# SET–"X"

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

## (MPH/PHD/URS–EE–2020)

# Environmental Science

Sr. No. 10113

Code **A**

**Time : 1¼ Hours** **Total Questions : 100** **Max. Marks : 100**

Roll No. _____ (in figure) _____ (in words)

Name : _____ Father's Name : _____

Mother's Name : _____ Date of Examination : _____

(Signature of the candidate) (Signature of the Invigilator)

**CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.**

1. **All questions are compulsory.**
2. The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A,B,C and D code will be got uploaded on the university website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet/Answer Key, the same may be brought to the notice of the Controller of Examination in writing/through E-Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered.
5. The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers **MUST NOT** be ticked in the Question book-let.
6. **There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.**
7. Use only Black or Blue **BALL POINT PEN** of good quality in the OMR Answer-Sheet.
8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.

| Question No. | Questions |
|---|---|
| 1. | How many ml. of 20 M $NH_3$ must be diluted to 500.0 ml. to make a 0.80 M solution :<br>(1) 10 mL (2) 20 mL<br>(3) 25 mL (4) 80 mL |
| 2. | The half-life of a radioactive material is 12 years. The radioactivity of this material falls to _____ of its initial value after 72 years.<br>(1) 1/6 (2) 1/8<br>(3) 1/16 (4) 1/64 |
| 3. | Which of the following is not a secondary air pollutant ?<br>(1) PAN (2) $O_3$<br>(3) $SO_x$ (4) Acid rain |
| 4. | $^{222}Rn$ is unstable and decays by losing 6 neutrons and 2 protons. The final decay product is _____ .<br>(1) $^{218}Bi$ (2) $^{216}Bi$<br>(3) $^{214}Po$ (4) $^{212}Tl$ |
| 5. | The percentage of nitrogen in urea is _____ .<br>(1) 23.3% (2) 22.0%<br>(3) 40.6% (4) 46.6% |
| 6. | Which indicator is used in Winkler method titration during the estimation of dissolved oxygen in water ?<br>(1) Potassium chromate (2) Starch solution<br>(3) Methyl orange (4) Phenolphthalein |

| Question No. | Questions |
|---|---|
| 7. | Which of the following is locating agent of amino acids in Paper chromatography ?<br>(1) Ninhydrin (2) Methyl orange<br>(3) Phenolphthalein (4) Brilliant green dye |
| 8. | Electrophoresis can not be used for the separation of :<br>(1) Amino acids (2) Proteins<br>(3) Lipids (4) Nucleic acid |
| 9. | SDS contains _____ carbon atoms :<br>(1) 6 (2) 10 (3) 12 (4) 16 |
| 10. | Which of the following pesticide contains sulphur atoms ?<br>(1) Malathion (2) DDT<br>(3) 2, 4-D (4) Carbaryl |
| 11. | In an isothermal process, the internal energy :<br>(1) increases<br>(2) decreases<br>(3) first increases then decreases<br>(4) remains constant |
| 12. | Wind roses typically use _____ cardinal directions.<br>(1) 4 (2) 8 (3) 16 (4) 32 |

| Question No. | Questions |
|---|---|
| 13. | In which layer of the atmosphere, air is dry ?<br>(1) Troposphere (2) Stratosphere<br>(3) Thermosphere (4) Ionosphere |
| 14. | Which among these has maximum percentage (by volume) in dry air ?<br>(1) Carbon dioxide (2) Argon<br>(3) Methane (4) Hydrogen |
| 15. | Which of the following is not amongst the components of photochemical smog ?<br>(1) Unsaturated hydrocarbon (2) $NO_2$<br>(3) $SO_2$ (4) Ozone |
| 16. | India is considered under which region in zoogeography ?<br>(1) Neotropical (2) Palaearctic<br>(3) Ethiopian (4) Oriental |
| 17. | Which of the following is longest mountain range ?<br>(1) The Andes<br>(2) The Himalayas<br>(3) The Ural Mountains<br>(4) The Kunlun Mountains |

| Question No. | Questions |
|---|---|
| 18. | The correct sequence of four stages of water movement in the hydrological cycle is :<br>(1) Evaporation - Condensation - Precipitation - Infiltration<br>(2) Evaporation - Precipitation - Condensation - Infiltration<br>(3) Precipitation - Evaporation - Condensation - Infiltration<br>(4) Precipitation - Evaporation - Infiltration - Condensation |
| 19. | In an ecosystem, energy flow is :<br>(1) Always unidirectional<br>(2) Always bidirectional<br>(3) In any direction<br>(4) Always down direction |
| 20. | The number of The Sustainable Development Goals (SDGs), adopted by all United Nations Member States in 2015 is _____ .<br>(1) 7 (2) 12 (3) 17 (4) 24 |
| 21. | Food chain always starts with _____ .<br>(1) Photosynthesis (2) Respiration<br>(3) Transpiration (4) Denitrification |
| 22. | Vinegar is prepared from alcohol with the help of :<br>(1) *Lactobacillus* (2) *Acetobacter*<br>(3) *Azotobacter* (4) *Rhizobium* |

| Question No. | Questions |
|---|---|
| 23. | The diversity of habitats over the landscape or geographical 2area is known as :<br>(1) Alpha diversity (2) Beta diversity<br>(3) Gamma diversity (4) Species diversity |
| 24. | Which of the following pyramid is always upright ?<br>(1) Pyramid of number<br>(2) Pyramid of energy<br>(3) Pyramid of biomass<br>(4) All of the above |
| 25. | Which one of the following is found in tropical rainforests ?<br>(1) Neem tree (2) Mahogany tree<br>(3) Teak tree (4) Sandalwood tree |
| 26. | Which one of the following lakes is formed due to wind action ?<br>(1) Aeolian lakes (2) Shoreline lake<br>(3) Solution lake (4) Lateral lake |
| 27. | Siberian crane is regular visitor of which national park ?<br>(1) Keoladeo national park<br>(2) Dudhwa national park<br>(3) Bandipur national park<br>(4) Kanha national park |

| Question No. | Questions |
|---|---|
| 28. | Law of minimum was given by :<br>(1) Shelford (2) Leibig<br>(3) Blackman (4) Clement |
| 29. | Red Data Book is published by :<br>(1) IUCN (2) USEPA<br>(3) WWF (4) IG-BP |
| 30. | The area where two major communities meet and together is termed as :<br>(1) Ecads (2) Ecotype<br>(3) Ecotone (4) Timber line |
| 31. | Which one of the following is not correctly matched ?<br>(1) Calcium - Dolomite (2) Uranium - Pitchblende<br>(3) Lead - Galena (4) Mercury - Malachite |
| 32. | The amount of water vapor in the air as a proportion of the maximu amount the air could hold at the temperature is called as _____ .<br>(1) Relative humidity (2) Dew point<br>(3) Evaporation rate (4) Infiltration |
| 33. | Which of the following is most abundant natural acid ?<br>(1) Hydrochloric acid (2) Phosphoric acid<br>(3) Carbonic acid (4) Nitric acid |

| Question No. | Questions |
|---|---|
| 34. | Which one of the following is correct ?<br>(1) Soil organic matter (%) = 1.472 × Soil organic carbon (%)<br>(2) Soil organic matter (%) = 1.724 × Soil organic carbon (%)<br>(3) Soil organic matter (%) = 0.58 × Soil organic carbon (%)<br>(4) Soil organic matter (%) = 1.274 × Soil organic carbon (%) |
| 35. | The altitudinal distance of a geostationary satellite from the earth is about _____ .<br>(1) 22,000 km (2) 28,000 km<br>(3) 36,000 km (4) 42,000 km |
| 36. | Which of the following is correct ?<br>(1) Refractive index of the ocean water increases with salinity<br>(2) Refractive index of the ocean water increases with temperature<br>(3) Refractive index of the ocean water decreases with salinity<br>(4) Refractive index of the ocean water decreases with temperature |
| 37. | _____ receives rainfall from both the South-West and North-West monsoons.<br>(1) Lakshadweep Islands<br>(2) Andaman and Nicobar Islands<br>(3) Tamilnadu<br>(4) Jammu and Kashmir |

| Question No. | Questions |
|---|---|
| 38. | Which of the following is not correct about Tropical cyclones ?<br>(1) A tropical cyclone is a rapidly rotating storm system characterized by a low-pressure<br>(2) Tropical cyclones are steered primarily westward by the westerlies<br>(3) Atleast 26.5 °C sea surface temperature is required for the formation of a tropical cyclone<br>(4) Tropical cyclones are steered primarily westward by the Easterlies |
| 39. | Which one of the following is the Intensity scale of the earthquake ?<br>(1) Richter scale (2) Mercalli scale<br>(3) Kelvin scale (4) Mohs scale |
| 40. | Tsunami is caused by _____ :<br>(1) Earthquake (2) Hurricane<br>(3) El nino (4) Land slides |
| 41. | The sequence of processes for production of ethanol from lignocellulosic biomass is :<br>(1) Fermentation, Pre-treatment, Saccharification, Distillation<br>(2) Pre-treatment, Saccharification, Distillation, Fermentation<br>(3) Saccharification, Distillation, Pre-treatment, Fermentation<br>(4) Pre-treatment, Saccharification, Fermentation, Distillation |

| Question No. | Questions |
|---|---|
| 42. | Which radioactive isotope is used in geological dating ?<br>(1) Cobalt-60 (2) Corbon-14<br>(3) Uranium-238 (4) Technetium-99 |
| 43. | The temperature at the inner core's surface of earth is estimated to be approximately _____ .<br>(1) 2,200 K (2) 3,500 K<br>(3) 4,700 K (4) 5,700 K |
| 44. | The percentage of $CO_2$ in biogas is :<br>(1) 50-65 % (2) 30-50 %<br>(3) 10-20 % (4) $CO_2$ is not present in biogas |
| 45. | The rate of solar energy reaching the earth surface is _____ .<br>(1) 526 W (2) 912 W<br>(3) 1016 W (4) $2.3 \times 10^3$ W |
| 46. | Anemometer is used for the measure of _____ .<br>(1) Ambient temperature<br>(2) Humidity<br>(3) Altitude<br>(4) Wind speed |

| Question No. | Questions |
|---|---|
| 47. | Correct order of Uranium decay series is :<br>(1) Uranium → Radium → Polonium → Thorium<br>(2) Uranium → Polonium → Radium → Thorium<br>(3) Uranium → Radium → Thorium → Polonium<br>(4) Uranium → Thorium → Radium → Polonium |
| 48. | Pyrolusite is an ore of :<br>(1) Uranium (2) Niobium<br>(3) Manganese (4) Titanium |
| 49. | Velocity of geostationary satellite with respect to earth is :<br>(1) zero (2) 1.0 m $s^{-1}$<br>(3) 10 m $s^{-1}$ (4) 15 m $s^{-1}$ |
| 50. | The main constituents of Liquefied Petroleum Gas (LPG) are :<br>(1) Methane + ethane<br>(2) Ethane + propane<br>(3) Propane + butane<br>(4) Butane + acetylene |
| 51. | As per IS 10500 : 2012, Acceptable limit of nitrate (as $NO_3$) in drinking water is :<br>(1) 15 mg/L (2) 45 mg/L<br>(3) 55 mg/L (4) 100 mg/L |

