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FOR MAHA SET PREPARATION

MAHA SET 2024 Paper II Environmental Sciences Set A Question Paper

EXAM	YEAR	TYPE
MAHA SET	2024	Question Paper

Test Booklet Code & Serial No.
प्रश्नपत्रिका कोड व क्रमांक

A

Paper-II
ENVIRONMENTAL SCIENCE

Signature and Name of Invigilator

1. (Signature) .....

(Name) .....

2. (Signature) .....

(Name) .....

Seat No. | | | | | | | |

(In figures as in Admit Card)

Seat No. .....

(In words)

OMR Sheet No. | | | | | | | |

(To be filled by the Candidate)

APR - 31224

Time Allowed : 2 Hours] **[Maximum Marks : 200**

Number of Pages in this Booklet : **24** Number of Questions in this Booklet : **100**

Instructions for the Candidates

1. Write your Seat No. and OMR Sheet No. in the space provided on the top of this page.
2. This paper consists of **100** objective type questions. Each question will carry *two* marks. *All* questions of Paper II will be compulsory.
3. 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 :
   (*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 or 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 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.
   (*iii*) After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
4. 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) ● (D)

5. 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.
6. Read instructions given inside carefully.
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8. 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.
9. 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.
10. Use only Blue/Black Ball point pen.
11. Use of any calculator or log table, etc., is prohibited.
12. There is no negative marking for incorrect answers.

विद्यार्थ्यांसाठी महत्त्वाच्या सूचना

1. परीक्षार्थींनी आपला आसन क्रमांक या पृष्ठावरील वरच्या कोपऱ्यात लिहावा. तसेच आपणांस दिलेल्या उत्तरपत्रिकेचा क्रमांक त्याखाली लिहावा.
2. सदर प्रश्नपत्रिकेत 100 बहुपर्यायी प्रश्न आहेत. प्रत्येक प्रश्नास **दोन** गुण आहेत. या प्रश्नपत्रिकेतील **सर्व** प्रश्न सोडविणे अनिवार्य आहे.
3. परीक्षा सुरू झाल्यावर विद्यार्थ्याला प्रश्नपत्रिका दिली जाईल. सुरुवातीच्या 5 मिनिटांमध्ये आपण सदर प्रश्नपत्रिका उघडून खालील बाबी अवश्य तपासून पहाव्यात.
   (*i*) प्रश्नपत्रिका उघडण्यासाठी प्रश्नपत्रिकेवर लावलेले सील उघडावे. सील नसलेली किंवा सील उघडलेली प्रश्नपत्रिका स्वीकारू नये.
   (*ii*) 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.
   (*iii*) वरीलप्रमाणे सर्व पडताळून पाहिल्यानंतरच प्रश्नपत्रिकेवर ओ.एम.आर. उत्तरपत्रिकेचा नंबर लिहावा.
4. 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) ● (D)

5. या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे **ओ.एम.आर. उत्तरपत्रिकेतच दर्शवावीत.** इतर ठिकाणी लिहिलेली उत्तरे तपासली जाणार नाहीत.
6. आत दिलेल्या सूचना काळजीपूर्वक वाचाव्यात.
7. प्रश्नपत्रिकेच्या शेवटी जोडलेल्या कोऱ्या पानावरच कच्चे काम करावे.
8. 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.
9. 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.
10. फक्त निळ्या किंवा काळ्या बॉल पेनचाच वापर करावा.
11. कॅलक्युलेटर किंवा लॉग टेबल वापरण्यास परवानगी नाही.
12. चुकीच्या उत्तरासाठी गुण कपात केली जाणार नाही.

APR - 31224/II—A

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APR - 31224/II—A

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.

1. A good example of raster data is .....

(A) Satellite imagery

(B) Railway line

(C) Dug wells

(D) Airports

2. The process by which water is released from plants into the atmosphere is known as :

(A) Condensation

(B) Transpiration

(C) Evaporation

(D) Precipitation

3. Which law of thermodynamics is used to understand the concept of energy conservation ?

(A) Zeroth law

(B) First law

(C) Second law

(D) Third law

4. When was Namami Gange project launched ?

(A) 2011

(B) 2012

(C) 2014

(D) 2002

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5. In which atmospheric condition is the environmental lapse rate less than the moist adiabatic lapse rate ?

