidity</p> <p>(D) Cause decomposition of organic material</p> |
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| <p>49. The loam soil is composed of :</p> <p>(A) Clay + Sand</p> <p>(B) Sand + Silt</p> <p>(C) Sand + Gravel + Silt + Clay</p> <p>(D) Sand + Gravel + Clay</p> <p>50. The association between sea anemone and Hermit crab is :</p> <p>(A) Protocooperation</p> <p>(B) Exploitation</p> <p>(C) Predation</p> <p>(D) Antibiosis</p> <p>51. Which of the following sequence of general process of succession is correct ?</p> <p>(A) Stabilization → Nudation → Invasion → Competition → Reaction</p> <p>(B) Nudation → Invasion → Competition → Reaction → Stabilization</p> <p>(C) Invasion → Nudation → Competition → Reaction → Stabilization</p> <p>(D) Competition → Reaction → Stabilization → Invasion → Nudation</p> | <p>52. An urn shaped age pyramid indicates :</p> <p>(A) Declining population</p> <p>(B) Stable population</p> <p>(C) Young population</p> <p>(D) Increasing population</p> <p>53. A narrow zone of habitat transition tends to increase in variety and density of species is known as :</p> <p>(A) Ordination</p> <p>(B) Continuum</p> <p>(C) Edge effect</p> <p>(D) Ecotype</p> <p>54. Electrostatic precipitators work on the principle of :</p> <p>(A) Gravity settling</p> <p>(B) Centrifugal separation</p> <p>(C) Charge separation</p> <p>(D) All of the above</p> <p>55. What is the maximum limit for BOD of effluent to be discharged on land ?</p> <p>(A) 30 mg/L</p> <p>(B) 100 mg/L</p> <p>(C) 250 mg/L</p> <p>(D) 10 mg/L</p> |
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56. In an ecosystem one species inhibits by another species by releasing noxious or toxic substance is known as :

- (A) Chelation
- (B) Allelopathy
- (C) Mesocosms
- (D) Microcosm

57. Match the following and select the *correct* answer from the codes given below it :

List-I**List-II**

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|--------------|-------------|
| (a) Plastics | (i) 4500 |
| (b) Paper | (ii) 18500 |
| (c) Food | (iii) 32500 |
| (d) Wood | (iv) 16500 |

Codes :

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

58. Match the following and select the *correct* answer from the codes given below :

**Nature of Hazardous
Substance**

- (a) Ignitable
- (b) Corrosive
- (c) Carcinogenic
- (d) Toxic

Example

- (i) Lead salts
- (ii) Polyaromatic hydrocarbons
- (iii) Sulphuric acid
- (iv) White phosphorous

Codes :

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

59. Match the following and select the *correct* answer from the codes given below :

Method of Waste

Management

- (a) Sanitary landfill
- (b) Incineration
- (c) Recycling
- (d) Sedimentation

Process

- (i) Removal of larger particles
- (ii) Conversion of waste into usable items
- (iii) Burning of waste
- (iv) Burying below earth surface

Codes :

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

60. What is the estimated per capita solid waste generation in the small towns of India ?

- (A) 0.1 kg
- (B) 0.3 to 0.4 kg
- (C) 0.5 kg
- (D) 0.5 to 0.6 kg

61. Recent data on the vertical distribution of ozone in the atmosphere show :

- (A) Increase in ozone both stratosphere and troposphere
- (B) Decrease in ozone both in stratosphere and troposphere
- (C) Decrease in stratospheric ozone and increase in troposphere ozone
- (D) Increase in tropospheric ozone and decrease in stratosphere ozone

62. Match the following and select the *correct* answer from the codes given below :

Noise intensity (dB)

- (a) 80
- (b) 110
- (c) 120
- (d) 140

Health Hazards

- (i) Stimulation of reception in skin
- (ii) Annoying
- (iii) Pain in ear, insanity
- (iv) Pain threshold

Codes :

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

63. The range of sound frequencies for normal human conversation are
- (A) 500 to 2000 Hertz
 - (B) 10 to 10,000 Hertz
 - (C) 100 to 10,000 Hertz
 - (D) 50 to 5,000 Hertz

64. The sound velocity is high in the media.
- (A) Liquid
 - (B) Solid
 - (C) Gases
 - (D) Vapors

65. Match the following and select the *correct* answer from the codes given below :

**Method of Impact
Identification**

- (a) Simple matrix
- (b) Cross impact matrix
- (c) Descriptive checklist
- (d) Simple checklist

Example

- (i) Asian Development Bank (1987)
- (ii) Carstea et al (1976)
- (iii) Johnson and Bell (1975)
- (iv) Leopold et al (1971)

Codes :

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

66. What is the sound velocity in the air at 0°C ?

- (A) 1269 m/s
- (B) 331 m/s
- (C) 1435 m/s
- (D) 5130 m/s

67. The last period's forecast was 70 and demand was 60. What is the simple exponential smoothing forecast with alpha of 0.4 for the next period ?

