

AIIMS 2024 Paramedical Question Paper

Time Allowed :90 Minutes	Maximum Marks :90	Total questions :90
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General Instructions

Read the following instructions very carefully and strictly follow them:

1. **Mode of Exam:** Online (Computer-based test)
2. **Exam Duration:** 90 minutes
3. **Type of Questions:** Objective (Multiple Choice Questions)
4. **Total Questions:** 90
5. **Total Marks:** 90
6. **Language Medium:** English & Hindi

Chemistry

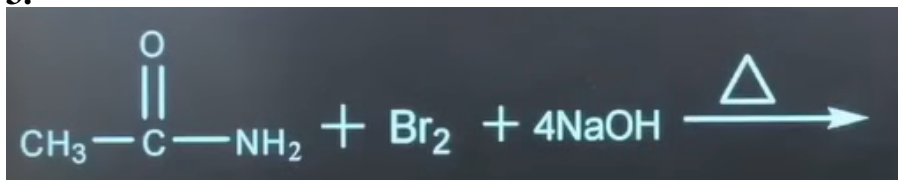
1. Which of the following is a globular protein?

- (A) Collagen
 - (B) Myoglobin or Hemoglobin
 - (C) Myosin
 - (D) Fibroin
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2. Which of the following is a crystalline solid?

- (A) plastic
 - (B) rubber
 - (C) glass
 - (D) quartz
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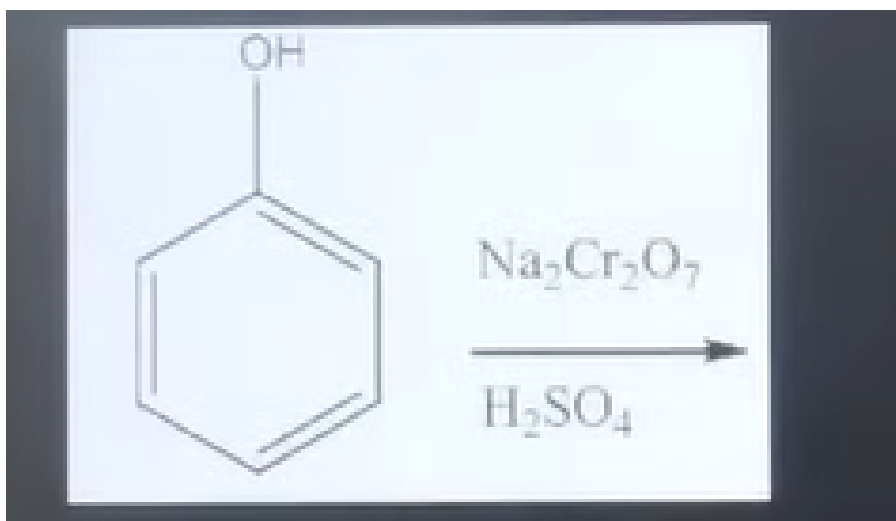
3.



What is the major product of the reaction?

- (A) CH_3COOH
 - (B) CH_3NH_2
 - (C) CH_3Br
 - (D) $\text{CH}_3\text{CH}_2\text{NH}_2$
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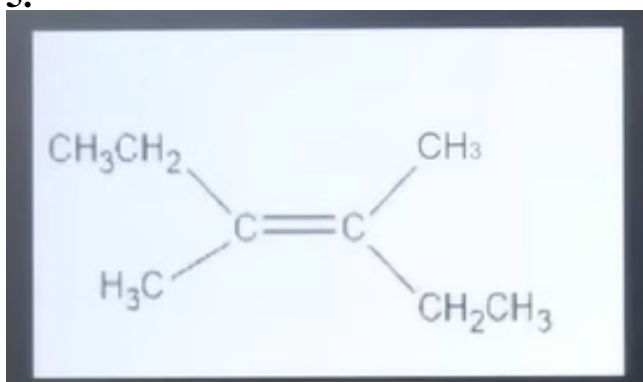
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What is the major product formed when phenol is treated with sodium dichromate ($\text{Na}_2\text{Cr}_2\text{O}_7$) and sulfuric acid (H_2SO_4)?

- (A) Benzoic acid
 - (B) Benzaldehyde
 - (C) 2-Nitrophenol
 - (D) p-Benzoquinone
-

5.



What is the correct IUPAC name for the following compound?

- (A) trans-3,4-dimethylhex-3-ene
 - (B) cis-3,4-dimethylhex-3-ene
 - (C) trans-2,3-dimethylhex-2-ene
 - (D) cis-2,3-dimethylhex-2-ene
-

6. The element Neodymium (Nd) belongs to the 4f series. What is its atomic number?

- (A) 60
 - (B) 61
 - (C) 62
 - (D) 63
-

7. Explain why ortho-nitrophenol is more steam volatile than para-nitrophenol.

- (A) Ortho-nitrophenol forms stronger intermolecular hydrogen bonds.
 - (B) Para-nitrophenol exhibits intramolecular hydrogen bonding.
 - (C) Ortho-nitrophenol forms intramolecular hydrogen bonds, reducing intermolecular attraction.
 - (D) Para-nitrophenol has a lower molecular weight than ortho-nitrophenol.
-

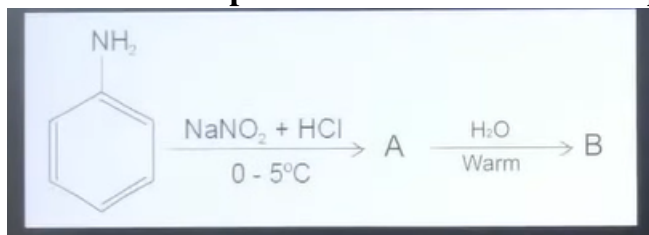
8. Which non-metallic solid is known for its electrical conductivity?