| Question No. | Questions |
|---|---|
| 52. | As per the Noise Pollution (Regulation and Control) Rules, 2000, the night time limits of noise in residential area is :<br>(1) 35 dB (A) Leq (2) 45 dB (A) Leq<br>(3) 55 dB (A) Leq (4) 75 dB (A) Leq |
| 53. | According to _____ the amount of gas dissolved in a liquid is proportional to its partial pressure above the liquid.<br>(1) Dalton's Law<br>(2) Henry's Law<br>(3) Gay Lussac's Law<br>(4) Raoult's Law |
| 54. | Sulphur dioxide in ambient air is determined by :<br>(1) Modified West and Gaeke Method<br>(2) Jackson Candle method<br>(3) Jacob and Hochheiser modified Method<br>(4) Gas Phase Chemiluminescence method |
| 55. | "Fanning" plumes are obtained under :<br>(1) unstable atmosphere<br>(2) neutral atmospheric conditions<br>(3) super adiabatic environment<br>(4) extreme inversion condition |

| Question No. | Questions |
|---|---|
| 56. | After 5 days of incubation at 20°C, the residual dissolved oxygen in blanks was 7.80 mg/L and in a 0.1 percent dilution of the waste was 2.30 mg/L. What is the 5-day BOD of the waste ?<br>(1) 55 mg/L (2) 550 mg/L<br>(3) 5500 mg/L (4) 55000 mg/L |
| 57. | How much oxygen ($O_2$) in gm is required for complete combustion of 44g of propane ?<br>(1) 32 g (2) 64 g<br>(3) 82 g (4) 160 g |
| 58. | Turbidity of water can be determined by :<br>(1) Hydrograph<br>(2) Nephelometer<br>(3) Atomic absorption spectrophotometer<br>(4) Liquid Scintillation counter |
| 59. | The soil order "vertisol" is related to :<br>(1) Alluvial soil (2) Red soil<br>(3) Black soil (4) Laterite soil |
| 60. | Which one of the following is not suitable worm species for vermicomposting ?<br>(1) *Eisenia fetia* (2) *Eudrilus eugeniae*<br>(3) *Pheretima posthuman* (4) *Periohyx excavatus* |

| Question No. | Questions |
|---|---|
| 61. | The groundwater of the Bangladesh is severely polluted by which heavy metal ?<br>(1) Lead (2) Arsenic<br>(3) Cadmium (4) Mercury |
| 62. | Which committee reviews the EIA and EMP reports of developmental projects in Ministry of Environment, Forest and Climate Change ?<br>(1) Project Assessment Committee<br>(2) Project Evaluation Committee<br>(3) Environmental Clearance Committee<br>(4) Environment Appraisal Committee |
| 63. | Which of the following is not a step of EIA methodology ?<br>(1) Baseline study (2) Scoping<br>(3) Environmental auditing (4) Screening |
| 64. | Which of the following methodologies can not be used for assessing the impacts of any developmental activity on the environment ?<br>(1) Adhoc method (2) Flexible method<br>(3) Overlay method (4) Matrix method |
| 65. | The number of environmental factors listed on the vertical axis in Leopold Matrix to carrying out the Environmental Impact Assessment :<br>(1) 22 (2) 44<br>(3) 66 (4) 88 |

| Question No. | Questions |
|---|---|
| 66. | Which one represent the Environmental Management System ?<br>(1) ISO 9001 (2) ISO 14001<br>(3) OHSAS 18001 (4) ISO 21001 |
| 67. | The concept of environmental auditing in industrial units in India was formally introduced in which year ?<br>(1) 1974 (2) 1981<br>(3) 1992 (4) 2006 |
| 68. | In EIA, Three overlapping phases : identification, prediction and evaluation belong to :<br>(1) Impact Analysis (2) Decision making<br>(3) Reporting (4) Review |
| 69. | The United Nations Commission on Sustainable Development (CSD) was established by the UN General Assembly in which year ?<br>(1) 1992 (2) 1999<br>(3) 2016 (4) 2020 |
| 70. | According to Solid Waste Management Rules, 2016, Special Economic Zones (SEZ) to earmark at least _____ of the total area of the plot for recovery and recycling facility.<br>(1) 1 % (2) 2 %<br>(3) 3 % (4) 5 % |

| Question No. | Questions |
|---|---|
| 71. | Which of the following is excluded from the scope of Basel convention ?<br>(1) Radioactive waste<br>(2) Clinical waste<br>(3) Waste of explosive nature<br>(4) Waste oils/water, hydrocarbons/water mixtures, emulsions |
| 72. | Which one of the following is not a characteristics of hazardous waste ?<br>(1) Corrosivity (2) Toxicity<br>(3) Ignitability (4) Biodegradability |
| 73. | For the collection of Anatomical waste _____ colour plastic bags are used.<br>(1) Red (2) Black<br>(3) Yellow (4) White |
| 74. | If plastics are burnt in incinerator at low temperature then which of the following gases are produced ?<br>(1) Phosphine (2) Dioxins and furans<br>(3) Radon (4) Acetylene gas |
| 75. | The calorific value of solid waste can be determined experimentally using _____ .<br>(1) UV-Vis Spectrophotometer<br>(2) ICP-MS<br>(3) Bomb calorimeter<br>(4) Flame photometer |

| Question No. | Questions |
|---|---|
| 76. | Which of the following scale is used to determine the hardness of the solid waste ?<br>(1) Moh's scale (2) Kelvin's scale<br>(3) Avogadro's scale (4) Dobson's scale |
| 77. | Incineration process is done at a temperature of _____.<br>(1) 60 – 100 °C (2) 350 – 500 °C<br>(3) 850 – 1100 °C (4) 1500 – 2000 °C |
| 78. | Which one of the following is not a Composting method ?<br>(1) NADEP method (2) Bangalore method<br>(3) Mangalore Method (4) Indore method |
| 79. | _____ is used as a natural liner in landfills.<br>(1) Clay (2) HDPE<br>(3) Silt (4) Gravel |
| 80. | Which of the following is not correct about Lotka – Volterra model ?<br>(1) Deals with predator-pray interactions<br>(2) It has a pair of second-order linear differential equations<br>(3) This model assumes that the prey population finds ample food at all times<br>(4) This model assumes that predators have limitless appetite |

| Question No. | Questions |
|---|---|
| 81. | If the Arithmetic mean of a set of two observations is 9 and its Geometric mean is 6. Then the Harmonic mean of the set of observations is :<br>(1) 2 (2) 4<br>(3) 15 (4) 54 |
| 82. | Gaussian Plume model is about :<br>(1) Microorganism growth<br>(2) Risk assessment<br>(3) Predator-prey interactions<br>(4) Air pollution dispersion |
| 83. | Chi-square curve ranges from :<br>(1) $-\infty$ to $+\infty$ (2) $-\infty$ to 0<br>(3) 0 to $\infty$ (4) 0 to 1 |
| 84. | Mode of the series 0, 0, 0, 2, 2, 3, 3, 8, 10 is :<br>(1) 0 (2) 2<br>(3) 3 (4) 10 |
| 85. | The midpoint of the values after they have been ordered from the smallest to the largest or the largest to the smallest is called :<br>(1) Mean (2) Median<br>(3) Lower quartile (4) Upper quartile |

| Question No. | Questions |
|---|---|
| 86. | The probability of an event cannot be :<br>(1) 0.3 (2) 0.5<br>(3) −0.5 (4) 1.0 |
| 87. | What is the Median of the following set of scores ? 3, 6, 9, 4, 7, 2, 8 :<br>(1) 3 (2) 4<br>(3) 6 (4) 9 |
| 88. | If all frequencies of classes are same, the value of Chi-square is _____ :<br>(1) Zero (2) One<br>(3) Infinity (4) Can not be predicted |
| 89. | Which of the following radiations has maximum energy ?<br>(1) Infrared radiations<br>(2) Gamma radiation<br>(3) UV radiations<br>(4) Microwave radiations |
| 90. | Sardar Sarovar Dam is built on which river ?<br>(1) Krishna river (2) Cauvery river<br>(3) Narmada river (4) Bhagirathi river |
| 91. | Which of the following is a Pozzolana, material ?<br>(1) Cement (2) Fly ash<br>(3) River sand (4) Activated sludge |

| Question No. | Questions |
|---|---|
| 92. | What are Bharat Stage VI (BS VI) standards ?<br>(1) Drinking water standards<br>(2) Ambient air quality standards<br>(3) Emission standard from vehicles<br>(4) Emission standard from brick kilns |
| 93. | Which gland of human body is affected by Iodine deficiency ?<br>(1) Pituitary gland (2) Pineal gland<br>(3) Hypothalamus (4) Thyroid gland |
| 94. | The octane number of *iso*-octane is _____ ?<br>(1) 0 (2) 1<br>(3) 10 (4) 100 |
| 95. | Photolysis of $NO_2$ occurs due to the radiations of which wavelength ?<br>(1) < 390 nm (2) 400 – 450 nm<br>(3) 500 – 574 nm (4) > 574 nm |
| 96. | Which of the following has maximum tendency to combine with haemoglobin ?<br>(1) CO (2) NOx<br>(3) SOx (4) Pb |

| Question No. | Questions |
|---|---|
| 97. | Which of the following is not a criteria air pollutant ?<br>(1) CO (2) $CO_2$<br>(3) Pb (4) $O_3$ |
| 98. | Efficiency of primary production in an ocean is _____ :<br>(1) 0.02 % (2) 0.2 %<br>(3) 2 % (4) 20 % |
| 99. | Wastewater detention time in Grit chamber is :<br>(1) 2 minutes (2) 2 hours<br>(3) 8 hours (4) 2 days |
| 100. | In which season is the ozone found at its maximum level in the northern hemisphere ?<br>(1) Winter (2) Spring<br>(3) Summer (4) Autumn |

# SET–"X"

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

## (MPH/PHD/URS–EE–2020)

# Environmental Science

Sr. No. 10114

Code **B**

**Time : 1¼ Hours** **Total Questions : 100** **Max. Marks : 100**

Roll No. _____ (in figure) _____ (in words)

Name : _____ Father's Name : _____

Mother's Name : _____ Date of Examination : _____

(Signature of the candidate) (Signature of the Invigilator)

**CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.**

1. **All questions are compulsory.**
2. The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A,B,C and D code will be got uploaded on the university website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet/Answer Key, the same may be brought to the notice of the Controller of Examination in writing/through E-Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered.
5. The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers **MUST NOT** be ticked in the Question book-let.
6. **There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.**
7. Use only Black or Blue **BALL POINT PEN** of good quality in the OMR Answer-Sheet.
8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.