(A) Absolutely stable

(B) Absolutely unstable

(C) Conditionally stable

(D) Conditionally unstable

6. In which year was the United Nations Environment Program established ?

(A) 1962

(B) 1982

(C) 1972

(D) 2022

7. In which thermodynamic process does a system exchange heat with its surroundings but does no work and there is no change in internal energy ?

(A) Isobaric process

(B) Isothermal process

(C) Adiabatic process

(D) Isochoric process

8. In which direction does the Coriolis force deflect moving air in the Northern Hemisphere ?

(A) East

(B) West

(C) North

(D) South

9. The process of thermal expansion causing seawater to rise is primarily a result of :

(A) Increased solar radiation

(B) Greenhouse gas emissions

(C) Changes in ocean salinity

(D) Ozone hole

10. A remote sensing method that uses light in the form of a pulsed laser is called .....

(A) RADAR

(B) LIDAR

(C) NOAA

(D) MODIS

11. Which of the following solutions has the lowest pH ?

(A) 0.1 M NaCl

(B) 0.1 M NaOH

(C) 0.1 M NaF

(D) 0.1 M NH_3

12. Peroxyacetyl nitrate (PAN) and ozone are :

(A) Primary and secondary pollutants respectively

(B) Secondary pollutants always

(C) Secondary and primary pollutants respectively

(D) Primary pollutants always

13. The atoms having same atomic mass but different atomic number are called :

(A) Isotopes

(B) Isobars

(C) Isomers

(D) Isotones

14. Which of the following has the weakest binding ?

(A) Covalent bond

(B) Coordinate bond

(C) Ionic bond

(D) van der Waals forces

15. Oxidation state of Cr in $[Cr(H_2O)_4Cl_2]^+$ is :

(A) + 2

(B) + 3

(C) + 5

(D) + 7

16. The correct order of increasing solubility of Cl_2, CO, NH_3 and CO_2 in water is :

(A) $Cl_2 < CO < NH_3 < CO_2$

(B) $CO < CO_2 < Cl_2 < NH_3$

(C) $CO_2 < CO < Cl_2 < NH_3$

(D) $CO_2 < CO < NH_3 < Cl_2$

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17. Which one is an example of one element material ?

(A) Rock

(B) Sand

(C) Diamond

(D) Bronze

18. The pH of rain water in India is higher than its value reported in acidified regions because of :

(A) High Na content

(B) High K content

(C) Low sulphate content

(D) High Ca content

19. About DO, COD and BOD content of water, which statement is correct ?

(A) Good quality water has high BOD

(B) Good quality water has low BOD and low DO

(C) Good quality of water has high DO

(D) Good quality water has high DO and high COD

20. Which one of the following is *incorrect* about POPs ?

(A) Endosulfan — to control crop pests

(B) DDT — to control disease vectors

(C) Aldrin — to control fungi

(D) Chlordane — to control termites

21. ..... of species is the number of individuals or biomass per unit area of total area.

(A) Ecological mortality

(B) Ecological natality

(C) Specific density

(D) Crude density

22. The density of a species is the numerical representation of its idividuals in a unit area or volume. The formula for determining density is .....

(A) Density (D) = $\frac{\text{No. of individuals of all species in a plot}}{\text{Total no. of sample plots studied}}$

(B) Density (D) = $\frac{\text{No. of all species in a plot}}{\text{Total no. of sample plots studied}}$

(C) Density (D) = $\frac{\text{No. of individuals of the species in}}{\text{Total no. of sample}}$ $\frac{}{\text{all the sample plots}}$ plots studied

(D) Density (D) = $\frac{\text{No. of genuses in all sample plots}}{\text{Total no. of sample plots studied}}$

23. Which biogeographical region finds the musk deer in its natural habitat ?

(A) Sahyadri mountain ranges

(B) Coastal belt

(C) Eastern Himalayas

(D) Runn of Kutch

24. False perception without any external stimulus is .....

(A) Hallucination

(B) Delirium

(C) Illusion

(D) Delusion

25. What distinguishes biofuels from conventional fossil fuels ?

(A) Biofuels are derived from renewable sources

(B) Biofuels have a higher energy density than fossil fuels

(C) Biofuels require more extensive refining processes

(D) Biofuels have a higher cost per unit of energy

26. The phenomenon of having higher number of species in ecotone is :

(A) Dominance effect

(B) Frequency

(C) Abundance

(D) Edge effect

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27. **Assertion (A) :** The phosphorus cycle in an ecosystem is a secondary cycle.