- (A) Sulfur
 - (B) Diamond
 - (C) Graphite
 - (D) Phosphorus
-

9. Which acid is present in vinegar?

- (A) Formic acid
 - (B) Acetic acid
 - (C) Citric acid
 - (D) Malic acid
-

10. Which compound is formed as the final product *B*?

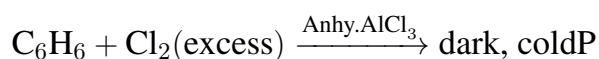


- (A) Phenol
 - (B) Benzene
 - (C) Aniline
 - (D) Benzenediazonium chloride
-

11. Which of the following is a thermoplastic polymer?

- (A) Bakelite
 - (B) Polystyrene
 - (C) PVC
 - (D) Nylon 6
-

12. Product, *P* is:



- (A) $\text{C}_6\text{H}_5\text{Cl}$
 - (B) $\text{C}_6\text{H}_4\text{Cl}_2$
 - (C) $\text{C}_6\text{H}_6\text{Cl}_6$
 - (D) C_6Cl_6
-

13. The number of ions formed on dissolving one mole of $\text{K}_3[\text{Fe}(\text{CN})_6]$ in water is:

- (A) 3
- (B) 4

(C) 5

(D) 6

14. Calculate the magnetic moment of the element with atomic number $Z = 28$.

(A) 2.828 BM

(B) 4.90 BM

(C) 5.92 BM

(D) 0 BM

15. Which of the following is adsorbent?

(A) ZnO

(B) Al₂O₃

(C) Fe₂O₃

(D) Mn₂O₃

16. The reaction of zinc with dilute and concentrated nitric acid, respectively, produces:

(A) N₂O and NO₂

(B) NO and N₂O

(C) NO₂ and N₂O

(D) NO₂ and NO

17. Select the mismatch:

Molecule	Geometry
NH₃	Trigonal Pyramidal
H₂S	Bent
CHCl₃	Trigonal Pyramidal

- (A) NH₃ – Trigonal Pyramidal
 (B) H₂S – Bent
 (C) CHCl₃ – Trigonal Pyramidal
 (D) All are correctly matched
-

18. Movement of colloidal particle after developing charge

- (A) Brownian
 (B) Osmosis
 (C) Electrodialysis
 (D) Electrophoresis
-

19. The correct increasing order of energy of orbitals in a hydrogen atom is:

- (A) $3s < 3p < 3d$
 (B) $3s < 3d < 3p$
 (C) $3p < 3d < 3s$
 (D) All have equal energy
-

20. 1028 grams of seawater sample contains 7 mL of dissolved oxygen (O₂). What is the concentration of oxygen in parts per million (ppm)?

- (A) 0.6 ppm

- (B) 6 ppm
 - (C) 6.8 ppm
 - (D) 60 ppm
-

21. What is the dispersed phase and dispersion medium of the following colloidal systems?

(i) Smoke

(ii) Paint

(A) Smoke: Dispersed phase = Solid, Dispersion medium = Gas; Paint: Dispersed phase = Solid, Dispersion medium = Liquid

(B) Smoke: Dispersed phase = Gas, Dispersion medium = Solid; Paint: Dispersed phase = Liquid, Dispersion medium = Solid

(C) Smoke: Dispersed phase = Liquid, Dispersion medium = Gas; Paint: Dispersed phase = Gas, Dispersion medium = Liquid

(D) Smoke: Dispersed phase = Gas, Dispersion medium = Liquid; Paint: Dispersed phase = Solid, Dispersion medium = Gas

22. When a smaller ion (usually a cation) is dislocated from its normal site in a crystal and moves to an interstitial site, it is known as:

(A) Schottky defect

(B) Frenkel defect

(C) Interstitial defect

(D) Vacancy defect

23. Arrange the following compounds in increasing order of their boiling points:

$\text{C}_2\text{H}_5\text{OH}$, CH_3CHO , $\text{CH}_3\text{CH}_2\text{CH}_3$, CH_3OCH_3

- (A) $\text{CH}_3\text{CH}_2\text{CH}_3 < \text{CH}_3\text{OCH}_3 < \text{CH}_3\text{CHO} < \text{C}_2\text{H}_5\text{OH}$
(B) $\text{C}_2\text{H}_5\text{OH} < \text{CH}_3\text{CHO} < \text{CH}_3\text{OCH}_3 < \text{CH}_3\text{CH}_2\text{CH}_3$
(C) $\text{CH}_3\text{OCH}_3 < \text{CH}_3\text{CH}_2\text{CH}_3 < \text{CH}_3\text{CHO} < \text{C}_2\text{H}_5\text{OH}$
(D) $\text{CH}_3\text{CHO} < \text{C}_2\text{H}_5\text{OH} < \text{CH}_3\text{CH}_2\text{CH}_3 < \text{CH}_3\text{OCH}_3$
-

Biology

24. Sterilization process in males is:

- (A) vasectomy
(B) tubectomy
(C) amniocentesis
(D) Hysterectomy
-

25. ... together with the cervix forms the birth canal.

- (A) Vagina
(B) