IC 518N / IC 530

M.Sc. II[nd] SEMESTER EXAMINATION, 2024-25

INDUSTRIAL CHEMISTRY

(Environmental Chemistry)

(Open Elective Course)

AFFIX PRESCRIBED RUBBER STAMP

Date (तिथि) : _____

Paper ID
(To be filled in the OMR Sheet)

5662

अनुक्रमांक (अंकों में) :
Roll No. (In Figures) :

अनुक्रमांक (शब्दों में) : _____

Roll No. (In Words) : _____

Time : 1:30 Hrs.
समय : 1:30 घण्टे

Max. Marks : 100
अधिकतम अंक : 100

नोट : पुस्तिका में 50 प्रश्न दिये गये हैं, सभी प्रश्न करने होंगे। प्रत्येक प्रश्न 2 अंक का होगा।

Important Instructions :

1. The candidate will write his/her Roll Number only at the places provided for, i.e. on the cover page and on the OMR answer sheet at the end and nowhere else.
2. Immediately on receipt of the question booklet, the candidate should check up the booklet and ensure that it contains all the pages and that no question is missing. If the candidate finds any discrepancy in the question booklet, he/she should report the invigilator within 10 minutes of the issue of this booklet and a fresh question booklet without any discrepancy be obtained.

महत्वपूर्ण निर्देश :

1. अभ्यर्थी अपने अनुक्रमांक केवल उन्हीं स्थानों पर लिखेंगे जो इसके लिए दिये गये हैं, अर्थात् प्रश्न पुस्तिका के मुख्य पृष्ठ तथा साथ दिये गये ओ०एम०आर० उत्तर पत्र पर, तथा अन्यत्र कहीं नहीं लिखेंगे।
2. प्रश्न पुस्तिका मिलते ही अभ्यर्थी को जाँच करके सुनिश्चित कर लेना चाहिए कि इस पुस्तिका में पूरे पृष्ठ हैं और कोई प्रश्न छूटा तो नहीं है। यदि कोई विसंगति है तो प्रश्न पुस्तिका मिलने के 10 मिनट के भीतर ही कक्ष परिप्रेक्षक को सूचित करना चाहिए और बिना त्रुटि की दूसरी प्रश्न पुस्तिका प्राप्त कर लेना चाहिए।

1. The term bioavailability refers to-

(A) The ease with which a substance can be absorbed and used by living organisms

(B) The availability of healthcare in rural areas

(C) The quantity of freshwater resources in a region

(D) The abundance of plant species in an ecosystem

2. Which of the following pollutants is a common contaminant in electronic waste (e-waste) ?

(A) Oxygen

(B) Mercury

(C) Potassium

(D) Carbon dioxide

3. What causes the transformation of ice (solid) into water (liquid) ?

(A) Enhanced particle vibrations

(B) Increased kinetic energy accelerating thermal energy

(C) Particle collisions

(D) Liberation of water molecules after breaking

4. Which pollutant is a major concern in the formation of acid fog in industrial areas ?

(A) Carbon dioxide

(B) Ammonia

(C) Nitrogen oxides

(D) Sulfur dioxide

5. The phenomenon known as eutrophication occurs when-

(A) Oxygen levels in water bodies decrease due to excess nutrients

(B) Water bodies experience a sudden increase in salinity

(C) Water temperature in lakes and rivers rises significantly

(D) Water bodies become more acidic due to pollution

6. What is the primary reason for the unique properties exhibited by water ?

(A) The covalent bonding pattern and bond length

(B) The ease of ionization of water, even at room temperature

(C) The presence of hydrogen bonding between water molecules

(D) The bond angle between two hydrogen atoms in a water molecule

7. Assertion (A) : The pH of rain water in urban areas is often lower than in rural areas

Reason (R) : Urban areas experience higher emissions of SO_2 and NO_2

(A) Both A & R are correct and the R justifies the A

(B) Both A & R are correct, but the R does not justify the A

(C) The A is correct, but the R is incorrect

(D) Both A & R are incorrect

8. Which of the following pollutants is a major concern in indoor air pollution in homes and workplaces ?

(A) Carbon dioxide

(B) Carbon monoxide

(C) Volatile organic compounds

(D) Sulfur dioxide

9. Which of the following pollutants is a major concern in acid mine drainage from abandoned mines ?

(A) Sulfuric acid

(B) Carbon dioxide

(C) Nitrogen oxides

(D) Sulfur dioxide

10. Which pollutants majorly contribute to ocean acidification ?

(A) Sulfur dioxide

(B) Lead

(C) Carbon dioxide

(D) Nitrogen oxides

11. Which among the following is the most harmful air pollutant that is produced by automobiles ?

(A) CO

(B) HNO_3

(C) SO_2

(D) NO

12. Which among the following is the main source of soil & water pollution ?

(A) Mining

(B) Agro Industry

(C) Thermal Stations

(D) None of the above

13. Water pollution is indicated by :

(A) Amount of Nitrogen

(B) Amount of BOD

(C) Amount of Oxygen

(D) Amount of Hydrogen

14. _____ is not a gaseous air pollutant.