| Question No. | Questions |
|---|---|
| 1. | Which of the following is excluded from the scope of Basel convention ?<br>(1) Radioactive waste<br>(2) Clinical waste<br>(3) Waste of explosive nature<br>(4) Waste oils/water, hydrocarbons/water mixtures, emulsions |
| 2. | Which one of the following is not a characteristics of hazardous waste ?<br>(1) Corrosivity (2) Toxicity<br>(3) Ignitability (4) Biodegradability |
| 3. | For the collection of Anatomical waste _____ colour plastic bags are used.<br>(1) Red (2) Black<br>(3) Yellow (4) White |
| 4. | If plastics are burnt in incinerator at low temperature then which of the following gases are produced ?<br>(1) Phosphine (2) Dioxins and furans<br>(3) Radon (4) Acetylene gas |
| 5. | The calorific value of solid waste can be determined experimentally using _____ .<br>(1) UV-Vis Spectrophotometer<br>(2) ICP-MS<br>(3) Bomb calorimeter<br>(4) Flame photometer |

| Question No. | Questions |
|---|---|
| 6. | Which of the following scale is used to determine the hardness of the solid waste ?<br>(1) Moh's scale (2) Kelvin's scale<br>(3) Avogadro's scale (4) Dobson's scale |
| 7. | Incineration process is done at a temperature of _____.<br>(1) 60 – 100 °C (2) 350 – 500 °C<br>(3) 850 – 1100 °C (4) 1500 – 2000 °C |
| 8. | Which one of the following is not a Composting method ?<br>(1) NADEP method (2) Bangalore method<br>(3) Mangalore Method (4) Indore method |
| 9. | _____ is used as a natural liner in landfills.<br>(1) Clay (2) HDPE<br>(3) Silt (4) Gravel |
| 10. | Which of the following is not correct about Lotka – Volterra model ?<br>(1) Deals with predator-pray interactions<br>(2) It has a pair of second-order linear differential equations<br>(3) This model assumes that the prey population finds ample food at all times<br>(4) This model assumes that predators have limitless appetite |

| Question No. | Questions |
|---|---|
| 11. | As per IS 10500 : 2012, Acceptable limit of nitrate (as $NO_3$) in drinking water is :<br>(1) 15 mg/L (2) 45 mg/L<br>(3) 55 mg/L (4) 100 mg/L |
| 12. | As per the Noise Pollution (Regulation and Control) Rules, 2000, the night time limits of noise in residential area is :<br>(1) 35 dB (A) Leq (2) 45 dB (A) Leq<br>(3) 55 dB (A) Leq (4) 75 dB (A) Leq |
| 13. | According to _____ the amount of gas dissolved in a liquid is proportional to its partial pressure above the liquid.<br>(1) Dalton's Law<br>(2) Henry's Law<br>(3) Gay Lussac's Law<br>(4) Raoult's Law |
| 14. | Sulphur dioxide in ambient air is determined by :<br>(1) Modified West and Gaeke Method<br>(2) Jackson Candle method<br>(3) Jacob and Hochheiser modified Method<br>(4) Gas Phase Chemiluminescence method |

| Question No. | Questions |
|---|---|
| 15. | "Fanning" plumes are obtained under :<br>(1) unstable atmosphere<br>(2) neutral atmospheric conditions<br>(3) super adiabatic environment<br>(4) extreme inversion condition |
| 16. | After 5 days of incubation at 20°C, the residual dissolved oxygen in blanks was 7.80 mg/L and in a 0.1 percent dilution of the waste was 2.30 mg/L. What is the 5-day BOD of the waste ?<br>(1) 55 mg/L (2) 550 mg/L<br>(3) 5500 mg/L (4) 55000 mg/L |
| 17. | How much oxygen ($O_2$) in gm is required for complete combustion of 44g of propane ?<br>(1) 32 g (2) 64 g<br>(3) 82 g (4) 160 g |
| 18. | Turbidity of water can be determined by :<br>(1) Hydrograph<br>(2) Nephelometer<br>(3) Atomic absorption spectrophotometer<br>(4) Liquid Scintillation counter |
| 19. | The soil order "vertisol" is related to :<br>(1) Alluvial soil (2) Red soil<br>(3) Black soil (4) Laterite soil |

| Question No. | Questions |
|---|---|
| 20. | Which one of the following is not suitable worm species for vermicomposting ?<br>(1) *Eisenia fetia* (2) *Eudrilus eugeniae*<br>(3) *Pheretima posthuman* (4) *Periohyx excavatus* |
| 21. | Which one of the following is not correctly matched ?<br>(1) Calcium - Dolomite (2) Uranium - Pitchblende<br>(3) Lead - Galena (4) Mercury - Malachite |
| 22. | The amount of water vapor in the air as a proportion of the maximum amount the air could hold at the temperature is called as _____ .<br>(1) Relative humidity (2) Dew point<br>(3) Evaporation rate (4) Infiltration |
| 23. | Which of the following is most abundant natural acid ?<br>(1) Hydrochloric acid (2) Phosphoric acid<br>(3) Carbonic acid (4) Nitric acid |
| 24. | Which one of the following is correct ?<br>(1) Soil organic matter (%) = 1.472 × Soil organic carbon (%)<br>(2) Soil organic matter (%) = 1.724 × Soil organic carbon (%)<br>(3) Soil organic matter (%) = 0.58 × Soil organic carbon (%)<br>(4) Soil organic matter (%) = 1.274 × Soil organic carbon (%) |

| Question No. | Questions |
|---|---|
| 25. | The altitudinal distance of a geostationary satellite from the earth is about _____ .<br>(1) 22,000 km (2) 28,000 km<br>(3) 36,000 km (4) 42,000 km |
| 26. | Which of the following is correct ?<br>(1) Refractive index of the ocean water increases with salinity<br>(2) Refractive index of the ocean water increases with temperature<br>(3) Refractive index of the ocean water decreases with salinity<br>(4) Refractive index of the ocean water decreases with temperature |
| 27. | _____ receives rainfall from both the South-West and North-West monsoons.<br>(1) Lakshadweep Islands<br>(2) Andaman and Nicobar Islands<br>(3) Tamilnadu<br>(4) Jammu and Kashmir |
| 28. | Which of the following is not correct about Tropical cyclones ?<br>(1) A tropical cyclone is a rapidly rotating storm system characterized by a low-pressure<br>(2) Tropical cyclones are steered primarily westward by the westerlies<br>(3) Atleast 26.5 °C sea surface temperature is required for the formation of a tropical cyclone<br>(4) Tropical cyclones are steered primarily westward by the Easterlies |

| Question No. | Questions |
|---|---|
| 29. | Which one of the following is the Intensity scale of the earthquake ?<br>(1) Richter scale (2) Mercalli scale<br>(3) Kelvin scale (4) Mohs scale |
| 30. | Tsunami is caused by _____ :<br>(1) Earthquake (2) Hurricane<br>(3) El nino (4) Land slides |
| 31. | In an isothermal process, the internal energy :<br>(1) increases<br>(2) decreases<br>(3) first increases then decreases<br>(4) remains constant |
| 32. | Wind roses typically use _____ cardinal directions.<br>(1) 4 (2) 8 (3) 16 (4) 32 |
| 33. | In which layer of the atmosphere, air is dry ?<br>(1) Troposphere (2) Stratosphere<br>(3) Thermosphere (4) Ionosphere |
| 34. | Which among these has maximum percentage (by volume) in dry air ?<br>(1) Carbon dioxide (2) Argon<br>(3) Methane (4) Hydrogen |

| Question No. | Questions |
|---|---|
| 35. | Which of the following is not amongst the components of photochemical smog ?<br>(1) Unsaturated hydrocarbon (2) $NO_2$<br>(3) $SO_2$ (4) Ozone |
| 36. | India is considered under which region in zoogeography ?<br>(1) Neotropical (2) Palaearctic<br>(3) Ethiopian (4) Oriental |
| 37. | Which of the following is longest mountain range ?<br>(1) The Andes<br>(2) The Himalayas<br>(3) The Ural Mountains<br>(4) The Kunlun Mountains |
| 38. | The correct sequence of four stages of water movement in the hydrological cycle is :<br>(1) Evaporation - Condensation - Precipitation - Infiltration<br>(2) Evaporation - Precipitation - Condensation - Infiltration<br>(3) Precipitation - Evaporation - Condensation - Infiltration<br>(4) Precipitation - Evaporation - Infiltration - Condensation |

| Question No. | Questions |
|---|---|
| 39. | In an ecosystem, energy flow is :<br>(1) Always unidirectional<br>(2) Always bidirectional<br>(3) In any direction<br>(4) Always down direction |
| 40. | The number of The Sustainable Development Goals (SDGs), adopted by all United Nations Member States in 2015 is _____ .<br>(1) 7 (2) 12 (3) 17 (4) 24 |
| 41. | Which of the following is a Pozzolana, material ?<br>(1) Cement (2) Fly ash<br>(3) River sand (4) Activated sludge |
| 42. | What are Bharat Stage VI (BS VI) standards ?<br>(1) Drinking water standards<br>(2) Ambient air quality standards<br>(3) Emission standard from vehicles<br>(4) Emission standard from brick kilns |
| 43. | Which gland of human body is affected by Iodine deficiency ?<br>(1) Pituitary gland (2) Pineal gland<br>(3) Hypothalamus (4) Thyroid gland |

| Question No. | Questions |
|---|---|
| 44. | The octane number of *iso*-octane is _____ ?<br>(1) 0 (2) 1<br>(3) 10 (4) 100 |
| 45. | Photolysis of $NO_2$ occurs due to the radiations of which wavelength ?<br>(1) < 390 nm (2) 400 – 450 nm<br>(3) 500 – 574 nm (4) > 574 nm |
| 46. | Which of the following has maximum tendency to combine with haemoglobin ?<br>(1) CO (2) NOx<br>(3) SOx (4) Pb |
| 47. | Which of the following is not a criteria air pollutant ?<br>(1) CO (2) $CO_2$<br>(3) Pb (4) $O_3$ |
| 48. | Efficiency of primary production in an ocean is _____ :<br>(1) 0.02 % (2) 0.2 %<br>(3) 2 % (4) 20 % |
| 49. | Wastewater detention time in Grit chamber is :<br>(1) 2 minutes (2) 2 hours<br>(3) 8 hours (4) 2 days |

| Question No. | Questions |
|---|---|
| 50. | In which season is the ozone found at its maximum level in the northern hemisphere ?<br>(1) Winter (2) Spring<br>(3) Summer (4) Autumn |
| 51. | The groundwater of the Bangladesh is severely polluted by which heavy metal ?<br>(1) Lead (2) Arsenic<br>(3) Cadmium (4) Mercury |
| 52. | Which committee reviews the EIA and EMP reports of developmental projects in Ministry of Environment, Forest and Climate Change ?<br>(1) Project Assessment Committee<br>(2) Project Evaluation Committee<br>(3) Environmental Clearance Committee<br>(4) Environment Appraisal Committee |
| 53. | Which of the following is not a step of EIA methodology ?<br>(1) Baseline study (2) Scoping<br>(3) Environmental auditing (4) Screening |
| 54. | Which of the following methodologies can not be used for assessing the impacts of any developmental activity on the environment ?<br>(1) Adhoc method (2) Flexible method<br>(3) Overlay method (4) Matrix method |

| Question No. | Questions |
|---|---|
| 55. | The number of environmental factors listed on the vertical axis in Leopold Matrix to carrying out the Environmental Impact Assessment :<br>(1) 22 (2) 44<br>(3) 66 (4) 88 |
| 56. | Which one represent the Environmental Management System ?<br>(1) ISO 9001 (2) ISO 14001<br>(3) OHSAS 18001 (4) ISO 21001 |
| 57. | The concept of environmental auditing in industrial units in India was formally introduced in which year ?<br>(1) 1974 (2) 1981<br>(3) 1992 (4) 2006 |
| 58. | In EIA, Three overlapping phases : identification, prediction and evaluation belong to :<br>(1) Impact Analysis (2) Decision making<br>(3) Reporting (4) Review |
| 59. | The United Nations Commission on Sustainable Development (CSD) was established by the UN General Assembly in which year ?<br>(1) 1992 (2) 1999<br>(3) 2016 (4) 2020 |

| Question No. | Questions |
|---|---|
| 60. | According to Solid Waste Management Rules, 2016, Special Economic Zones (SEZ) to earmark at least _____ of the total area of the plot for recovery and recycling facility.<br>(1) 1 %<br>(2) 2 %<br>(3) 3 %<br>(4) 5 % |
| 61. | If the Arithmetic mean of a set of two observations is 9 and its Geometric mean is 6. Then the Harmonic mean of the set of observations is :<br>(1) 2<br>(2) 4<br>(3) 15<br>(4) 54 |
| 62. | Gaussian Plume model is about :<br>(1) Microorganism growth<br>(2) Risk assessment<br>(3) Predator-prey interactions<br>(4) Air pollution dispersion |
| 63. | Chi-square curve ranges from :<br>(1) $-\infty$ to $+\infty$<br>(2) $-\infty$ to 0<br>(3) 0 to $\infty$<br>(4) 0 to 1 |
| 64. | Mode of the series 0, 0, 0, 2, 2, 3, 3, 8, 10 is :<br>(1) 0<br>(2) 2<br>(3) 3<br>(4) 10 |

