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2022

TEST BOOKLET

TEST BOOKLET SERIES

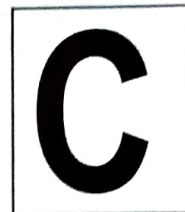
Paper-IV

Time allowed : 3 hours

Full marks : 200

Answer *all* the questions.

Questions are of equal value.



715

Serial No.

Roll No.:

Signature of the Candidate:

INSTRUCTIONS

Candidates should read the following instructions carefully before answering the questions:

1. This booklet consists of 24 pages including this front page, containing 200 questions. **Verify the Page Nos. and Test Booklet series on each page and bring at once to the Invigilator's notice any discrepancy.**
2. Answers will have to be given in the Special Answer-Sheets supplied for the purpose.
3. Before you proceed to mark in the Answer-Sheet in response to various items in the Test Booklet, you have to fill in some particulars in the Answer-Sheet as per instructions sent to you in the Admit Card. **Do not fold the Answer-Sheet as this will result in error in your marks.**
4. All questions are of multiple-choice answer-type. You will find **four** probable answers (A), (B), (C) and (D) against each question. Find out which of the four answers appears to you to be **correct or the best**. Now darken the circle corresponding to the letter of the selected answer in the Answer-Sheet with **Black Ball Point Pen** as per instructions printed on the reverse of the **Admit Card** and in the Answer-Sheet.
5. One and only one circle is to be fully blackened for answer. Any spot in any other circle (multiple circle) or in wrong circle will be considered as wrong answer. If more than one circle is encoded for a particular answer, it will be treated as a wrong answer.
6. **There will be negative marking of 0.25 mark for each wrong answer.**
7. **There are blank pages at the end of this Booklet for Rough Work.**
8. **The Special Answer-Sheet should be handed over to the Invigilator before leaving the Examination Hall. You are permitted to take away the used Test Booklet after completion of the examination.**

1. Which one is not a pollutant normally?
 (A) Hydrocarbon ✓
(B) Carbon dioxide
(C) Carbon monoxide
(D) Sulphur dioxide
2. Which one of the following is not a naturally-occurring element that may be hazardous to human health?
(A) Lead
 (B) Radon
(C) Phthalate
(D) Mercury
3. Where was the 4th meeting of the "National Start-up Advisory Council" (NSAC) held?
(A) New Delhi
(B) Mumbai
(C) Bengaluru
(D) Hyderabad
4. Which of the following types of unemployment is most common in agricultural sector?
(A) Seasonal Unemployment
(B) Frictional Unemployment
 (C) Disguised Unemployment
(D) Voluntary Unemployment
5. In coming years, skin related disorders will be more common due to
 (A) water pollution
 (B) depletion of ozone layer
(C) pollutants in air
(D) use of detergents
6. Which metal of the following is powdered, suspended in oil and used as paint?
(A) Fe
(B) Sn
 (C) Al
(D) Ag
7. Study of inter-relationships between organisms and their environment is
 (A) ecology
(B) ecosystem
(C) phytogeography
(D) ethology
8. Which one of the following type of pollution is cultural eutrophication?
(A) Noise pollution
(B) Thermal pollution
(C) Soil pollution
 (D) Water pollution
9. DDT and bleaching powder are the compounds of
(A) S
(B) P
 (C) Chlorine
(D) As
10. Which European country recently legalised same-sex marriage, becoming the 30th country in the world to do so?
(A) Switzerland
(B) Italy
(C) Portugal
(D) Spain

11. Citric acid can be produced from crude sugar by aerobic fermentation using the enzyme:

- (A) Amylase
- (B) Lipase
- (C) Thiobacilla
- (D) Aspergillus niger

12. The closely related morphologically similar sympatric populations, but reproductively isolated, are designated as

- (A) clones ✓
- (B) sibling species
- (C) clines
- (D) demes

13. Which one of the following would most directly prevent a dead zone from forming in a water body that is already experiencing eutrophication?

- (A) Increase the O_2 concentration in the water
- (B) Lower the nutrient levels
- (C) Increase the amount of algae and phytoplankton
- (D) Increase the amount of bacteria that decompose dead organic matter

14. As of 2021, which actor holds the record of receiving most Filmfare awards for Best Actor?

- (A) Dev Anand
- (B) Raj Kapoor
- (C) Dharmendra
- (D) Dilip Kumar

15. Minor gypsum is added to cement clinker during its grinding in order to

- (A) increase the plasticity of the cement paste
- (B) decrease the plasticity of the cement paste
- (C) increase the plasticity and increase initial setting time of the cement paste
- (D) reduce plasticity and quick setting of cement paste

16. The velocity profile of a liquid flowing through a capillary is

- (A) Straight line
- (B) Circular arc
- (C) Hyperbolic
- (D) Parabolic

17. Which of the following super conducting material has the highest critical temperature and highest critical magnetic flux density?