- (A) 63.8
- (B) 65
- (C) 62
- (D) 66

68. Which of the following is *true* regarding the two smoothing constants of the Forecast Including Trend (FIT) model ?

- (A) Their values are determined independently
- (B) They are called alpha and beta, producer risk and consumers risk
- (C) Alpha is always smaller than beta
- (D) All of the above

69. The sampling procedure in which an interviewer is asked to interview 25 teachers, 50 public servants and 25 farmers is called :
- (A) Stratified sampling
 - (B) Accidental sampling
 - (C) Spatial sampling
 - (D) Quota sampling
70. The Chi-square distribution is :
- (A) Multimodal
 - (B) Symmetrical
 - (C) Continuous
 - (D) Discrete
71. In a partially destroyed laboratory record of an analysis of correlation data, the results only are legible as variance of $X = 9$ and regression equations are $8X - 10Y + 66 = 0$ and $40X - 18Y = 214$. What is the mean values of X and Y ?
- (A) 12 and 17
 - (B) 13 and 17
 - (C) 17 and 12
 - (D) 17 and 13
72. The probability of type one error is :
- (A) Probability of rejecting null hypothesis (accepting alternative hypothesis) when null hypothesis is true
 - (B) Probability of accepting null hypothesis (rejecting alternative hypothesis) when null hypothesis is false
 - (C) Probability of rejecting null hypothesis (accepting alternative hypothesis) when null hypothesis is false
 - (D) Probability of accepting null hypothesis (rejecting) alternative hypothesis when null hypothesis is true
73. In case of n attributes the total number of ultimate class frequencies is :
- (A) n
 - (B) $2n$
 - (C) 2^n
 - (D) 4^n