| Question No. | Questions |
|---|---|
| 65. | The midpoint of the values after they have been ordered from the smallest to the largest or the largest to the smallest is called :<br>(1) Mean (2) Median<br>(3) Lower quartile (4) Upper quartile |
| 66. | The probability of an event cannot be :<br>(1) 0.3 (2) 0.5<br>(3) −0.5 (4) 1.0 |
| 67. | What is the Median of the following set of scores ? 3, 6, 9, 4, 7, 2, 8 :<br>(1) 3 (2) 4<br>(3) 6 (4) 9 |
| 68. | If all frequencies of classes are same, the value of Chi-square is _____ :<br>(1) Zero (2) One<br>(3) Infinity (4) Can not be predicted |
| 69. | Which of the following radiations has maximum energy ?<br>(1) Infrared radiations<br>(2) Gamma radiation<br>(3) UV radiations<br>(4) Microwave radiations |
| 70. | Sardar Sarovar Dam is built on which river ?<br>(1) Krishna river (2) Cauvery river<br>(3) Narmada river (4) Bhagirathi river |

| Question No. | Questions |
|---|---|
| 71. | The sequence of processes for production of ethanol from lignocellulosic biomass is :<br>(1) Fermentation, Pre-treatment, Saccharification, Distillation<br>(2) Pre-treatment, Saccharification, Distillation, Fermentation<br>(3) Saccharification, Distillation, Pre-treatment, Fermentation<br>(4) Pre-treatment, Saccharification, Fermentation, Distillation |
| 72. | Which radioactive isotope is used in geological dating ?<br>(1) Cobalt-60 (2) Corbon-14<br>(3) Uranium-238 (4) Technetium-99 |
| 73. | The temperature at the inner core's surface of earth is estimated to be approximately _____ .<br>(1) 2,200 K (2) 3,500 K<br>(3) 4,700 K (4) 5,700 K |
| 74. | The percentage of $CO_2$ in biogas is :<br>(1) 50-65 % (2) 30-50 %<br>(3) 10-20 % (4) $CO_2$ is not present in biogas |
| 75. | The rate of solar energy reaching the earth surface is _____ .<br>(1) 526 W (2) 912 W<br>(3) 1016 W (4) $2.3 \times 10^3$ W |

| Question No. | Questions |
|---|---|
| 76. | Anemometer is used for the measure of _____ .<br>(1) Ambient temperature<br>(2) Humidity<br>(3) Altitude<br>(4) Wind speed |
| 77. | Correct order of Uranium decay series is :<br>(1) Uranium → Radium → Polonium → Thorium<br>(2) Uranium → Polonium → Radium → Thorium<br>(3) Uranium → Radium → Thorium → Polonium<br>(4) Uranium → Thorium → Radium → Polonium |
| 78. | Pyrolusite is an ore of :<br>(1) Uranium (2) Niobium<br>(3) Manganese (4) Titanium |
| 79. | Velocity of geostationary satellite with respect to earth is :<br>(1) zero (2) 1.0 m $s^{-1}$<br>(3) 10 m $s^{-1}$ (4) 15 m $s^{-1}$ |
| 80. | The main constituents of Liquefied Petroleum Gas (LPG) are :<br>(1) Methane + ethane (2) Ethane + propane<br>(3) Propane + butane (4) Butane + acetylene |

| Question No. | Questions |
|---|---|
| 81. | Food chain always starts with _____ .<br>(1) Photosynthesis (2) Respiration<br>(3) Transpiration (4) Denitrification |
| 82. | Vinegar is prepared from alcohol with the help of :<br>(1) *Lactobacillus* (2) *Acetobacter*<br>(3) *Azotobacter* (4) *Rhizobium* |
| 83. | The diversity of habitats over the landscape or geographical 2area is known as :<br>(1) Alpha diversity (2) Beta diversity<br>(3) Gamma diversity (4) Species diversity |
| 84. | Which of the following pyramid is always upright ?<br>(1) Pyramid of number<br>(2) Pyramid of energy<br>(3) Pyramid of biomass<br>(4) All of the above |
| 85. | Which one of the following is found in tropical rainforests ?<br>(1) Neem tree (2) Mahogany tree<br>(3) Teak tree (4) Sandalwood tree |

| Question No. | Questions |
|---|---|
| 86. | Which one of the following lakes is formed due to wind action ?<br>(1) Aeolian lakes (2) Shoreline lake<br>(3) Solution lake (4) Lateral lake |
| 87. | Siberian crane is regular visitor of which national park ?<br>(1) Keoladeo national park<br>(2) Dudhwa national park<br>(3) Bandipur national park<br>(4) Kanha national park |
| 88. | Law of minimum was given by :<br>(1) Shelford (2) Leibig<br>(3) Blackman (4) Clement |
| 89. | Red Data Book is published by :<br>(1) IUCN (2) USEPA<br>(3) WWF (4) IG-BP |
| 90. | The area where two major communities meet and together is termed as :<br>(1) Ecads (2) Ecotype<br>(3) Ecotone (4) Timber line |
| 91. | How many ml. of 20 M $NH_3$ must be diluted to 500.0 ml. to make a 0.80 M solution :<br>(1) 10 mL (2) 20 mL<br>(3) 25 mL (4) 80 mL |

| Question No. | Questions |
|---|---|
| 92. | The half-life of a radioactive material is 12 years. The radioactivity of this material falls to _____ of its initial value after 72 years.<br>(1) 1/6 (2) 1/8<br>(3) 1/16 (4) 1/64 |
| 93. | Which of the following is not a secondary air pollutant ?<br>(1) PAN (2) $O_3$<br>(3) $SO_x$ (4) Acid rain |
| 94. | $^{222}Rn$ is unstable and decays by losing 6 neutrons and 2 protons. The final decay product is _____ .<br>(1) $^{218}Bi$ (2) $^{216}Bi$<br>(3) $^{214}Po$ (4) $^{212}Tl$ |
| 95. | The percentage of nitrogen in urea is _____ .<br>(1) 23.3% (2) 22.0%<br>(3) 40.6% (4) 46.6% |
| 96. | Which indicator is used in Winkler method titration during the estimation of dissolved oxygen in water ?<br>(1) Potassium chromate (2) Starch solution<br>(3) Methyl orange (4) Phenolphthalein |
| 97. | Which of the following is locating agent of amino acids in Paper chromatography ?<br>(1) Ninhydrin (2) Methyl orange<br>(3) Phenolphthalein (4) Brilliant green dye |

| Question No. | Questions |
|---|---|
| 98. | Electrophoresis can not be used for the separation of :<br>(1) Amino acids (2) Proteins<br>(3) Lipids (4) Nucleic acid |
| 99. | SDS contains _____ carbon atoms :<br>(1) 6 (2) 10 (3) 12 (4) 16 |
| 100. | Which of the following pesticide contains sulphur atoms ?<br>(1) Malathion (2) DDT<br>(3) 2, 4-D (4) Carbaryl |

# SET–"X"

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

## (MPH/PHD/URS–EE–2020)

# Environmental Science

10115

Sr. No._____

Code **C**

**Time : 1¼ Hours** **Total Questions : 100** **Max. Marks : 100**

Roll No. _____ (in figure)_____ (in words)

Name : _____ Father's Name : _____

Mother's Name : _____ Date of Examination : _____

(Signature of the candidate) (Signature of the Invigilator)

**CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.**

1. **All questions are compulsory.**
2. The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A,B,C and D code will be got uploaded on the university website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet/Answer Key, the same may be brought to the notice of the Controller of Examination in writing/through E-Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered.
5. The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers **MUST NOT** be ticked in the Question book-let.
6. **There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.**
7. Use only Black or Blue **BALL POINT PEN** of good quality in the OMR Answer-Sheet.
8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.

| Question No. | Questions |
|---|---|
| 1. | The sequence of processes for production of ethanol from lignocellulosic biomass is :<br>(1) Fermentation, Pre-treatment, Saccharification, Distillation<br>(2) Pre-treatment, Saccharification, Distillation, Fermentation<br>(3) Saccharification, Distillation, Pre-treatment, Fermentation<br>(4) Pre-treatment, Saccharification, Fermentation, Distillation |
| 2. | Which radioactive isotope is used in geological dating ?<br>(1) Cobalt-60 (2) Corbon-14<br>(3) Uranium-238 (4) Technetium-99 |
| 3. | The temperature at the inner core's surface of earth is estimated to be approximately _____ .<br>(1) 2,200 K (2) 3,500 K<br>(3) 4,700 K (4) 5,700 K |
| 4. | The percentage of $CO_2$ in biogas is :<br>(1) 50-65 % (2) 30-50 %<br>(3) 10-20 % (4) $CO_2$ is not present in biogas |
| 5. | The rate of solar energy reaching the earth surface is _____ .<br>(1) 526 W (2) 912 W<br>(3) 1016 W (4) $2.3 \times 10^3$ W |

| Question No. | Questions |
|---|---|
| 6. | Anemometer is used for the measure of _____ .<br>(1) Ambient temperature<br>(2) Humidity<br>(3) Altitude<br>(4) Wind speed |
| 7. | Correct order of Uranium decay series is :<br>(1) Uranium → Radium → Polonium → Thorium<br>(2) Uranium → Polonium → Radium → Thorium<br>(3) Uranium → Radium → Thorium → Polonium<br>(4) Uranium → Thorium → Radium → Polonium |
| 8. | Pyrolusite is an ore of :<br>(1) Uranium (2) Niobium<br>(3) Manganese (4) Titanium |
| 9. | Velocity of geostationary satellite with respect to earth is :<br>(1) zero (2) 1.0 m $s^{-1}$<br>(3) 10 m $s^{-1}$ (4) 15 m $s^{-1}$ |
| 10. | The main constituents of Liquefied Petroleum Gas (LPG) are :<br>(1) Methane + ethane<br>(2) Ethane + propane<br>(3) Propane + butane<br>(4) Butane + acetylene |

| Question No. | Questions |
|---|---|
| 11. | Food chain always starts with _____ .<br>(1) Photosynthesis (2) Respiration<br>(3) Transpiration (4) Denitrification |
| 12. | Vinegar is prepared from alcohol with the help of :<br>(1) *Lactobacillus* (2) *Acetobacter*<br>(3) *Azotobacter* (4) *Rhizobium* |
| 13. | The diversity of habitats over the landscape or geographical 2area is known as :<br>(1) Alpha diversity (2) Beta diversity<br>(3) Gamma diversity (4) Species diversity |
| 14. | Which of the following pyramid is always upright ?<br>(1) Pyramid of number<br>(2) Pyramid of energy<br>(3) Pyramid of biomass<br>(4) All of the above |
| 15. | Which one of the following is found in tropical rainforests ?<br>(1) Neem tree (2) Mahogany tree<br>(3) Teak tree (4) Sandalwood tree |