- (A) Lead
- (B) Nb-Zr alloy
- (C) Nb_3Ge
- (D) $YBa_2Cu_3O_7$

18. Which one of the following would be described as anthropogenic?

- (A) Water backing up behind a beaver dam
- (B) The dinosaurs going extinct
- (C) Logging a forest
- (D) A mudslide burying a stream

19. Which of the following solid waste disp. method is ecologically most acceptable?

- (A) Land fill
- (B) Incineration
- (C) Pyrolysis ✗
- (D) Composting

20. Which one of the following is not a predicted consequence of global climate change?

- (A) Spread of diseases carried by insects, such as malaria.
- (B) Rise in sea levels. ✓
- (C) Increases in the global average air and ocean temperatures. ✓
- (D) All of the above

Please Turn Over

21. Which one of the following is associated with the issue of control and phasing out of the use of ozone depleting substances?

- (A) Bretton Woods Conference
- (B) Montreal Protocol
- (C) Kyoto Protocol
- (D) Nagoya Protocol

22. The Nobel Prize for Chemistry 2021 has been awarded for developing a new way for building molecules known as

- (A) Altered DNAs
- (B) Altered mRNAs
- (C) Asymmetric Organocatalyst
- (D) None of the above

23. In clinical laboratory thin layer chromatography (TLC) is used to identify:

- (A) Illicit drugs
- (B) Poisons
- (C) Inks
- (D) All of the above

24. The material successfully used as induction core is

- (A) Garnet
- (B) AlNiCo magnet
- (C) Ba-Sr ferrite
- (D) Ni-Zn ferrite

25. What is the name of the new model of Sustainable Development of Rivers proposed by the Government of India?

- (A) Namani Bharat
- (B) Arth Ganga
- (C) River SDG
- (D) Namani Nadi

26. India imports maximum gold from which country?

- (A) Switzerland
- (B) UAE
- (C) South Africa
- (D) Brazil

27. What is the primary cause of ocean acidification?

- (A) Atmospheric CO_2 dissolving in ocean water.
- (B) Increases in acid rain.
- (C) Increased erosion of acid-containing rocks.
- (D) Water draining into the ocean has a higher pH from industrial pollutants.

28. Oil of winter green is

- (A) Acetic acid
- (B) Benzoic acid
- (C) Methyl Salicylate
- (D) Phthalic acid

29. The real name of Gulzar, the noted poet and lyricist is

- (A) Sampooran Singh Kalra
- (B) Sadanand Singh Kalra
- (C) Surjeet Singh Kohli
- (D) Probodh Chandra Bhatt

30. Green chemistry uses following oxidising agent for clean oxidation

- (A) $\text{K}_2\text{Cr}_2\text{O}_7$
- (B) NH_4NO_3
- (C) $\text{K}_2\text{S}_2\text{O}_8$
- (D) Aqueous H_2O_2

31. Hydraulic press is based on
(A) Archimedes' Law
 (B) Pascal's law
(C) Reynold's law
(D) Bernoulis' law
32. Current in a circuit is wattless when phase difference between current and voltage is
(A) 0°
(B) $\pi/2$
(C) π
(D) $-\pi$
33. Which one of the following terms describes the complete set of chemical reactions that occur within cells?
(A) Metabolism
(B) Cellular respiration
 (C) Calvin cycle
(D) Bio energetics
34. Plants such as Prosopis, Acacia and Capparis represent examples of tropical
(A) deciduous forests
(B) evergreen forests
(C) grass lands
 (D) thorn forests
35. The main hindrance of nanomaterials is
(A) large surface area to volume ratio.
(B) uniform size distribution in nanometer range.
(C) coarsening effect from ostwald ripening or agglomeration on aging.
(D) even morphology.
36. National Science Day is observed on
(A) 1st July
(B) 14th November
 (C) 28th February
(D) 5th September
37. Phosphate pollution is caused by
(A) sewage and phosphate rock
 (B) sewage and agricultural fertilizers
(C) phosphate rock only
(D) agricultural fertilizers only
38. The Rourkela Steel Plant is located on the bank of
(A) Bhadra River
(B) Suvarnarekha River
(C) Damodar River
 (D) Brahmani River
39. Which of the following is a secondary pollutant?
 (A) PAN
(B) Aerosol
(C) CO
(D) CO₂
40. Which of the following is known as inorganic graphite?
(A) (BN)₃
(B) B₃N₃H₆
(C) Si₆
(D) Si₃N₄