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| <p>74. If X_1, X_2, \dots, X_n is a random sample of size n from a normal population with mean μ and variance σ^2. What is the simple hypothesis of the following ?</p> <p>(A) $\mu < \mu_0, \sigma^2 = \sigma_0^2$</p> <p>(B) $\mu = \mu_0, \sigma^2 = \sigma_0^2$</p> <p>(C) $\mu = \mu_0, \sigma^2 < \sigma_0^2$</p> <p>(D) $\mu = \mu_0, \sigma^2 > \sigma_0^2$</p> <p>75. In a series of 100 houses actually invaded by smallpox, 70% of the inhabitants are attacked and 85% have been vaccinated. What is the lowest percentage of the vaccinated that must have been attacked ?</p> <p>(A) 64.7%</p> <p>(B) 63.7%</p> <p>(C) 62.7%</p> <p>(D) 61.7%</p> <p>76. For a singular square matrix :</p> <p>(A) its determinant is greater than zero</p> <p>(B) its determinant is less than zero</p> <p>(C) its determinant is equal to zero</p> <p>(D) all of the above</p> | <p>77. Documentation of comprehensive information on availability and knowledge of local biodiversity resources is known as :</p> <p>(A) Community biodiversity record</p> <p>(B) People's biodiversity registers</p> <p>(C) Revenue record</p> <p>(D) Panchayat record</p> <p>78. National Biodiversity Authority is setup at :</p> <p>(A) Bhopal</p> <p>(B) Chennai</p> <p>(C) Bhubaneswar</p> <p>(D) Ahmedabad</p> <p>79. What is the full form of UNFCCC with respect to global warming convention ?</p> <p>(A) United Nations Framework Convention on Climate Change</p> <p>(B) United Nations Federation Convention on Climate Change</p> <p>(C) United Nations Framework Center on Climate Change</p> <p>(D) United Nations Federation Center on Climate Change</p> <p>80. Kaziranga National Park in Assam is known for :</p> <p>(A) One horn Rhino</p> <p>(B) Crocodile</p> <p>(C) Bengal Tiger</p> <p>(D) Bison</p> |
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| <p>81. The temperature at Tropical Tropopause (Ht 17 km) is about °C.</p> <p>(A) –75</p> <p>(B) –95</p> <p>(C) –50</p> <p>(D) –60</p> <p>82. In a thermodynamic system entropy ϕ is defined as where dh is heat added, p and T are pressure and temperature.</p> <p>(A) dh/p</p> <p>(B) dh/T</p> <p>(C) dh/T^2</p> <p>(D) dh/pT</p> <p>83. In case of temperature inversion :</p> <p>(A) Lapse rate is positive</p> <p>(B) Temperature is constant with height</p> <p>(C) Temperature is not a function of z</p> <p>(D) Lapse rate is negative</p> | <p>84. Coriolis force is a function of</p> <p>(A) Altitude</p> <p>(B) Latitude</p> <p>(C) Longitude</p> <p>(D) Pressure</p> <p>85. Warm ocean current flowing from east coast of U.S. towards Europe is known as :</p> <p>(A) Kuroshio current</p> <p>(B) Benguela current</p> <p>(C) Gulf stream</p> <p>(D) Peru current</p> <p>86. Droughts of All India scale such as 1972 drought are associated with EL Nino events.</p> <p>(A) Always</p> <p>(B) Never</p> <p>(C) Rarely</p> <p>(D) Sometimes</p> |
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| <p>87. Prevailing wind direction at a station 'A' is mostly NE'ly at the height of 10 m. A plume of smoke at that height will drift towards :</p> <p>(A) North</p> <p>(B) East</p> <p>(C) South-West</p> <p>(D) North-West</p> <p>88. Evaporation and precipitation over the earth changes with latitude. Evaporation exceeds precipitation in of the Northern hemisphere.</p> <p>(A) Polar region</p> <p>(B) Subtropical region</p> <p>(C) Equatorial region</p> <p>(D) Latitude region</p> <p>89. Harmful UV radiation emanating from the sun is prevented from reaching the earth surface by the presence of ozone in the :</p> <p>(A) Mesosphere</p> <p>(B) Thermosphere</p> <p>(C) Stratosphere</p> <p>(D) Troposphere</p> | <p>90. The greenhouse gases trap the energy reflected :</p> <p>(A) From the earth and keeps the earth cool</p> <p>(B) From the earth and keeps the earth warm</p> <p>(C) On its way from the sun and keeps the earth cool</p> <p>(D) On its way from the sun and keeps the earth warm</p> <p>91. Hydro energy is the energy produced from :</p> <p>(A) Sunlight</p> <p>(B) Water</p> <p>(C) Coal</p> <p>(D) Fossil fuel</p> <p>92. Which one of the following is the most abundant gas in the stratosphere ?</p> <p>(A) O₃</p> <p>(B) NO₂</p> <p>(C) CO</p> <p>(D) C₆H₆</p> |
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| <p>93. What are direct effects of increasing amount of smoke in the atmosphere ?</p> <p>(A) Reduced visibility</p> <p>(B) Poor air quality</p> <p>(C) Formation of acid rain</p> <p>(D) All of the above</p> <p>94. Which one of the following is a secondary pollutant ?</p> <p>(A) SO₂</p> <p>(B) O₃</p> <p>(C) CO</p> <p>(D) NO</p> <p>95. Solar energy can be converted directly into electric energy with the help of :</p> <p>(A) Photovoltaic cell</p> <p>(B) Dry cell</p> <p>(C) Rechargeable cell</p> <p>(D) Photothermal device</p> <p>96. Which one of the following <i>does not</i> contribute significantly to global warming ?</p> <p>(A) NO</p> <p>(B) O₃</p> <p>(C) SF₆</p> <p>(D) HFCs</p> | <p>97. Scintillation counter is used mainly for the determination of :</p> <p>(A) α-particles</p> <p>(B) β-particles</p> <p>(C) γ-particles</p> <p>(D) β and γ-particles only</p> <p>98. Which clay mineral has hydrogen bond ?</p> <p>(A) Kaolinite</p> <p>(B) Vermiculite</p> <p>(C) Beidellite</p> <p>(D) Montmorillonite</p> <p>99. The chemical formula of Talc mineral is :</p> <p>(A) CaF₂</p> <p>(B) CaSO₄.2H₂O</p> <p>(C) MgSi₄O₁₀ (OH)₂</p> <p>(D) SiO₂</p> <p>100. Mass spectrometers are used to determine :</p> <p>(A) Bulk properties of sample</p> <p>(B) Relative mass of atoms</p> <p>(C) Acidity of the sample</p> <p>(D) Absorption of light</p> |
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JUN - 31220/II—B

ROUGH WORK