| Question No. | Questions |
|---|---|
| 16. | Which one of the following lakes is formed due to wind action ?<br>(1) Aeolian lakes (2) Shoreline lake<br>(3) Solution lake (4) Lateral lake |
| 17. | Siberian crane is regular visitor of which national park ?<br>(1) Keoladeo national park (2) Dudhwa national park<br>(3) Bandipur national park (4) Kanha national park |
| 18. | Law of minimum was given by :<br>(1) Shelford (2) Leibig<br>(3) Blackman (4) Clement |
| 19. | Red Data Book is published by :<br>(1) IUCN (2) USEPA<br>(3) WWF (4) IG-BP |
| 20. | The area where two major communities meet and together is termed as :<br>(1) Ecads (2) Ecotype<br>(3) Ecotone (4) Timber line |
| 21. | How many ml. of 20 M $NH_3$ must be diluted to 500.0 ml. to make a 0.80 M solution :<br>(1) 10 mL (2) 20 mL<br>(3) 25 mL (4) 80 mL |

| Question No. | Questions |
|---|---|
| 22. | The half-life of a radioactive material is 12 years. The radioactivity of this material falls to _____ of its initial value after 72 years.<br>(1) 1/6 (2) 1/8<br>(3) 1/16 (4) 1/64 |
| 23. | Which of the following is not a secondary air pollutant ?<br>(1) PAN (2) $O_3$<br>(3) $SO_x$ (4) Acid rain |
| 24. | $^{222}Rn$ is unstable and decays by losing 6 neutrons and 2 protons. The final decay product is _____ .<br>(1) $^{218}Bi$ (2) $^{216}Bi$<br>(3) $^{214}Po$ (4) $^{212}Tl$ |
| 25. | The percentage of nitrogen in urea is _____ .<br>(1) 23.3% (2) 22.0%<br>(3) 40.6% (4) 46.6% |
| 26. | Which indicator is used in Winkler method titration during the estimation of dissolved oxygen in water ?<br>(1) Potassium chromate (2) Starch solution<br>(3) Methyl orange (4) Phenolphthalein |
| 27. | Which of the following is locating agent of amino acids in Paper chromatography ?<br>(1) Ninhydrin (2) Methyl orange<br>(3) Phenolphthalein (4) Brilliant green dye |

| Question No. | Questions |
|---|---|
| 28. | Electrophoresis can not be used for the separation of :<br>(1) Amino acids (2) Proteins<br>(3) Lipids (4) Nucleic acid |
| 29. | SDS contains _____ carbon atoms :<br>(1) 6 (2) 10 (3) 12 (4) 16 |
| 30. | Which of the following pesticide contains sulphur atoms ?<br>(1) Malathion (2) DDT<br>(3) 2, 4-D (4) Carbaryl |
| 31. | If the Arithmetic mean of a set of two observations is 9 and its Geometric mean is 6. Then the Harmonic mean of the set of observations is :<br>(1) 2 (2) 4<br>(3) 15 (4) 54 |
| 32. | Gaussian Plume model is about :<br>(1) Microorganism growth<br>(2) Risk assessment<br>(3) Predator-prey interactions<br>(4) Air pollution dispersion |
| 33. | Chi-square curve ranges from :<br>(1) $-\infty$ to $+\infty$ (2) $-\infty$ to 0<br>(3) 0 to $\infty$ (4) 0 to 1 |

| Question No. | Questions |
|---|---|
| 34. | Mode of the series 0, 0, 0, 2, 2, 3, 3, 8, 10 is :<br>(1) 0 (2) 2<br>(3) 3 (4) 10 |
| 35. | The midpoint of the values after they have been ordered from the smallest to the largest or the largest to the smallest is called :<br>(1) Mean (2) Median<br>(3) Lower quartile (4) Upper quartile |
| 36. | The probability of an event cannot be :<br>(1) 0.3 (2) 0.5<br>(3) –0.5 (4) 1.0 |
| 37. | What is the Median of the following set of scores ? 3, 6, 9, 4, 7, 2, 8 :<br>(1) 3 (2) 4 (3) 6 (4) 9 |
| 38. | If all frequencies of classes are same, the value of Chi-square is _____ :<br>(1) Zero (2) One<br>(3) Infinity (4) Can not be predicted |
| 39. | Which of the following radiations has maximum energy ?<br>(1) Infrared radiations<br>(2) Gamma radiation<br>(3) UV radiations<br>(4) Microwave radiations |

| Question No. | Questions |
|---|---|
| 40. | Sardar Sarovar Dam is built on which river ?<br>(1) Krishna river (2) Cauvery river<br>(3) Narmada river (4) Bhagirathi river |
| 41. | The groundwater of the Bangladesh is severely polluted by which heavy metal ?<br>(1) Lead (2) Arsenic<br>(3) Cadmium (4) Mercury |
| 42. | Which committee reviews the EIA and EMP reports of developmental projects in Ministry of Environment, Forest and Climate Change ?<br>(1) Project Assessment Committee<br>(2) Project Evaluation Committee<br>(3) Environmental Clearance Committee<br>(4) Environment Appraisal Committee |
| 43. | Which of the following is not a step of EIA methodology ?<br>(1) Baseline study (2) Scoping<br>(3) Environmental auditing (4) Screening |
| 44. | Which of the following methodologies can not be used for assessing the impacts of any developmental activity on the environment ?<br>(1) Adhoc method (2) Flexible method<br>(3) Overlay method (4) Matrix method |

| Question No. | Questions |
|---|---|
| 45. | The number of environmental factors listed on the vertical axis in Leopold Matrix to carrying out the Environmental Impact Assessment :<br>(1) 22 (2) 44<br>(3) 66 (4) 88 |
| 46. | Which one represent the Environmental Management System ?<br>(1) ISO 9001 (2) ISO 14001<br>(3) OHSAS 18001 (4) ISO 21001 |
| 47. | The concept of environmental auditing in industrial units in India was formally introduced in which year ?<br>(1) 1974 (2) 1981<br>(3) 1992 (4) 2006 |
| 48. | In EIA, Three overlapping phases : identification, prediction and evaluation belong to :<br>(1) Impact Analysis (2) Decision making<br>(3) Reporting (4) Review |
| 49. | The United Nations Commission on Sustainable Development (CSD) was established by the UN General Assembly in which year ?<br>(1) 1992 (2) 1999<br>(3) 2016 (4) 2020 |

| Question No. | Questions |
|---|---|
| 50. | According to Solid Waste Management Rules, 2016, Special Economic Zones (SEZ) to earmark at least _____ of the total area of the plot for recovery and recycling facility.<br>(1) 1 %<br>(2) 2 %<br>(3) 3 %<br>(4) 5 % |
| 51. | Which one of the following is not correctly matched ?<br>(1) Calcium - Dolomite<br>(2) Uranium - Pitchblende<br>(3) Lead - Galena<br>(4) Mercury - Malachite |
| 52. | The amount of water vapor in the air as a proportion of the maximum amount the air could hold at the temperature is called as _____ .<br>(1) Relative humidity<br>(2) Dew point<br>(3) Evaporation rate<br>(4) Infiltration |
| 53. | Which of the following is most abundant natural acid ?<br>(1) Hydrochloric acid<br>(2) Phosphoric acid<br>(3) Carbonic acid<br>(4) Nitric acid |
| 54. | Which one of the following is correct ?<br>(1) Soil organic matter (%) = 1.472 × Soil organic carbon (%)<br>(2) Soil organic matter (%) = 1.724 × Soil organic carbon (%)<br>(3) Soil organic matter (%) = 0.58 × Soil organic carbon (%)<br>(4) Soil organic matter (%) = 1.274 × Soil organic carbon (%) |

| Question No. | Questions |
|---|---|
| 55. | The altitudinal distance of a geostationary satellite from the earth is about _____ .<br>(1) 22,000 km (2) 28,000 km<br>(3) 36,000 km (4) 42,000 km |
| 56. | Which of the following is correct ?<br>(1) Refractive index of the ocean water increases with salinity<br>(2) Refractive index of the ocean water increases with temperature<br>(3) Refractive index of the ocean water decreases with salinity<br>(4) Refractive index of the ocean water decreases with temperature |
| 57. | _____ receives rainfall from both the South-West and North-West monsoons.<br>(1) Lakshadweep Islands<br>(2) Andaman and Nicobar Islands<br>(3) Tamilnadu<br>(4) Jammu and Kashmir |
| 58. | Which of the following is not correct about Tropical cyclones ?<br>(1) A tropical cyclone is a rapidly rotating storm system characterized by a low-pressure<br>(2) Tropical cyclones are steered primarily westward by the westerlies<br>(3) Atleast 26.5 °C sea surface temperature is required for the formation of a tropical cyclone<br>(4) Tropical cyclones are steered primarily westward by the Easterlies |

| Question No. | Questions |
|---|---|
| 59. | Which one of the following is the Intensity scale of the earthquake ?<br>(1) Richter scale (2) Mercalli scale<br>(3) Kelvin scale (4) Mohs scale |
| 60. | Tsunami is caused by _____ :<br>(1) Earthquake (2) Hurricane<br>(3) El nino (4) Land slides |
| 61. | Which of the following is excluded from the scope of Basel convention ?<br>(1) Radioactive waste<br>(2) Clinical waste<br>(3) Waste of explosive nature<br>(4) Waste oils/water, hydrocarbons/water mixtures, emulsions |
| 62. | Which one of the following is not a characteristics of hazardous waste ?<br>(1) Corrosivity (2) Toxicity<br>(3) Ignitability (4) Biodegradability |
| 63. | For the collection of Anatomical waste _____ colour plastic bags are used.<br>(1) Red (2) Black<br>(3) Yellow (4) White |
| 64. | If plastics are burnt in incinerator at low temperature then which of the following gases are produced ?<br>(1) Phosphine (2) Dioxins and furans<br>(3) Radon (4) Acetylene gas |

| Question No. | Questions |
|---|---|
| 65. | The calorific value of solid waste can be determined experimentally using _____ .<br>(1) UV-Vis Spectrophotometer<br>(2) ICP-MS<br>(3) Bomb calorimeter<br>(4) Flame photometer |
| 66. | Which of the following scale is used to determine the hardness of the solid waste ?<br>(1) Moh's scale (2) Kelvin's scale<br>(3) Avogadro's scale (4) Dobson's scale |
| 67. | Incineration process is done at a temperature of _____.<br>(1) 60 – 100 °C (2) 350 – 500 °C<br>(3) 850 – 1100 °C (4) 1500 – 2000 °C |
| 68. | Which one of the following is not a Composting method ?<br>(1) NADEP method (2) Bangalore method<br>(3) Mangalore Method (4) Indore method |
| 69. | _____ is used as a natural liner in landfills.<br>(1) Clay (2) HDPE<br>(3) Silt (4) Gravel |

| Question No. | Questions |
|---|---|
| 70. | Which of the following is not correct about Lotka – Volterra model ?<br>(1) Deals with predator-pray interactions<br>(2) It has a pair of second-order linear differential equations<br>(3) This model assumes that the prey population finds ample food at all times<br>(4) This model assumes that predators have limitless appetite |
| 71. | Which of the following is a Pozzolana, material ?<br>(1) Cement (2) Fly ash<br>(3) River sand (4) Activated sludge |
| 72. | What are Bharat Stage VI (BS VI) standards ?<br>(1) Drinking water standards<br>(2) Ambient air quality standards<br>(3) Emission standard from vehicles<br>(4) Emission standard from brick kilns |
| 73. | Which gland of human body is affected by Iodine deficiency ?<br>(1) Pituitary gland (2) Pineal gland<br>(3) Hypothalamus (4) Thyroid gland |
| 74. | The octane number of *iso*-octane is ____ ?<br>(1) 0 (2) 1<br>(3) 10 (4) 100 |