41. Pyramid of numbers deals with number of
(A) species in an area
(B) individuals in a community
(C) individuals in a tropic-level
(D) subspecies in a community
42. Which one of the following is an example of an emerging disease?
(A) Malaria
(B) Ebola
(C) Cancer
(D) Heart disease
43. Which university was sought to be converted into Gati Shakti Vishwa Vidyalaya as per a recent bill passed in the Lok Sabha?
(A) National Rail and Transportation Institute (NRTI)
(B) BITS Pilani
(C) Indira Gandhi Institute of Development Research
(D) IIT Hyderabad
44. Thick paste of cement, sand, stone chips and water is
(A) Mortar
(B) Concrete
(C) Reinforced Cement Concrete
(D) Monoliths
45. The process of zone refining is used for ultra purification of
(A) Si
(B) Ge
(C) Ga
(D) All of the above
46. Zener diode is used as
(A) Coupler
(B) Rectifier
(C) Amplifier
(D) Voltage regulator
47. Which one of the following describes the use of organisms to control pests?
(A) Bioremediation
(B) Biological control
(C) Species niche partitioning
(D) Vector control
48. On which date, Constituent Assembly of India met for the first time?
(A) June 3, 1946
(B) July 6, 1946
(C) July 25, 1946
(D) December 9, 1946
49. Water soluble Vitamin is
(A) Vitamin A
(B) Vitamin D
(C) Vitamin E
(D) Vitamin B complex
50. Mention the organisation which released the 'State of Global Climate 2021' report:
(A) Niti Aayog
(B) NABARD
(C) World Meteorological Organisation
(D) Food and Agriculture Organisation

51. A micro-organism is viewed through a microscope and is determined to be made of a single cell that lacks organelles. From this information, which one of the following can you conclude?
- (A) The organism belongs to Domain Bacteria.
 - (B) The organism belongs to Domain Eukarya.
 - (C) The organism belongs to Domain Archaea.
 - (D) The cell is prokaryotic.
52. Bacteria that feed upon decaying organic matter in the soil would best be described as which one of the following?
- (A) Heterotrophic
 - (B) Autotrophic
 - (C) Fungi
 - (D) Cyanobacteria
53. An endocrinologist deals with
- (A) Teeth
 - (B) Glands
 - (C) Epidemics
 - (D) Heart
54. Which country has the largest muslim population in the world?
- (A) Pakistan
 - (B) Indonesia
 - (C) Iran
 - (D) Morocco
55. In which one among the following categories of protected areas in India are local people not allowed to collect and use the biomass?
- (A) Biosphere Reserves
 - (B) National Parks
 - (C) Wetlands declared under Ramsar Convention
 - (D) Wildlife Sanctuaries
56. In what rate the temperature of earth's atmosphere is increasing per year due to Green house effect?
- (A) 1°C
 - (B) 0.05°C
 - (C) 0.5°C
 - (D) 0.8°C
57. Anticancer drug is
- (A) Captopric
 - (B) Salicilin
 - (C) Aspirin
 - (D) Compothecin
58. A bicycle in motion does not fall because one of the following is conserved.
- (A) Linear momentum
 - (B) Angular momentum
 - (C) Kinetic energy
 - (D) All of the above
59. For individuals living in areas where no freshwater is available, which one of the following would produce water that could be used for drinking?
- (A) Desalination
 - (B) Groundwater mining
 - (C) Sublimation
 - (D) Transpiration
60. Under how many themes, the Nadi Utsav 2021 is being celebrated in India?
- (A) Two
 - (B) Four
 - (C) Six
 - (D) Seven

61. Which of the following is a branded narcotic drug?
- (A) Diazepam
(B) Morphine
(C) Ibuprofen
(D) Mestranol
62. How many items are there in the 11th Schedule of the constitution of India?
- (A) 27
(B) 28
(C) 29
(D) 33
63. Which state tableau was voted as the best among the States/UTs in the 'popular choice' category in Republic Day, 2022?
- (A) Uttar Pradesh
(B) Assam
(C) Maharashtra
(D) Karnataka
64. Use of polished rice in human diet causes the following disease
- (A) Night blindness
(B) Color blindness
(C) Goitre blindness
(D) Beriberi blindness
65. The optimum temperature for sludge digestion is
- (A) 10°C
(B) 25°C
(C) 37°C
(D) 50°C
66. Metallic bond is not characterised by
- (A) Opacity
(B) Ductility
(C) High conductivity
(D) Directionality
67. What type of noise can be abated by providing lining on walls and ceiling with sound absorbing material?
- (A) Source noise
(B) Air borne noise
(C) Structural noise
(D) Reflection noise
68. Bleeding is stopped by applying FeCl_3 solution because
- (A) blood starts flowing in opposite direction.
(B) reacts with blood and forms solid which seals the blood vessels.
(C) blood is coagulated and seals blood vessel.
(D) None of the above
69. Brass is the alloy of
- (A) Cu & Zn
(B) Cu & Sn
(C) Cu & Al
(D) Zinc and Tin
70. Who has been appointed as the President of the Confederation of Indian Industry (CII) for the year 2022-2023?
- (A) Sanjib Bajaj
(B) R.K. Dinesh
(C) Alka Mittal
(D) Pawan Munjal

71. In which year India International Science Festival was held?

- (A) 2016
- (B) 2017
- (C) 2018
- (D) 2019

72. The biggest ship building yard of India is

- (A) Garden Reach Workshop, Kolkata
- (B) Hindustan Ship yard, Visakhapatnam
- (C) Mazagaon Dock, Mumbai
- (D) Cochin Ship yard, Kochi

73. In Minamata Bay Japan the animals which remained free from Minamata disease, are

- (A) dogs
- (B) cats
- (C) pigs
- (D) rabbits

74. The study of the distribution of the world's species both in the past and in the present is known by what term?

- (A) Geology
- (B) Biogeography
- (C) Biodiversity
- (D) Biogeomorphology

75. Which one of the following processes would remove nitrates from contaminated water by converting it into nitrogen gas?