Reason (R) : Phosphorus does not occur naturally as gas.

(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, but (R) is false

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

28. Replacement of existing communities by any external condition is termed as :

(A) Autogenic succession

(B) Heterogenic succession

(C) Primary succession

(D) Secondary succession

29. Ramsar Convention is related to conservation of :

(A) Elephants

(B) Forests

(C) Deserts

(D) Wetlands

30. Biome is a group of :

(A) Many communities

(B) Many populations

(C) Many species

(D) Many ecosystems

31. An impermeable rock that neither contains nor transmits water is called .....

(A) Aquifer

(B) Aquiclude

(C) Aquifuge

(D) Aquitard

32. Alkalinity is a measure of the capacity of water to neutralize .....

(A) Water

(B) Salt

(C) Bases

(D) Acids

33. Yield of a well per unit drawdown is called .....

(A) Specific capacity

(B) Specific retention

(C) Safe yield

(D) Specific yield

34. The oceanic division that is photic in nature is called .....

(A) Hadal pelagic

(B) Abyssal pelagic

(C) Bathy pelagic

(D) Epipelagic

35. Soils containing more than 30% clay which shows cracks when dry is called .....

(A) Histosol

(B) Alfisols

(C) Vertisols

(D) Spodosol

36. In Goldschmidt's classification scheme, siderophile elements are represented by .....

(A) Ca-Mg-Na

(B) Fe-Ni-Au

(C) Cu-Pb-Zn

(D) Ar-Kr-Xe

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37. In Darcy's law $v = ki$, 'k' stands for .....

(A) Hydraulic gradient

(B) Discharge velocity

(C) Coefficient of permeability

(D) Coefficient of porosity

38. The Rann of Kutch (Kachchh) in Western India falls in which siesmic zone ?

(A) Zone II

(B) Zone III

(C) Zone IV

(D) Zone V

39. In India, Gondwana coal mines are located in .....

(A) Jaduguda

(B) Amba Dongar

(C) Bastar

(D) Raniganj

40. Which geothermal province/site occurs in Ladakh ?

(A) Manikaran

(B) Puga

(C) Surajkund

(D) Tattapani

41. The correct order of different solar radiations in terms of their wave-length increase .....

(A) IR < microwave < UV < X-rays

(B) UV < X-rays < Microwave < IR

(C) X-rays < UV < IR < Microwave

(D) Microwave < UV < IR < X-rays

42. Primarily, the fossil fuels are composed of :

(A) Carbon and Nitrogen

(B) Carbon and Oxygen

(C) Carbon and Sulphur

(D) Carbon and Hydrogen

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43. Which one of the following is an example of renewable energy ?

(A) Natural gas

(B) Nuclear

(C) Hydroelectric

(D) Petroleum oil

44. Which has the highest calorific value ?

(A) Coal

(B) Petrol

(C) Hydrogen

(D) Wood

45. Hydrogen produced through the electrolysis of water using renewable energy is called :

(A) Grey hydrogen

(B) Black hydrogen

(C) Green hydrogen

(D) White hydrogen

46. Which one of the following materials is used in photo-voltaic devices in the form of thin films ?

(A) Cadmium oxide

(B) Cadmium telluroide

(C) Cadmium sulphide

(D) Cadmium sulphate

47. Which one of the following materials on combustion is expected to exit highest NH_3 ?

(A) Wood

(B) Petrol

(C) Dung cake

(D) Plastic Waste

48. Carbon sequestration means :

(A) Storage of CO_2 through deposition in reservoir

(B) Removal of CO_2 from the atmosphere

(C) Removal of CO_2 from the atmosphere and storage in reservoir through deposition

(D) Transforming carbon credits from one country to another

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49. The International Solar Alliance (ISA) was founded in :

(A) 2017 in London

(B) 2015 in Paris

(C) 2019 in Paris

(D) 2021 in London

50. OSOWOG stands for :

(A) One salary of all the workers of a group

(B) One Stop Offer with Output Guarantee

(C) Offshore Oscillating Wind Occurrence Gradient

(D) One Sun One World One Grid

51. A stream of water having COD of 12 ppm discharges water at the rate of 1000 L/s into another stream with a flow rate of 2000 L/s and COD of 5 ppm. Assuming complete and instantaneous mixing, what is the resultant COD just downstream from the point of discharge ?