| Question No. | Questions |
|---|---|
| 75. | Photolysis of $NO_2$ occurs due to the radiations of which wavelength ?<br>(1) < 390 nm (2) 400 – 450 nm<br>(3) 500 – 574 nm (4) > 574 nm |
| 76. | Which of the following has maximum tendency to combine with haemoglobin ?<br>(1) CO (2) NOx<br>(3) SOx (4) Pb |
| 77. | Which of the following is not a criteria air pollutant ?<br>(1) CO (2) $CO_2$<br>(3) Pb (4) $O_3$ |
| 78. | Efficiency of primary production in an ocean is _____ :<br>(1) 0.02 % (2) 0.2 %<br>(3) 2 % (4) 20 % |
| 79. | Wastewater detention time in Grit chamber is :<br>(1) 2 minutes (2) 2 hours<br>(3) 8 hours (4) 2 days |
| 80. | In which season is the ozone found at its maximum level in the northern hemisphere ?<br>(1) Winter (2) Spring<br>(3) Summer (4) Autumn |

| Question No. | Questions |
|---|---|
| 81. | In an isothermal process, the internal energy :<br>(1) increases<br>(2) decreases<br>(3) first increases then decreases<br>(4) remains constant |
| 82. | Wind roses typically use _____ cardinal directions.<br>(1) 4 (2) 8 (3) 16 (4) 32 |
| 83. | In which layer of the atmosphere, air is dry ?<br>(1) Troposphere<br>(2) Stratosphere<br>(3) Thermosphere<br>(4) Ionosphere |
| 84. | Which among these has maximum percentage (by volume) in dry air ?<br>(1) Carbon dioxide (2) Argon<br>(3) Methane (4) Hydrogen |
| 85. | Which of the following is not amongst the components of photochemical smog ?<br>(1) Unsaturated hydrocarbon (2) $NO_2$<br>(3) $SO_2$ (4) Ozone |

| Question No. | Questions |
|---|---|
| 86. | India is considered under which region in zoogeography ?<br>(1) Neotropical (2) Palaearctic<br>(3) Ethiopian (4) Oriental |
| 87. | Which of the following is longest mountain range ?<br>(1) The Andes<br>(2) The Himalayas<br>(3) The Ural Mountains<br>(4) The Kunlun Mountains |
| 88. | The correct sequence of four stages of water movement in the hydrological cycle is :<br>(1) Evaporation - Condensation - Precipitation - Infiltration<br>(2) Evaporation - Precipitation - Condensation - Infiltration<br>(3) Precipitation - Evaporation - Condensation - Infiltration<br>(4) Precipitation - Evaporation - Infiltration - Condensation |
| 89. | In an ecosystem, energy flow is :<br>(1) Always unidirectional<br>(2) Always bidirectional<br>(3) In any direction<br>(4) Always down direction |

| Question No. | Questions |
|---|---|
| 90. | The number of The Sustainable Development Goals (SDGs), adopted by all United Nations Member States in 2015 is _____ .<br>(1) 7 (2) 12 (3) 17 (4) 24 |
| 91. | As per IS 10500 : 2012, Acceptable limit of nitrate (as $NO_3$) in drinking water is :<br>(1) 15 mg/L (2) 45 mg/L<br>(3) 55 mg/L (4) 100 mg/L |
| 92. | As per the Noise Pollution (Regulation and Control) Rules, 2000, the night time limits of noise in residential area is :<br>(1) 35 dB (A) Leq (2) 45 dB (A) Leq<br>(3) 55 dB (A) Leq (4) 75 dB (A) Leq |
| 93. | According to _____ the amount of gas dissolved in a liquid is proportional to its partial pressure above the liquid.<br>(1) Dalton's Law (2) Henry's Law<br>(3) Gay Lussac's Law (4) Raoult's Law |
| 94. | Sulphur dioxide in ambient air is determined by :<br>(1) Modified West and Gaeke Method<br>(2) Jackson Candle method<br>(3) Jacob and Hochheiser modified Method<br>(4) Gas Phase Chemiluminescence method |

| Question No. | Questions |
|---|---|
| 95. | "Fanning" plumes are obtained under :<br>(1) unstable atmosphere<br>(2) neutral atmospheric conditions<br>(3) super adiabatic environment<br>(4) extreme inversion condition |
| 96. | After 5 days of incubation at 20°C, the residual dissolved oxygen in blanks was 7.80 mg/L and in a 0.1 percent dilution of the waste was 2.30 mg/L. What is the 5-day BOD of the waste ?<br>(1) 55 mg/L (2) 550 mg/L<br>(3) 5500 mg/L (4) 55000 mg/L |
| 97. | How much oxygen ($O_2$) in gm is required for complete combustion of 44g of propane ?<br>(1) 32 g (2) 64 g<br>(3) 82 g (4) 160 g |
| 98. | Turbidity of water can be determined by :<br>(1) Hydrograph<br>(2) Nephelometer<br>(3) Atomic absorption spectrophotometer<br>(4) Liquid Scintillation counter |

| Question No. | Questions |
|---|---|
| 99. | The soil order "vertisol" is related to :<br>(1) Alluvial soil (2) Red soil<br>(3) Black soil (4) Laterite soil |
| 100. | Which one of the following is not suitable worm species for vermicomposting ?<br>(1) *Eisenia fetia*<br>(2) *Eudrilus eugeniae*<br>(3) *Pheretima posthuman*<br>(4) *Periohyx excavatus* |

# SET–"X"

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

## (MPH/PHD/URS–EE–2020)

# Environmental Science

Code **D**

Sr. No. 10116

**Time : 1¼ Hours** **Total Questions : 100** **Max. Marks : 100**

Roll No. _____ (in figure)_____ (in words)

Name : _____ Father's Name : _____

Mother's Name : _____ Date of Examination : _____

(Signature of the candidate) (Signature of the Invigilator)

**CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.**

1. **All questions are compulsory.**
2. The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A,B,C and D code will be got uploaded on the university website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet/Answer Key, the same may be brought to the notice of the Controller of Examination in writing/through E-Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered.
5. The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers **MUST NOT** be ticked in the Question book-let.
6. **There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.**
7. Use only Black or Blue <u>BALL POINT PEN</u> of good quality in the OMR Answer-Sheet.
8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.

| Question No. | Questions |
|---|---|
| 1. | In an isothermal process, the internal energy :<br>(1) increases<br>(2) decreases<br>(3) first increases then decreases<br>(4) remains constant |
| 2. | Wind roses typically use _____ cardinal directions.<br>(1) 4 (2) 8 (3) 16 (4) 32 |
| 3. | In which layer of the atmosphere, air is dry ?<br>(1) Troposphere<br>(2) Stratosphere<br>(3) Thermosphere<br>(4) Ionosphere |
| 4. | Which among these has maximum percentage (by volume) in dry air ?<br>(1) Carbon dioxide (2) Argon<br>(3) Methane (4) Hydrogen |
| 5. | Which of the following is not amongst the components of photochemical smog ?<br>(1) Unsaturated hydrocarbon (2) $NO_2$<br>(3) $SO_2$ (4) Ozone |

| Question No. | Questions |
|---|---|
| 6. | India is considered under which region in zoogeography ?<br>(1) Neotropical (2) Palaearctic<br>(3) Ethiopian (4) Oriental |
| 7. | Which of the following is longest mountain range ?<br>(1) The Andes<br>(2) The Himalayas<br>(3) The Ural Mountains<br>(4) The Kunlun Mountains |
| 8. | The correct sequence of four stages of water movement in the hydrological cycle is :<br>(1) Evaporation - Condensation - Precipitation - Infiltration<br>(2) Evaporation - Precipitation - Condensation - Infiltration<br>(3) Precipitation - Evaporation - Condensation - Infiltration<br>(4) Precipitation - Evaporation - Infiltration - Condensation |
| 9. | In an ecosystem, energy flow is :<br>(1) Always unidirectional<br>(2) Always bidirectional<br>(3) In any direction<br>(4) Always down direction |

| Question No. | Questions |
|---|---|
| 10. | The number of The Sustainable Development Goals (SDGs), adopted by all United Nations Member States in 2015 is _____ .<br>(1) 7 (2) 12 (3) 17 (4) 24 |
| 11. | Which of the following is a Pozzolana, material ?<br>(1) Cement (2) Fly ash<br>(3) River sand (4) Activated sludge |
| 12. | What are Bharat Stage VI (BS VI) standards ?<br>(1) Drinking water standards<br>(2) Ambient air quality standards<br>(3) Emission standard from vehicles<br>(4) Emission standard from brick kilns |
| 13. | Which gland of human body is affected by Iodine deficiency ?<br>(1) Pituitary gland<br>(2) Pineal gland<br>(3) Hypothalamus<br>(4) Thyroid gland |
| 14. | The octane number of *iso*-octane is _____ ?<br>(1) 0 (2) 1<br>(3) 10 (4) 100 |

| Question No. | Questions |
|---|---|
| 15. | Photolysis of $NO_2$ occurs due to the radiations of which wavelength ?<br>(1) < 390 nm<br>(2) 400 – 450 nm<br>(3) 500 – 574 nm<br>(4) > 574 nm |
| 16. | Which of the following has maximum tendency to combine with haemoglobin ?<br>(1) CO (2) NOx<br>(3) SOx (4) Pb |
| 17. | Which of the following is not a criteria air pollutant ?<br>(1) CO (2) $CO_2$<br>(3) Pb (4) $O_3$ |
| 18. | Efficiency of primary production in an ocean is _____ :<br>(1) 0.02 % (2) 0.2 %<br>(3) 2 % (4) 20 % |
| 19. | Wastewater detention time in Grit chamber is :<br>(1) 2 minutes (2) 2 hours<br>(3) 8 hours (4) 2 days |

| Question No. | Questions |
|---|---|
| 20. | In which season is the ozone found at its maximum level in the northern hemisphere ?<br>(1) Winter (2) Spring<br>(3) Summer (4) Autumn |
| 21. | Which of the following is excluded from the scope of Basel convention ?<br>(1) Radioactive waste<br>(2) Clinical waste<br>(3) Waste of explosive nature<br>(4) Waste oils/water, hydrocarbons/water mixtures, emulsions |
| 22. | Which one of the following is not a characteristics of hazardous waste ?<br>(1) Corrosivity (2) Toxicity<br>(3) Ignitability (4) Biodegradability |
| 23. | For the collection of Anatomical waste _____ colour plastic bags are used.<br>(1) Red (2) Black<br>(3) Yellow (4) White |
| 24. | If plastics are burnt in incinerator at low temperature then which of the following gases are produced ?<br>(1) Phosphine<br>(2) Dioxins and furans<br>(3) Radon<br>(4) Acetylene gas |

| Question No. | Questions |
|---|---|
| 25. | The calorific value of solid waste can be determined experimentally using _____ .<br>(1) UV-Vis Spectrophotometer<br>(2) ICP-MS<br>(3) Bomb calorimeter<br>(4) Flame photometer |
| 26. | Which of the following scale is used to determine the hardness of the solid waste ?<br>(1) Moh's scale (2) Kelvin's scale<br>(3) Avogadro's scale (4) Dobson's scale |
| 27. | Incineration process is done at a temperature of _____.<br>(1) 60 – 100 °C (2) 350 – 500 °C<br>(3) 850 – 1100 °C (4) 1500 – 2000 °C |
| 28. | Which one of the following is not a Composting method ?<br>(1) NADEP method<br>(2) Bangalore method<br>(3) Mangalore Method<br>(4) Indore method |
| 29. | _____ is used as a natural liner in landfills.<br>(1) Clay (2) HDPE<br>(3) Silt (4) Gravel |