- (A) Nitrification
- (B) Nitrogen fixation
- (C) Denitrification
- (D) Assimilation

76. "Satyajit Ray Lifetime Achievement" is associated with

- (A) Physics
- (B) Film and Entertainment
- (C) Cricket
- (D) Theatre

77. Arrack Movement or Anti-liquor Movement was led by women in which state of India?

- (A) Manipur
- (B) Punjab
- (C) Rajasthan
- (D) Andhar Pradesh

78. 2.0% solution of mercurochrome is used as

- (A) Insecticide
- (B) Fungicide
- (C) Herbicide
- (D) Strong antiseptic

79. Which country topped the Sustainable Development Report 2021?

- (A) UK
- (B) USA
- (C) Germany
- (D) Finland

80. The formation of ozone hole in the Antarctic region has been a cause of concern. What could be the reason for the formation of this hole?

- (A) Presence of prominent tropospheric turbulence; and inflow of CFCs.
- (B) Presence of prominent polar front and stratospheric clouds; and inflow of CFCs.
- (C) Absence of polar front and stratospheric clouds; and inflow of methane and CFCs.
- (D) Increased temperature at polar region due to global warming.

81. Polarisation of light proves the
 (A) longitudinal nature of light
 (B) quantum nature of light
 (C) corpuscular nature of light
 ✓(D) transverse nature of light
82. If you are concerned about bio magnification of toxins, which one of the following would you most want to avoid eating?
 ✓(A) Tuna (tertiary consumer)
 (B) Seaweed (producer)
 (C) Urchin (primary consumer)
 (D) Sculpin (secondary consumer)
83. Which one of the following is not a site for in-situ method of conservation of flora?
 (A) Biosphere Reserves
 ✓(B) Botanical Garden
 (C) National Park
 (D) Wildlife Sanctuary
84. Which one of the following is a biodiversity hotspot in India?
 ✓(A) Western Ghats
 (B) Nandadevi
 (C) Easter Ghats
 (D) Aravalli
85. Which one of the following is more indicative of conventional agriculture, and not sustainable agriculture?
 (A) Biological control
 (B) Intercropping
 (C) Minimal tillage
 ✓(D) Integrated pest management
86. Contact angle of mercury with respect to glass is
 ✓(A) 0°
 (B) 90°
 (C) $<90^\circ$
 (D) $>90^\circ$
87. World Pulses Day is observed globally on
 (A) 8 February
 (B) 9 February
 (C) 10 February
 (D) 11 February
88. Which article of the Constitution of India states that 'no Citizen shall be denied admission into any educational institution maintained by the State or receiving aid out of State funds on grounds only of religion, race, caste, language or any of them'?
 ✓(A) Article 26
 (B) Article 27
 (C) Article 28
 (D) Article 29
89. People and their culture that have existed continuously dating back to a time before their land was invaded or colonized by other societies are known as
 (A) Endemic
 (B) Indigenous
 (C) Exotic
 (D) Incurable
90. The Paracin Open 'A' Chess Tournament held in July 2022 in Serbia has been won by
 (A) R. Praggnanandhaa
 (B) Alexander Predke
 (C) Al Muthaiah
 (D) Alisher Suleymenov

91. 'RADAR' stands for;
- (A) Radio Detection and Ranging
 - (B) Ready Advanced Appliance for Ranging
 - (C) Range Detection Appliance for Airplane Ranging
 - (D) Ready Advanced Airplane Ranging
92. Human ear is most sensitive to the sound of frequencies in between
- (A) 100 – 500 Hz
 - (B) 500 – 5000 Hz
 - (C) 5000 – 10000 Hz
 - (D) 10000 – 20000 Hz
93. Which one of the following is not a renewable source of energy?
- (A) Nuclear
 - (B) Wind
 - (C) Solar
 - (D) Hydropower
94. Which one of the following is not consumed as an edible oil?
- (A) Sesame oil
 - (B) Ricebran oil
 - (C) Palm oil
 - (D) Castor oil
95. Which country is set to host the first tribal nation's summit since 2016?
- (A) USA
 - (B) India
 - (C) Russia
 - (D) Japan
96. Which of the following functions as primary standard?
- (A) KMnO_4
 - (B) $\text{K}_2\text{Cr}_2\text{O}_7$
 - (C) Sodium Thiosulphate
 - (D) EDTA
97. Renewable source of energy is
- (A) biomass
 - (B) coal
 - (C) petroleum
 - (D) kerosene
98. What is the meaning of coral bleaching?
- (A) Paling of coral color or decline in zooxanthellae due to climate change
 - (B) Impacts of excessive sea trade on fishing industry
 - (C) Both (A) and (B)
 - (D) None of the above
99. Oxygen binding protein in body is
- (A) Hemoglobin
 - (B) Myoglobin
 - (C) Hemery Thrin
 - (D) All of the above
100. Which institution released a report entitled, "Reforms in Urban Planning Capacity in India"?
- (A) World Bank
 - (B) Niti Aayog
 - (C) UNICEF
 - (D) UniFem