(A) 17 ppm

(B) 5.66 ppm

(C) 7.33 ppm

(D) 60 ppm

52. What is the basic principle behind sensor used in vibration measurements ?

(A) Magnetic induction

(B) Photoelectric effect

(C) Piezoelectric effect

(D) Thermoelectric effect

53. Which type of lakes have water with limited transparency (lower than 3 feet) and suffocates fauna below water depths ?

(A) Oligotrophic

(B) Mesotrophic

(C) Eutrophic

(D) Hypereutrophic

54. What is the permissible one hour average concentration of ozone (O_3) in ambient air in residential area as per the National Ambient Air Quality Standards (NAAQS) 2009 in India ?

(A) 100 $\mu g/m^3$

(B) 60 $\mu g/m^3$

(C) 30 $\mu g/m^3$

(D) 180 $\mu g/m^3$

55. In 2020, which of the following chemicals was leaked in industrial accident in Vishakhapatnam ?

(A) Methyl isocyanate

(B) Vinyl benzene

(C) Dichloroethane

(D) Trinitrobenzene

56. Which government body in India is responsible for setting and enforcing ambient air quality standards ?

(A) Ministry of Earth Sciences (MoES)

(B) Central Pollution Control Board (CPCB)

(C) India Meteorological Department (IMD)

(D) National Green Tribunal (NGT)

57. Which of the following is not a water softning process ?

(A) Reverse osmosis

(B) Ion exchange resin process

(C) Coagulation using aluminium sulfate

(D) Clark's process

58. Which gas does not contribute to the greenhouse effect in the Earth's atmosphere ?

(A) Carbon dioxide

(B) Water vapour

(C) Ozone

(D) Oxygen

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59. Match List-I and List-II containing different areas/zones and limits of noise levels in day time :

List I

(Category of Areas/Zones)

(*a*) Residential Area

(*b*) Silent Zone

(*c*) Commercial Area

(*d*) Industrial Area

List II

(Day-time noise limits in dB)

(*i*) 75

(*ii*) 65

(*iii*) 55

(*iv*) 50

Codes :

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

60. In order to accelerate efforts towards meeting water-related challenges, the United Nations General Assembly declared 2018-2028 as :

(A) International Decade for Action on Water for Sustainable Development

(B) International Decade for Action on Water for Drinking and Sanitation

(C) International Decade for Action on Water and Environment

(D) International Decade for Drinking Water Supply

61. Which is a complex process of anaerobic digestion that includes four phases such as hydrolysis, acidogenesis, acetogenesis and methanogenesis ?

(A) Bioleading of organic waste

(B) Bioreduction of organic waste

(C) Biomineralization

(D) Biomethanation of organic waste

62. The following is NOT an important step in the processing of municipal solid wastes for manufacturing Refused Derived Fuel (RDF) :

(A) Magnetic separation

(B) Pelletizing

(C) Shredding

(D) Cooling of MSW at –80°C

63. Which of the following is poisonous, explosive and a potent greenhouse gas ?

(A) Compressed air

(B) Helium

(C) Argon

(D) Methane

64. Which of the following can be easily decomposed by microorganisms ?

(A) Petricible wastes

(B) Putrescible wastes

(C) Inpetricible wastes

(D) Non-petricible wastes

65. The following agency declared ban on burning of solid waste on land, including at the landfill sites .....

(A) The National White Tribunal (NWT)

(B) The National Green Tribunal (NGT)

(C) The National Pollution Control Board (NPCB)

(D) The National Solid Waste Control Board (NSWCB)

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66. Hexavalent chromium (VI) is reduced by using sulfur dioxide (SO_2) as a reducing agent to .....

(A) Chromium (I)

(B) Chromium (II)

(C) Chromium (III)

(D) Chromium (V)

67. What is the breaking down of polymers into smaller molecules by thermal decomposition at temperatures close to 300°C-400°C in the presence of a catalyst in an inert atmesphere ?