| Question No. | Questions |
|---|---|
| 30. | Which of the following is not correct about Lotka – Volterra model ?<br>(1) Deals with predator-pray interactions<br>(2) It has a pair of second-order linear differential equations<br>(3) This model assumes that the prey population finds ample food at all times<br>(4) This model assumes that predators have limitless appetite |
| 31. | As per IS 10500 : 2012, Acceptable limit of nitrate (as $NO_3$) in drinking water is :<br>(1) 15 mg/L (2) 45 mg/L<br>(3) 55 mg/L (4) 100 mg/L |
| 32. | As per the Noise Pollution (Regulation and Control) Rules, 2000, the night time limits of noise in residential area is :<br>(1) 35 dB (A) Leq (2) 45 dB (A) Leq<br>(3) 55 dB (A) Leq (4) 75 dB (A) Leq |
| 33. | According to _____ the amount of gas dissolved in a liquid is proportional to its partial pressure above the liquid.<br>(1) Dalton's Law<br>(2) Henry's Law<br>(3) Gay Lussac's Law<br>(4) Raoult's Law |

| Question No. | Questions |
|---|---|
| 34. | Sulphur dioxide in ambient air is determined by :<br>(1) Modified West and Gaeke Method<br>(2) Jackson Candle method<br>(3) Jacob and Hochheiser modified Method<br>(4) Gas Phase Chemiluminescence method |
| 35. | "Fanning" plumes are obtained under :<br>(1) unstable atmosphere<br>(2) neutral atmospheric conditions<br>(3) super adiabatic environment<br>(4) extreme inversion condition |
| 36. | After 5 days of incubation at 20°C, the residual dissolved oxygen in blanks was 7.80 mg/L and in a 0.1 percent dilution of the waste was 2.30 mg/L. What is the 5-day BOD of the waste ?<br>(1) 55 mg/L (2) 550 mg/L<br>(3) 5500 mg/L (4) 55000 mg/L |
| 37. | How much oxygen ($O_2$) in gm is required for complete combustion of 44g of propane ?<br>(1) 32 g (2) 64 g<br>(3) 82 g (4) 160 g |

| Question No. | Questions |
|---|---|
| 38. | Turbidity of water can be determined by :<br>(1) Hydrograph<br>(2) Nephelometer<br>(3) Atomic absorption spectrophotometer<br>(4) Liquid Scintillation counter |
| 39. | The soil order "vertisol" is related to :<br>(1) Alluvial soil (2) Red soil<br>(3) Black soil (4) Laterite soil |
| 40. | Which one of the following is not suitable worm species for vermicomposting ?<br>(1) *Eisenia fetia* (2) *Eudrilus eugeniae*<br>(3) *Pheretima posthuman* (4) *Periohyx excavatus* |
| 41. | Which one of the following is not correctly matched ?<br>(1) Calcium - Dolomite (2) Uranium - Pitchblende<br>(3) Lead - Galena (4) Mercury - Malachite |
| 42. | The amount of water vapor in the air as a proportion of the maximum amount the air could hold at the temperature is called as _____ .<br>(1) Relative humidity (2) Dew point<br>(3) Evaporation rate (4) Infiltration |

| Question No. | Questions |
|---|---|
| 43. | Which of the following is most abundant natural acid ?<br>(1) Hydrochloric acid (2) Phosphoric acid<br>(3) Carbonic acid (4) Nitric acid |
| 44. | Which one of the following is correct ?<br>(1) Soil organic matter (%) = 1.472 × Soil organic carbon (%)<br>(2) Soil organic matter (%) = 1.724 × Soil organic carbon (%)<br>(3) Soil organic matter (%) = 0.58 × Soil organic carbon (%)<br>(4) Soil organic matter (%) = 1.274 × Soil organic carbon (%) |
| 45. | The altitudinal distance of a geostationary satellite from the earth is about _____ .<br>(1) 22,000 km (2) 28,000 km<br>(3) 36,000 km (4) 42,000 km |
| 46. | Which of the following is correct ?<br>(1) Refractive index of the ocean water increases with salinity<br>(2) Refractive index of the ocean water increases with temperature<br>(3) Refractive index of the ocean water decreases with salinity<br>(4) Refractive index of the ocean water decreases with temperature |
| 47. | _____ receives rainfall from both the South-West and North-West monsoons.<br>(1) Lakshadweep Islands<br>(2) Andaman and Nicobar Islands<br>(3) Tamilnadu<br>(4) Jammu and Kashmir |

| Question No. | Questions |
|---|---|
| 48. | Which of the following is not correct about Tropical cyclones ?<br>(1) A tropical cyclone is a rapidly rotating storm system characterized by a low-pressure<br>(2) Tropical cyclones are steered primarily westward by the westerlies<br>(3) Atleast 26.5 °C sea surface temperature is required for the formation of a tropical cyclone<br>(4) Tropical cyclones are steered primarily westward by the Easterlies |
| 49. | Which one of the following is the Intensity scale of the earthquake ?<br>(1) Richter scale (2) Mercalli scale<br>(3) Kelvin scale (4) Mohs scale |
| 50. | Tsunami is caused by _____ :<br>(1) Earthquake (2) Hurricane<br>(3) El nino (4) Land slides |
| 51. | Food chain always starts with _____ .<br>(1) Photosynthesis (2) Respiration<br>(3) Transpiration (4) Denitrification |
| 52. | Vinegar is prepared from alcohol with the help of :<br>(1) *Lactobacillus* (2) *Acetobacter*<br>(3) *Azotobacter* (4) *Rhizobium* |

| Question No. | Questions |
|---|---|
| 53. | The diversity of habitats over the landscape or geographical 2area is known as :<br>(1) Alpha diversity (2) Beta diversity<br>(3) Gamma diversity (4) Species diversity |
| 54. | Which of the following pyramid is always upright ?<br>(1) Pyramid of number<br>(2) Pyramid of energy<br>(3) Pyramid of biomass<br>(4) All of the above |
| 55. | Which one of the following is found in tropical rainforests ?<br>(1) Neem tree (2) Mahogany tree<br>(3) Teak tree (4) Sandalwood tree |
| 56. | Which one of the following lakes is formed due to wind action ?<br>(1) Aeolian lakes (2) Shoreline lake<br>(3) Solution lake (4) Lateral lake |
| 57. | Siberian crane is regular visitor of which national park ?<br>(1) Keoladeo national park<br>(2) Dudhwa national park<br>(3) Bandipur national park<br>(4) Kanha national park |

| Question No. | Questions |
|---|---|
| 58. | Law of minimum was given by :<br>(1) Shelford (2) Leibig<br>(3) Blackman (4) Clement |
| 59. | Red Data Book is published by :<br>(1) IUCN (2) USEPA<br>(3) WWF (4) IG-BP |
| 60. | The area where two major communities meet and together is termed as :<br>(1) Ecads (2) Ecotype<br>(3) Ecotone (4) Timber line |
| 61. | The sequence of processes for production of ethanol from lignocellulosic biomass is :<br>(1) Fermentation, Pre-treatment, Saccharification, Distillation<br>(2) Pre-treatment, Saccharification, Distillation, Fermentation<br>(3) Saccharification, Distillation, Pre-treatment, Fermentation<br>(4) Pre-treatment, Saccharification, Fermentation, Distillation |
| 62. | Which radioactive isotope is used in geological dating ?<br>(1) Cobalt-60 (2) Corbon-14<br>(3) Uranium-238 (4) Technetium-99 |

| Question No. | Questions |
|---|---|
| 63. | The temperature at the inner core's surface of earth is estimated to be approximately _____ .<br>(1) 2,200 K (2) 3,500 K<br>(3) 4,700 K (4) 5,700 K |
| 64. | The percentage of $CO_2$ in biogas is :<br>(1) 50-65 % (2) 30-50 %<br>(3) 10-20 % (4) $CO_2$ is not present in biogas |
| 65. | The rate of solar energy reaching the earth surface is _____ .<br>(1) 526 W (2) 912 W<br>(3) 1016 W (4) $2.3 \times 10^3$ W |
| 66. | Anemometer is used for the measure of _____ .<br>(1) Ambient temperature (2) Humidity<br>(3) Altitude (4) Wind speed |
| 67. | Correct order of Uranium decay series is :<br>(1) Uranium → Radium → Polonium → Thorium<br>(2) Uranium → Polonium → Radium → Thorium<br>(3) Uranium → Radium → Thorium → Polonium<br>(4) Uranium → Thorium → Radium → Polonium |

| Question No. | Questions |
|---|---|
| 68. | Pyrolusite is an ore of :<br>(1) Uranium (2) Niobium<br>(3) Manganese (4) Titanium |
| 69. | Velocity of geostationary satellite with respect to earth is :<br>(1) zero (2) 1.0 m $s^{-1}$<br>(3) 10 m $s^{-1}$ (4) 15 m $s^{-1}$ |
| 70. | The main constituents of Liquefied Petroleum Gas (LPG) are :<br>(1) Methane + ethane (2) Ethane + propane<br>(3) Propane + butane (4) Butane + acetylene |
| 71. | The groundwater of the Bangladesh is severely polluted by which heavy metal ?<br>(1) Lead (2) Arsenic<br>(3) Cadmium (4) Mercury |
| 72. | Which committee reviews the EIA and EMP reports of developmental projects in Ministry of Environment, Forest and Climate Change ?<br>(1) Project Assessment Committee<br>(2) Project Evaluation Committee<br>(3) Environmental Clearance Committee<br>(4) Environment Appraisal Committee |

| Question No. | Questions |
|---|---|
| 73. | Which of the following is not a step of EIA methodology ?<br>(1) Baseline study (2) Scoping<br>(3) Environmental auditing (4) Screening |
| 74. | Which of the following methodologies can not be used for assessing the impacts of any developmental activity on the environment ?<br>(1) Adhoc method<br>(2) Flexible method<br>(3) Overlay method<br>(4) Matrix method |
| 75. | The number of environmental factors listed on the vertical axis in Leopold Matrix to carrying out the Environmental Impact Assessment :<br>(1) 22 (2) 44<br>(3) 66 (4) 88 |
| 76. | Which one represent the Environmental Management System ?<br>(1) ISO 9001 (2) ISO 14001<br>(3) OHSAS 18001 (4) ISO 21001 |
| 77. | The concept of environmental auditing in industrial units in India was formally introduced in which year ?<br>(1) 1974 (2) 1981<br>(3) 1992 (4) 2006 |

| Question No. | Questions |
|---|---|
| 78. | In EIA, Three overlapping phases : identification, prediction and evaluation belong to :<br>(1) Impact Analysis (2) Decision making<br>(3) Reporting (4) Review |
| 79. | The United Nations Commission on Sustainable Development (CSD) was established by the UN General Assembly in which year ?<br>(1) 1992 (2) 1999<br>(3) 2016 (4) 2020 |
| 80. | According to Solid Waste Management Rules, 2016, Special Economic Zones (SEZ) to earmark at least _____ of the total area of the plot for recovery and recycling facility.<br>(1) 1 % (2) 2 %<br>(3) 3 % (4) 5 % |
| 81. | How many ml. of 20 M $NH_3$ must be diluted to 500.0 ml. to make a 0.80 M solution :<br>(1) 10 mL (2) 20 mL<br>(3) 25 mL (4) 80 mL |
| 82. | The half-life of a radioactive material is 12 years. The radioactivity of this material falls to _____ of its initial value after 72 years.<br>(1) 1/6 (2) 1/8<br>(3) 1/16 (4) 1/64 |