101. Pollavaram Project is associated with the river:

- (A) Cauvery
- (B) Penner
- (C) Krishna
- (D) Godavari

102. Acid rains are produced by

- (A) excess NO_2 and SO_2 from burning fossil fuels
- (B) excess production of NH_3 by industry and coal gas
- (C) excess release of carbon monoxide by incomplete combustion
- (D) excess formation of CO_2 by combustion and animal respiration

103. Which Indian city has prepared a Draft Regional Plan (DRP-2041)?

- (A) Mumbai
- (B) Kochi
- (C) Chennai
- (D) New Delhi

104. Mohan Veena is associated with

- (A) Pt. Vishwa Mohan Bhatt
- (B) Doraiswamy Iyengar
- (C) Ayyagani Swamasundaram
- (D) Zia Mohinuddin Dagar

105. Alzheimer's disease is caused by

- (A) interaction of Al with internal organs of the body.
- (B) interaction of Cu with internal organs of the body.
- (C) interaction of Ag with internal organs of the body.
- (D) interaction of Sn with internal organs of the body.

106. Which of the following amendments of the Indian Constitution is related to reservation of SC's and ST's and representation of Anglo Indians in the Lok Sabha and State Assembly?

- (A) 54th Amendment
- (B) 63th Amendment
- (C) 111th Amendment
- (D) 79th Amendment

107. An endobiotic fungus is

- (A) Agaricus
- (B) Morchella
- (C) Synchytrium
- (D) Polyporus

108. Ultraviolet radiations from sunlight causes a reaction that produces

- (A) fluorides
- (B) carbon monoxide
- (C) sulphur dioxide
- (D) ozone

109. The equal sharing of Earth's resources is specifically known as

- (A) Environmental justices
- (B) Sustainability
- (C) Environmental equity
- (D) Ecological foot printing

110. C-dating application of radio isotope ^{14}C emits

- (A) α particle
- (B) β particle
- (C) γ -ray
- (D) positrons

111. Depletion of the stratospheric ozone layer occurs when molecules of ozone are destroyed by chemicals such as

- (A) CFC
- (B) DDT
- (C) O₃
- (D) PCB

112. Thermit welding uses Al powder because of

- (A) its lightness
- (B) its lower melting point
- (C) its greater affinity for O₂
- (D) All of the above

113. A diet high in saturated fats can be linked to which of the following disorder

- (A) Kidney Failure
- (B) Bulimia
- (C) Anorexia
- (D) Cardiovascular diseases

114. Which one of the following is not a major cause of biodiversity loss?

- (A) Habitat loss
- (B) Climate change
- (C) Invasive Species
- (D) Zoonotic diseases

115. The term PVC in the plastic industry stands for

- (A) Phospho Vinyl Chloride
- (B) Poly Vinyl Carbonate
- (C) Poly Vinyl Chloride
- (D) Phospho Vanadium Chloride

116. If you analyzed waste water directly after primary treatment, what would you notice?

- (A) Harmful bacteria and other biological agents have been killed or removed
- (B) The water is potable
- (C) Much of the dissolved solids have been removed
- (D) Many suspended solids have been removed

117. The blueness of the sky is mainly due to

- (A) the scattering of sunlight by air molecules.
- (B) the presence of water vapor.
- (C) absorption of blue light by the air.
- (D) emission of blue light by the atmosphere.

118. What is the urban population percentage to the total population of India as per the Census 2011?

- (A) 31
- (B) 34
- (C) 36
- (D) 40

119. Carbon mono oxide is a pollutant because

- (A) reacts with hemoglobin
- (B) makes nervous system inactive
- (C) it reacts with O₂
- (D) it inhibits glycolysis

120. Which of the following is a polysaccharide?

- (A) Glucose
- (B) Starch
- (C) Glycogen
- (D) Sucrose

121. Water is essential to life because it has many special properties. Which one of the following is a special property of water?

- (A) It is able to covalently bond to other water molecules
- (B) It is good at dissolving other substances
- (C) It easily heats up γ
- (D) It easily cools ϕ

122. The pressure gauge required for measuring high pressure of the order of 10^5 Psi

- (A) U-Tube manometer
- (B) Bourdon pressure gauge
- (C) Mc Cleod gauge
- (D) Pirani gauge

123. pH of the blood in human body around 7 is maintained by buffering action of

- (A) H_2CO_3 and Na_2CO_3
- (B) H_2CO_3 and NaHCO_3
- (C) CH_3COOH and CH_3COONa
- (D) Na_2HPO_4 and NaH_2PO_4

124. The increasing amount of carbon dioxide in the air is slowly raising the temperature of the atmosphere, because it absorbs

- (A) the water vapour of the air and retains its heat.
- (B) the ultraviolet part of the solar radiation.
- (C) all the solar radiations.
- (D) the infrared part of the solar radiation.