(A) Gasification

(B) Biodegradation

(C) Pyrolysis

(D) Co-processing

68. Which agency has developed a process to produce ceramics from fly ash having superior abrasion resistance ?

(A) The National Metallurgical Laboratory, Jamshedpur

(B) The National Chemical Laboratory, Pune

(C) The National Metallurgical Laboratory, Dhanbad

(D) The National Metallurgical Laboratory, Ranchi

69. Galvanized metal is preferable for garbage storage because of its .....

(A) High pathogen resistance

(B) High corrosion resistance

(C) High pressure resistance

(D) High temperature resistance

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70. Choose the *correct* sequence of the four-step process of the layout collection routes for wastes :

(A) Layout preliminary collection routes, prepare location maps, develop balanced routes, and prepare data summaries

(B) Prepare location maps, prepare data summaries, layout preliminary collection routes, and develop balanced routes

(C) Develop balanced routes, prepare data summaries, prepare location maps, and layout preliminary collection routes

(D) Prepare data summaries, prepare location maps, layout preliminary collection routes, and develop balanced routes

71. What is the major conclusion of the Paris Agreement ?

(A) Decrease Global Warming by 1°C

(B) Decrease Global Warming by 2°C

(C) Decrease Global Warming by 1.5°C

(D) Decrease Global Warming by 0.5°C

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

List-I

(Acts)

(*a*) Forest Conservation Act

(*b*) Wildlife Protection Act

(*c*) Environmental (Protection) Act

(*d*) Water (Prevention and Control of Pollution) Act

List-II

(Year of enactment)

(1) 1972

(2) 1974

(3) 1980

(4) 1986

Codes :

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

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73. The greater one-horned rhino is listed under which schedule of the Wildlife Protection Act, 1972 ?

(A) Schedule II

(B) Schedule IV

(C) Schedule III

(D) Schedule I

74. A Lysimeter is used to measure :

(A) Infiltration

(B) Evaporation

(C) Evapotranspiration

(D) Radiation

75. Public hearing is conducted .....

(A) Prior to the site selection

(B) Prior to the approval of Terms of Reference

(C) After preparation of EIA

(D) After Environmental Clearance

76. Which of the following is the *correct* order of EIA steps ?

(A) Scoping, impact prediction, impact identification, mitigation, EIS, Screening, EA

(B) Screening, Scoping, Impact Identification, Impact Prediction, Mitigation, EIS, EA

(C) EA, EIS, impact identification, impact prediction, mitigation, screening, scoping

(D) Impact identification, mitigation, impact prediction, screening, scoping, EA, EIS

77. Which of the following EIA process plays critical role throughout life cycle of the project ?

(A) Impact identification

(B) Scoping

(C) Environmental baseline

(D) Impact prediction

78. **Assertion (A) :** Human exposure to high noise leads in degeneration of sensory hairs in ear.

Reason (R) : The exhaustion of sensory hairs occur under the impact of noise in human being.

(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 false but (R) is true

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

79. The normal human conversation takes place in the sound frequencies range of .....

(A) 10 to 10,000 Hz

(B) 500 to 2000 Hz

(C) 100 to 1000 Hz

(D) 50 to 5000 Hz

80. Identify the correct sequence of CO_2 contribution to the atmosphere ?

(A) Industrial processes > Transport Industry > Agricultural burning > Forest fires

(B) Transport industry > Forest fires > Industrial processes > Agricultural burning

(C) Forest fires > Industrial Process > Agricultural burning > Transport industry

(D) Agricultural burning > Forest fires > Industrial Processes > Transport industry

81. In 1989 there were three candidates for the position of Principal, Mr. Chatterji, Mr. Ayangar and Dr. Singh, whose chances of getting the appointment are in the proportion 4 : 2 : 3 respectively. The probability that Mr. Chatterji if selected would introduce co-education in the college is 0.3. The probabilities of Mr. Ayangar and Dr. Singh doing the same are respectively 0.5 and 0.8. What is the probability that there was co-education in the college in 1990 ?

(A) $\frac{32}{55}$

(B) $\frac{32}{45}$

(C) $\frac{23}{55}$

(D) $\frac{23}{45}$

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82. Given the frequency function

$f(x, \theta) = \frac{1}{\theta}; \ 0 \leq x \leq \theta$

$= 0;$ otherwise

and that testing the null hypothesis $H_0 : \theta = 1$ against its alternative $H_1 : \theta = 2$ by means of a single observed value of x. What would be the size of type one error for $(0.5 \leq x)$?

(A) 0.25

(B) 0.50

(C) 0.75

(D) 1

83. For a frequency distribution given, that its mean is 120, mode is 123 and Karl Pearson's coefficient of skewness is –0.3. What is the value of coefficient of variation ?