| Question No. | Questions |
|---|---|
| 83. | Which of the following is not a secondary air pollutant ?<br>(1) PAN (2) $O_3$<br>(3) $SO_x$ (4) Acid rain |
| 84. | $^{222}Rn$ is unstable and decays by losing 6 neutrons and 2 protons. The final decay product is _____ .<br>(1) $^{218}Bi$ (2) $^{216}Bi$<br>(3) $^{214}Po$ (4) $^{212}Tl$ |
| 85. | The percentage of nitrogen in urea is _____ .<br>(1) 23.3% (2) 22.0%<br>(3) 40.6% (4) 46.6% |
| 86. | Which indicator is used in Winkler method titration during the estimation of dissolved oxygen in water ?<br>(1) Potassium chromate (2) Starch solution<br>(3) Methyl orange (4) Phenolphthalein |
| 87. | Which of the following is locating agent of amino acids in Paper chromatography ?<br>(1) Ninhydrin (2) Methyl orange<br>(3) Phenolphthalein (4) Brilliant green dye |
| 88. | Electrophoresis can not be used for the separation of :<br>(1) Amino acids (2) Proteins<br>(3) Lipids (4) Nucleic acid |

| Question No. | Questions |
|---|---|
| 89. | SDS contains _____ carbon atoms :<br>(1) 6 (2) 10 (3) 12 (4) 16 |
| 90. | Which of the following pesticide contains sulphur atoms ?<br>(1) Malathion (2) DDT<br>(3) 2, 4-D (4) Carbaryl |
| 91. | If the Arithmetic mean of a set of two observations is 9 and its Geometric mean is 6. Then the Harmonic mean of the set of observations is :<br>(1) 2 (2) 4 (3) 15 (4) 54 |
| 92. | Gaussian Plume model is about :<br>(1) Microorganism growth<br>(2) Risk assessment<br>(3) Predator-prey interactions<br>(4) Air pollution dispersion |
| 93. | Chi-square curve ranges from :<br>(1) $-\infty$ to $+\infty$ (2) $-\infty$ to 0<br>(3) 0 to $\infty$ (4) 0 to 1 |
| 94. | Mode of the series 0, 0, 0, 2, 2, 3, 3, 8, 10 is :<br>(1) 0 (2) 2<br>(3) 3 (4) 10 |

| Question No. | Questions |
|---|---|
| 95. | The midpoint of the values after they have been ordered from the smallest to the largest or the largest to the smallest is called :<br>(1) Mean (2) Median<br>(3) Lower quartile (4) Upper quartile |
| 96. | The probability of an event cannot be :<br>(1) 0.3 (2) 0.5 (3) −0.5 (4) 1.0 |
| 97. | What is the Median of the following set of scores ? 3, 6, 9, 4, 7, 2, 8 :<br>(1) 3 (2) 4 (3) 6 (4) 9 |
| 98. | If all frequencies of classes are same, the value of Chi-square is _____ :<br>(1) Zero (2) One<br>(3) Infinity (4) Can not be predicted |
| 99. | Which of the following radiations has maximum energy ?<br>(1) Infrared radiations (2) Gamma radiation<br>(3) UV radiations (4) Microwave radiations |
| 100. | Sardar Sarovar Dam is built on which river ?<br>(1) Krishna river (2) Cauvery river<br>(3) Narmada river (4) Bhagirathi river |
| | |

# Code - A

| Q. 1 | Q.2 | Q.3 | Q.4 | Q.5 | Q.6 | Q.7 | Q.8 | Q.9 | Q.10 |
|---|---|---|---|---|---|---|---|---|---|
| b | d | c | c | d | b | a | a | c | a |
| Q. 11 | Q.12 | Q.13 | Q.14 | Q.15 | Q.16 | Q.17 | Q.18 | Q.19 | Q.20 |
| d | c | b | b | c | d | a | a | a | c |
| Q. 21 | Q.22 | Q.23 | Q.24 | Q.25 | Q.26 | Q.27 | Q.28 | Q.29 | Q.30 |
| a | b | c | b | b | a | a | b | a | c |
| Q. 31 | Q.32 | Q.33 | Q.34 | Q.35 | Q.36 | Q.37 | Q.38 | Q.39 | Q.40 |
| d | a | c | b | c | a | b | b | b | a |
| Q. 41 | Q.42 | Q.43 | Q.44 | Q.45 | Q.46 | Q.47 | Q.48 | Q.49 | Q.50 |
| d | c | d | b | c | d | d | c | a | c |
| Q. 51 | Q.52 | Q.53 | Q.54 | Q.55 | Q.56 | Q.57 | Q.58 | Q.59 | Q.60 |
| b | b | b | a | d | c | d | b | c | c |
| Q. 61 | Q.62 | Q.63 | Q.64 | Q.65 | Q.66 | Q.67 | Q.68 | Q.69 | Q.70 |
| b | d | c | b | d | b | c | a | a | d |
| Q. 71 | Q.72 | Q.73 | Q.74 | Q.75 | Q.76 | Q.77 | Q.78 | Q.79 | Q.80 |
| a | d | c | b | c | a | c | c | a | b |
| Q. 81 | Q. 82 | Q.83 | Q.84 | Q.85 | Q.86 | Q.87 | Q.88 | Q.89 | Q.90 |
| b | d | c | a | b | c | c | a | b | c |
| Q. 91 | Q.92 | Q.93 | Q.94 | Q.95 | Q.96 | Q.97 | Q.98 | Q.99 | Q100. |
| b | c | d | d | a | a | b | b | a | b |

Code - B

| Q. 1 | Q.2 | Q.3 | Q.4 | Q.5 | Q.6 | Q.7 | Q.8 | Q.9 | Q.10 |
|---|---|---|---|---|---|---|---|---|---|
| a | d | c | b | c | a | c | c | a | b |
| Q. 11 | Q.12 | Q.13 | Q.14 | Q.15 | Q.16 | Q.17 | Q.18 | Q.19 | Q.20 |
| b | b | b | a | d | c | d | b | c | c |
| Q. 21 | Q.22 | Q.23 | Q.24 | Q.25 | Q.26 | Q.27 | Q.28 | Q.29 | Q.30 |
| d | a | c | b | c | a | b | b | b | a |
| Q. 31 | Q.32 | Q.33 | Q.34 | Q.35 | Q.36 | Q.37 | Q.38 | Q.39 | Q.40 |
| d | c | b | b | c | d | a | a | a | c |
| Q. 41 | Q.42 | Q.43 | Q.44 | Q.45 | Q.46 | Q.47 | Q.48 | Q.49 | Q.50 |
| b | c | d | d | a | a | b | b | a | b |
| Q. 51 | Q.52 | Q.53 | Q.54 | Q.55 | Q.56 | Q.57 | Q.58 | Q.59 | Q.60 |
| b | d | c | b | d | b | c | a | a | d |
| Q. 61 | Q.62 | Q.63 | Q.64 | Q.65 | Q.66 | Q.67 | Q.68 | Q.69 | Q.70 |
| b | d | c | a | b | c | c | a | b | c |
| Q. 71 | Q.72 | Q.73 | Q.74 | Q.75 | Q.76 | Q.77 | Q.78 | Q.79 | Q.80 |
| d | c | d | b | c | d | d | c | a | c |
| Q. 81 | Q. 82 | Q.83 | Q.84 | Q.85 | Q.86 | Q.87 | Q.88 | Q.89 | Q.90 |
| a | b | c | b | b | a | a | b | a | c |
| Q. 91 | Q.92 | Q.93 | Q.94 | Q.95 | Q.96 | Q.97 | Q.98 | Q.99 | Q100. |
| b | d | c | c | d | b | a | a | c | a |

# Code - C

| Q. 1 | Q.2 | Q.3 | Q.4 | Q.5 | Q.6 | Q.7 | Q.8 | Q.9 | Q.10 |
|---|---|---|---|---|---|---|---|---|---|
| d | c | d | b | c | d | d | c | a | c |
| Q. 11 | Q.12 | Q.13 | Q.14 | Q.15 | Q.16 | Q.17 | Q.18 | Q.19 | Q.20 |
| a | b | c | b | b | a | a | b | a | c |
| Q. 21 | Q.22 | Q.23 | Q.24 | Q.25 | Q.26 | Q.27 | Q.28 | Q.29 | Q.30 |
| b | d | c | c | d | b | a | a | c | a |
| Q. 31 | Q.32 | Q.33 | Q.34 | Q.35 | Q.36 | Q.37 | Q.38 | Q.39 | Q.40 |
| b | d | c | a | b | c | c | a | b | c |
| Q. 41 | Q.42 | Q.43 | Q.44 | Q.45 | Q.46 | Q.47 | Q.48 | Q.49 | Q.50 |
| b | d | c | b | d | b | c | a | a | d |
| Q. 51 | Q.52 | Q.53 | Q.54 | Q.55 | Q.56 | Q.57 | Q.58 | Q.59 | Q.60 |
| d | a | c | b | c | a | b | b | b | a |
| Q. 61 | Q.62 | Q.63 | Q.64 | Q.65 | Q.66 | Q.67 | Q.68 | Q.69 | Q.70 |
| a | d | c | b | c | a | c | c | a | b |
| Q. 71 | Q.72 | Q.73 | Q.74 | Q.75 | Q.76 | Q.77 | Q.78 | Q.79 | Q.80 |
| b | c | d | d | a | a | b | b | a | b |
| Q. 81 | Q. 82 | Q.83 | Q.84 | Q.85 | Q.86 | Q.87 | Q.88 | Q.89 | Q.90 |
| d | c | b | b | c | d | a | a | a | c |
| Q. 91 | Q.92 | Q.93 | Q.94 | Q.95 | Q.96 | Q.97 | Q.98 | Q.99 | Q100. |
| b | b | b | a | d | c | d | b | c | c |

Code - D

| Q. 1 | Q.2 | Q.3 | Q.4 | Q.5 | Q.6 | Q.7 | Q.8 | Q.9 | Q.10 |
|---|---|---|---|---|---|---|---|---|---|
| d | c | b | d | c | d | a | a | a | c |
| Q. 11 | Q.12 | Q.13 | Q.14 | Q.15 | Q.16 | Q.17 | Q.18 | Q.19 | Q.20 |
| b | c | d | d | a | a | b | b | a | b |
| Q. 21 | Q.22 | Q.23 | Q.24 | Q.25 | Q.26 | Q.27 | Q.28 | Q.29 | Q.30 |
| a | d | c | b | c | a | c | c | a | b |
| Q. 31 | Q.32 | Q.33 | Q.34 | Q.35 | Q.36 | Q.37 | Q.38 | Q.39 | Q.40 |
| b | b | b | a | d | c | d | b | c | c |
| Q. 41 | Q.42 | Q.43 | Q.44 | Q.45 | Q.46 | Q.47 | Q.48 | Q.49 | Q.50 |
| d | a | c | b | c | a | b | b | b | a |
| Q. 51 | Q.52 | Q.53 | Q.54 | Q.55 | Q.56 | Q.57 | Q.58 | Q.59 | Q.60 |
| a | b | c | b | b | a | a | b | a | c |
| Q. 61 | Q.62 | Q.63 | Q.64 | Q.65 | Q.66 | Q.67 | Q.68 | Q.69 | Q.70 |
| d | c | d | b | c | d | d | c | a | c |
| Q. 71 | Q.72 | Q.73 | Q.74 | Q.75 | Q.76 | Q.77 | Q.78 | Q.79 | Q.80 |
| b | d | c | b | d | b | c | a | a | d |
| Q. 81 | Q. 82 | Q.83 | Q.84 | Q.85 | Q.86 | Q.87 | Q.88 | Q.89 | Q.90 |
| b | d | c | c | d | b | a | a | c | a |
| Q. 91 | Q.92 | Q.93 | Q.94 | Q.95 | Q.96 | Q.97 | Q.98 | Q.99 | Q100. |
| b | d | c | a | b | c | c | a | b | c |