125. Samvidhan Divas or Constitution Day is celebrated on

- (A) 3rd December
- (B) 25th October
- (C) 5th January
- (D) 26th November

126. During cell divisions, DNA synthesis takes place in

- (A) Interphase
- (B) Anaphase
- (C) Prophase
- (D) Telophase

127. Gaseous fuel having highest calorific value of the following is

- (A) producer gas
- (B) water gas
- (C) natural gas
- (D) liquified petroleum gas

128. What is the new deadline for implementation of Smart Cities Mission?

- (A) 2023
- (B) 2024
- (C) 2025
- (D) 2026

129. Which of the following reactions is an example of nuclear fusion reaction?

- (A) ${}^2_1\text{H} + {}^3_1\text{H} = {}^4_2\text{He} + {}^1_0\text{n}$
- (B) ${}^{12}_6\text{C} + {}^1_1\text{H} = {}^{14}_7\text{N} + \gamma$
- (C) ${}^{235}_{92}\text{U} + {}^1_0\text{n} = {}^{142}_{56}\text{Ba} + {}^{91}_{36}\text{Kr} + 3{}^1_0\text{n}$
- (D) ${}^{14}_7\text{N} + {}^1_0\text{n} = {}^{12}_6\text{C} + {}^1_1\text{H}$

130. The supersonic jets cause pollution by the thinning of

- (A) O_2 layer
- (B) O_3 layer
- (C) CO_2 layer
- (D) SO_2 layer

131. Supercritical CO_2 held at or above its critical temperature and critical pressure, adopts properties

- (A) midway of solid and gas
- (B) of liquid only
- (C) of gas only
- (D) midway between liquid and gas

132. In a chemical reaction, catalyst changes

- (A) Potential energy of the products
- (B) Potential energy of the reactants
- (C) Heat of reaction
- (D) Activation energy of the reaction

133. Which one of the following is not colloid?

- (A) Milk
- (B) Smoke
- (C) Blood
- (D) Urea

134. Which form of symbiosis benefits one member of the interaction, but neither benefits nor harms the other member?

- (A) Parasitism
- (B) Commensalism
- (C) Sequentialism
- (D) Mutualism

135. Which of the following is widely used as flavors in food and perfumery?

- (A) Carboxy methyl cellulose ✓
- (B) Ascorbic acid
- (C) Sachharin
- (D) Vanillin ✓

136. Little Boy relates to

- (A) H-bomb
- (B) U-bomb
- (C) Pu-bomb
- (D) He-bomb

137. Who built the Ibadatkhana at Fatehpur Sikri?

- (A) Shahjahan
- (B) Aurangzeb
- (C) Akbar
- (D) Jahangir

138. In N-type semiconductor, ultrapure Si is doped with

- (A) Boron
- (B) Aluminum
- (C) Phosphorous
- (D) Indium

139. What practice allows farmers to improve soil fertility, diversify their crops, and reduce pesticide costs by naturally breaking the cycle of weeds, insects, and diseases?

- (A) Monoculture
- (B) Biological control
- (C) Crop sharing
- (D) Crop rotation

140. Ultramarine blue pigment is a complex alumino-silicate containing

- (A) Sulphur
- (B) Phosphorous
- (C) Boron
- (D) Cobalt

141. Which type of bond is present in superhard material tungsten carbide?

- (A) Ionic
- (B) Covalent
- (C) Metallic
- (D) All of the above

142. The world's longest straight road without any corners is located in

- (A) USA
- (B) Saudi Arabia
- (C) Australia
- (D) China

143. How many countries were participated as Founding Members of United Nations?

- (A) 45
- (B) 48
- (C) 51
- (D) 70

144. Which of the following is absent in polluted water?

- (A) Hydrilla
- (B) Water hyacinth
- (C) Larva of stone fly
- (D) Blue green algae

145. A population has unlimited resources and exhibits rapid and sustained population growth. This type of growth would be best described by which one of the following?

- (A) Exponential
- (B) Logistic
- (C) Sigmoidal
- (D) Parabolic

146. Ashokan inscription in the north-western part of the Mauryan Empire near Peshwar were is:

- (A) Aramaic Script
- (B) Devanagari Script
- (C) Kharoshthi Script
- (D) Brahmi Script

147. Which is the result of damage to relative biological effectiveness?

- (A) High temperature
- (B) Pollution
- (C) Radiation
- (D) Low temperature

148. Cholesterol lowering agent in blood is

- (A) Vitamin K
- (B) Vitamin E
- (C) Vitamin C
- (D) Vitamin B₇

149. The headquarters of the International Court of Justice (ICJ) is situated in

- (A) The Hague
- (B) Vienna
- (C) Washington D.C.
- (D) Paris

150. Point out incorrect statement.

- (A) Detergent works well even with hard water.
- (B) Detergent does not form any precipitate with hard water.
- (C) Detergent is easily soluble in water.
- (D) Detergent is fully biodegradable.