(A) 6.33

(B) 7.33

(C) 8.33

(D) 9.33

84. When an investigator wants a sample containing in units which possess a rare attribute. The appropriate sampling procedure is :

(A) Simple random sampling without replacement

(B) Stratified sampling

(C) Inverse sampling

(D) Systematic sampling

85. What is the most likely price in city A corresponding to the price of Rs. 70 at city B from the following data ?

	City A	**City B**
Average price	65	67
Standard deviation	2.5	3.5

Correlation coefficient between the prices of commodities in the two cities is 0.8.

(A) Rs. 64.6

(B) Rs. 68.6

(C) Rs. 72.6

(D) Rs. 76.6

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86. If two dice are thrown, what is the probability that the sum is neither 7 nor 11 ?

(A) $\frac{3}{9}$

(B) $\frac{5}{9}$

(C) $\frac{7}{9}$

(D) $\frac{1}{9}$

87. In a book of 520 pages, 390 typographical errors occur. Assuming Poisson probability law for the number of errors per page, what is the probability that a number sample of 5 pages will contain no error ?

(A) $e^{4.75}$

(B) $e^{3.75}$

(C) $e^{-4.75}$

(D) $e^{-3.75}$

88. Let X be a random variable with the following probability distribution.

x	:	-3	6	9
$Pr(X = x)$	:	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$

What is expected value of $(2x + 1)^2$?

(A) 189

(B) 209

(C) 219

(D) 229

89. The equation of the linear trend fitted to the annual data is $y_t = 214.4 + 5.86x$ of an industry for the years 1998 to 2004, where $x = t - 2001$ and y_t is the annual production in thousand tonnes in time period t. What is the estimate of the annual production for the year 2005 ?

(A) 216.84 thousand tonnes

(B) 2017.84 thousand tonnes

(C) 227.84 thousand tonnes

(D) 237.84 thousand tonnes

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90. If x is normal variate with mean 1 and standard deviation 2 and y is another normal variate independent of x with mean 2 and standard deviation 3. What is the mean and variance of the normal variate $z = x + 2y$?

(A) 5 and 25

(B) 5 and 36

(C) 5 and 40

(D) 7 and 45

91. Fukushima Daiichi nuclear disaster caused due to :

(A) Earthquake

(B) Tsunami

(C) Cooling failure

(D) Heavy rains

92. In which state Gandhamardhan Hill was recently declared as India's 37th biodiversity heritage site ?

(A) Maharashtra

(B) Gujrat

(C) Rajasthan

(D) Odisha

93. Which states have conflict related to Almatti Dam ?

(A) Gujarat, Rajasthan and Madhya Pradesh

(B) Andhra Pradesh, Karnataka and Maharashtra

(C) Andhra Pradesh, Karnataka and Odisha

(D) Uttarakhand, Himachal Pradesh and Jammu Kashmir

94. Major nitrogen species responsible for nitrogen air pollution is :

(A) N_2O

(B) NO_2

(C) N_2O_5

(D) HNO_3

95. Chlorofluorocarbons (CFCs) are known for :

(A) Enhancing the ozone layer

(B) Absorbing UV radiation

(C) Reducing greenhouse gases

(D) Depleting the ozone layer

96. The abbreviation NMSHE, in the context of Climate Action Plan of Government of India, stands for :

(A) National Mission on Solar Hydro Energy

(B) National Mission on Sustaining Himalayan Ecosystem

(C) National Mission on Sustainable Hydrogen Energy

(D) National Mission on Survey of Himalayan Ecosystem

97. Which regulatory authority in India is responsible for setting vehicular emission standards ?

(A) Ministry of Road Transport and Highways (MoRTH)

(B) Bureau of Indian Standards (BIS)

(C) Ministry of Environment Forest and Climate Change (MoEFCC)

(D) National Institution for Transforming India (NITI Aayog)

98. Which one of the following is said to be the most important cause for the extinction of animals and plants ?

(A) Over-exploitation of species

(B) Loss of habitat and fragmentation

(C) Invasion of alien species

(D) Co-extinctions

99. The ozone hole is most prominently observed over which region ?

(A) North America

(B) Europe

(C) Antarctica

(D) Asia

100. What is the primary aim of the Solid and Liquid Waste Management (SLWM) component of the Swachh Bharat Abhiyan in rural areas ?

(A) To construct waste treatment facilities in every village

(B) To ensure 100% door to door collection of waste

(C) To manage and treat solid and liquid waste generated in rural households

(D) To establish a recycling center in each village

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