(A) Fumes

(B) Ozone

(C) Carbon

(D) Hydrogen Sulphide

15. Which of the following gas is a major cause of ozone depletion ?

(A) Release of CO

(B) Release of CFC

(C) Release of CH_4

(D) Release of CO_2

16. The main constituents of the acid rain are :-

(A) Nitrogen & hydrogen

(B) Sulphur & oxygen

(C) Carbon & Nitrogen

(D) Sulphur & Nitrogen

17. Which is the coldest region of the atmosphere ?

(A) Thermosphere

(B) Troposphere

(C) Mesosphere

(D) Stratosphere

18. Arrange the following atmospheric layers in the proper order (starting from earth's surface)

(A) Stratosphere < mesosphere < troposphere < thermosphere

(B) Troposphere < mesosphere < Stratosphere < thermosphere

(C) Troposphere < Stratosphere < mesosphere < thermosphere

(D) Mesosphere < thermosphere < Stratosphere < Troposphere

19. The irritant red haze in traffic and congested places is due to the oxides of which of the following ?

(A) Nitrogen

(B) Sulphur

(C) Carbon

(D) Hydrocarbons

20. Which of the following is the suitable climate for photochemical smog to occur?

(A) Cool, humid

(B) Dry, warm

(C) Sunny, humid

(D) Cool, dry

21. Where does the ozone hole occur ?

(A) North pole

(B) South pole

(C) The arctic

(D) Stratosphere

22. Pick out the one that is not one of the effects of ozone depletion ?

(A) Cataract

(B) Damages paints & fibers

(C) Sunburn

(D) Increase in the moisture content of soil

23. Which of the following factors help to measure quality of water ?

(A) DO

(B) BOD

(C) COD

(D) All of the above

24. A desirable green solvent should be _____:

(A) Costly

(B) Toxic

(C) Readily available

(D) Synthetic

25. Green Chemistry is also called as _____:

(A) Life Chemistry

(B) Environmental Chemistry

(C) Organic Chemistry

(D) Sustainable Chemistry

26. The green synthesis methods should have _____

(A) Low efficiency

(B) High harmful products

(C) Low energy requirements

(D) Low atom efficiency

27. The gas which was absent in secondary Atmosphere ?

(A) NH_3

(B) H_2

(C) O_3

(D) H_2S

28. Which one of the following fuels causes minimum air pollution ?

(A) Kerosene oil

(B) Hydrogen

(C) Coal

(D) Diesel

29. Clouds are present in :

(A) Troposphere

(B) Stratosphere

(C) Mesosphere

(D) Thermosphere

30. Global warming is caused due to _____ concentration of CO_2 in air :

(A) Decreased

(B) Increased

(C) Both (A) & (B)

(D) None of these

31. Which of the following are the primary causes of water pollution ?

(A) Plants

(B) Animals

(C) Human activities

(D) None of these

32. Generally, speaking the atmosphere in big cities is polluted most by

(A) Radioactive fall-out

(B) Household waste

(C) Automobile exhaust

(D) Pesticide residues

33. Which of the following pollutes the air of big cities ?

(A) Copper

(B) Lead

(C) Chromium

(D) Copper oxide

34. Most harmful pollutant is

(A) CO_2

(B) SO_3

(C) NO_2

(D) SO_2

35. Air is a/an-

(A) Element

(B) Compound

(C) Mixture

(D) None of these

36. Air pollution causing photochemical oxidants production include

(A) Carbon monoxide, Sulphur dioxide

(B) Nitrous oxide, nitric acid, fumes, nitric oxide

(C) Ozone, peroxyacetyl nitrate, aldehydes

(D) Oxygen, chlorine, fuming nitric acid

37. Which of the following is not a physical characteristics of water pollutant ?

(A) Colour

(B) pH

(C) Odour

(D) Temperature

38. What is the minimum percentage of solids in wastewater ?

(A) 30%

(B) 40%

(C) 50%

(D) 60%

39. _____ helps to mix the incoming influent and the returned activated sludge.

(A) Walls

(B) Orifice

(C) Manifold

(D) Bio-selector

40. The multiplication of is encouraged by the addition of oxygen.

(A) Bacteria

(B) Aerobic bacteria

(C) Anaerobic bacteria

(D) Fungi

41. Sludge from the primary clarifier is _____

(A) Brown and flocculant like appearance

(B) Dark in colour

(C) Gray and slimy

(D) Dark brown in colour

42. What among the following is renewable from of energy ?

(A) Windmill

(B) Wood

(C) Animal waste

(D) Crude oil

43. Solar cooker is a device which converts solar energy into _____:

(A) Electric energy

(B) Sound energy

(C) Thermal energy

(D) All of these

44. Inorganic impurities causing water pollution is :

(A) Fats

(B) Carbohydrates

(C) Salts of metals

(D) Protein

45. Disinfection of water is done to destroy pathogenic bacteria and thus prevent water-borne diseases. Disinfection of water may be done by the use of :

(A) Ozone and iodine

(B) Chlorine or its compounds

(C) Ultraviolet light for irradiation of water

(D) All (A), (B) & (C)

46. Solar cell is a device which converts the solar energy into _____

(A) Electric energy

(B) Sound energy

(C) Thermal energy

(D) All of these

47. _____ energy sources provide energy in dilute form.

(A) Non-Renewable

(B) Conventional

(C) Nuclear

(D) Renewable

48. The availability of Renewable energy sources is :

(A) Uncertain

(B) Constant

(C) High

(D) Regular

49. Renewable energy based power plants have _____:

(A) Negligible fuel cost

(B) Low energy availability

(C) Negligible production capacity

(D) Fuel storage tanks

50. In a sedimentation tank, the detention period for water ranges from_____ hours.

(A) 2 to 4

(B) 8 to 12

(C) 16 to 20

(D) 24 to 32

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