151. The most common indicator organism that represents polluted water is

- (A) C.vibrio
- (B) Entamoeba histolytica
- (C) E.coli
- (D) P.typhi

152. Antibiotic resistance in organisms is the result of what process?

- (A) Differentiation
- (B) Evolution
- (C) Emergence
- (D) Succession

153. Myoglobin is

- (A) Tetramer
- (B) Dimer
- (C) Monomer
- (D) Polymer

154. I^{131} is used for

- (A) Cancer therapy
- (B) Geological dating
- (C) Thyroid therapy
- (D) Leukemia therapy

155. Food chain in which microorganisms breakdown the food formed by primary producers is

- (A) parasitic food chain
- (B) detritus food chain
- (C) consumer food chain
- (D) predator food chain

156. The material used as fuel rod in nuclear reactor is

- (A) Graphite
- (B) UO_2
- (C) D_2O
- (D) ZrO_2

157. What is the best pH of the soil for cultivation of plants?

- (A) 3.4 – 5.4
- (B) 6.5 – 7.5
- (C) 4.5 – 8.5
- (D) 5.5 – 6.5

158. A light emitting diode produces light when

- (A) Forward biased
- (B) Reverse biased
- (C) Unbiased
- (D) None of the above

159. Huge solid waste liberated from Iron and Steel industry is

- (A) Red mud
- (B) Fly ash
- (C) Bottom ash
- (D) Granulated slag

160. Major aerosol pollutant in jet plane emission is

- (A) sulphur dioxide
- (B) carbon monoxide
- (C) methane
- (D) fluorocarbon

161. Who won Pulitzer Prize in Journalism in 2021?

- (A) The Statesman
- (B) The Hindu
- ✓(C) The Times of India
- (D) The New York Times

162. Which country has unveiled a National Plan to reduce 80% GHG emissions by 2050?

- (A) China
- (B) Israel
- (C) India
- (D) USA

163. The process of rapid cooling of parts in metallurgical operation is called

- ✓(A) Annealing
- (B) Quenching
- (C) Tempering
- (D) Toughening

164. LED and LASER diodes are made of

- (A) Al
- (B) Ga
- (C) As
- (D) GaAs

165. Most hazardous metal pollutant of automobile exhausts is

- (A) mercury
- ✓(B) cadmium
- (C) lead
- (D) copper

166. In which one of the following States is Pakhui Wildlife Sanctuary located?

- (A) Arunachal Pradesh
- (B) Manipur
- (C) Meghalaya
- (D) Nagaland

167. In which country has the Indian Prime Minister Shri Narendra Modi inaugurated the Sardar Patel Statue at Sanatan Mandir Cultural Center?

- (A) India
- (B) Nepal
- ✓(C) Canada
- (D) Afghanistan

168. Which of the following is not a classical dance form of India?

- (A) Kathak
- (B) Odissi
- ✓(C) Bhangra
- (D) Manipuri

169. Kausar Munir has been adjudged as the best lyricist in the International Indian Film Academy (IIFA) Awards 2022 for the film:

- ✓(A) Mimi
- (B) Tadap
- (C) Bunty Aur Bably 2
- (D) 83

170. Gas released during Bhopal tragedy was

- ✓(A) methyl isocyanate
- (B) potassium isothiocyanate
- (C) sodium isothiocyanate
- (D) ethyl isothiocyanate

171. Who was the Governor General during the annulment of 'Sati'?

- (A) Lord Bentinck
- (B) Lord Hastings
- (C) Lord Dalhousie
- (D) Lord Canning

172. The reuse of disposed needles and syringes may cause infections of

- (A) HIV
- (B) T.B.
- (C) Typhoid
- (D) Cancer

173. The presence of nitrogen in waste water is due to alteration of

- (A) carbohydrate
- (B) protein
- (C) fat
- (D) vitamin

174. Which of the following Act provided for communal representation in British India?

- (A) Indian Councils Act, 1892
- (B) Minto-Morley Reforms, 1909
- (C) Montague-Chelmsford Reforms, 1919
- (D) Government of India Act, 1935

175. Who among the following is associated with 'Songs from Prison', a translation of ancient Indian religious lyrics in English?

- (A) Bal Gangadhar Tilak
- (B) Jawaharlal Nehru
- (C) Mohandas Karamchand Gandhi
- (D) Sarojini Naidu

176. Electrical resistivity of a conductor

- (A) increases with temperature
- (B) decreases with temperature
- (C) does not change with temperature
- (D) decreases at lower temperature, then increases with temperature

177. Photochemical smog is a resultant of the reaction among

- (A) NO_2 , O_3 and peroxyacetyl nitrate in the presence of sunlight
- (B) CO , O_2 and peroxyacetyl nitrate in the presence of sunlight
- (C) CO , CO_2 and NO_2 at low temperature
- (D) high concentration of NO_2 , O_3 , and CO in the evening

178. Which of the following is double salt?

- (A) $\text{FeSO}_4 \cdot 6\text{H}_2\text{O}$
- (B) $\text{Pb}(\text{OH})\text{NO}_3$
- (C) K_2SO_4 , $\text{Al}_2(\text{SO}_4)_3$, $24\text{H}_2\text{O}$
- (D) $\text{K}_4[\text{Fe}(\text{CN})_6]$

179. By definition, what are you most likely to find in a biodiversity hotspot?

- (A) A large abundance of endangered species
- (B) A large number of endemic species
- (C) Mostly eukaryotic species
- (D) Extremophiles

180. D.D.T. is

- (A) not a pollutant
- (B) an antibiotic
- (C) a non-degradable pollutant
- (D) a biodegradable pollutant

181. Which of the following is the oldest Smriti?

- (A) Narad Smriti
- (B) Yajnavalkya Smriti
- (C) Brihaspati Smriti
- (D) Mann Smriti

182. Which Indian Architect has been awarded the "Royal Gold Medal" 2022?

- (A) Suman Bery
- (B) Chitra Biswanath
- (C) Balkrishna Vithaldas Doshi
- (D) Rajiv Kumar

183. Green house effect is warming due to

- (A) infra-red rays reaching earth
- (B) moisture layer in atmosphere
- (C) increase in temperature due to increase in carbon dioxide concentration of atmosphere
- (D) ozone layer of atmosphere

184. How much air does a man normally inhale in a day?

- (A) 5 kg
- (B) 16 kg
- (C) 20 kg
- (D) 25 kg

185. A disease caused by eating fish contaminated by industrial waste, containing mercury compounds, is called

- (A) Osteosclerosis
- (B) Hashimoto's oxidase
- (C) Bright's disease
- (D) Minamata disease

186. "Effective dose-50%" describes which one of the following?

- (A) The dose that results in 50% mortality
- (B) The dose that results in 50% survival
- (C) The dose that is 50% less than the lethal dose
- (D) The dose that results in a significant response in 50% of subjects

187. What is B.O.D.?

- (A) The amount of O_2 utilized by organisms in water
- (B) The amount of O_2 utilized by micro-organisms for decomposition
- (C) The total amount of P_2 present in water
- (D) All of the above

188. The metal extracted from bauxite ore using Bayer's process is

- (A) Al
- (B) Zn
- (C) Pb
- (D) Ba

189. Which of the following is protected by passivation?

- (A) Mild Steel
- (B) Silver
- (C) Bronze
- (D) Stainless Steel

190. In which year the first environmental conference (Stockholm Conference) was held?

- (A) 1965
- (B) 1968
- (C) 1970
- (D) 1972

191. What is the carbon credit?

- (A) It is the difference between the carbon emission allowed and actually emitted carbon
- (B) It is the loan amount by IMF for reducing pollution ✗
- (C) It is loan given to poor people for buying Modern Stoves ✗
- (D) All of the above

192. Relationship between Pressure (P) and Volume (V) of gas undergoing adiabatic expansion is (γ is ratio of specific heats at constant pressure and constant volume respectively).

- (A) $PV = \text{constant}$
- (B) $PV^\gamma = \text{constant}$
- (C) $PV^{\gamma-1} = \text{constant}$
- (D) $PV^{1/\gamma} = \text{constant}$

193. Coal, oil, and natural gas are created _____ and contain the remains of _____.

- (A) over millions of years; algae and plants
- (B) over millions of years; dinosaurs and other animals ✗
- (C) over hundreds of years; algae and plants ✗
- (D) over hundreds of years; dinosaurs and other animals ✗

194. How carbon monoxide, emitted by automobiles, prevents transport of oxygen in the body tissues?

- (A) By forming a stable compound with hemoglobin
- (B) By obstructing the reaction of oxygen with hemoglobin
- (C) By changing oxygen into carbon dioxide
- (D) By destroying the hemoglobin

195. CO level in the exhaust gas upto 10 ppm can be monitored by

- (A) Non dispersive IR spectroscopy
- (B) Gas chromatography
- (C) UV-VIS spectroscopy
- (D) Flame photometry

196. If there was no CO_2 in the earth's atmosphere, the temperature of earth's surface would be

- (A) higher than the present
- (B) dependent on the amount of oxygen in atmosphere
- (C) same as present
- (D) less than the present

197. Upper part of sea aquatic ecosystem contains

- (A) plankton
- (B) nekton
- (C) plankton and nekton
- (D) benthos

198. When is National Sport Day celebrated in India?

- (A) August 26th
- (B) August 29th
- (C) August 25th
- (D) August 31st

199. Which Financial Institution has launched Rs. 10,000 special refinance facility (SRF) 2021 to support Housing Finance Companies?

- (A) Reserve Bank of India
- (B) State Bank of India
- (C) NABARD
- (D) National Housing Bank

200. The ratio of specific heats at constant pressure and constant volume for diatomic gas is

- (A) 1.66
- (B) 1.40
- (C) 1.30
- (D) 1.25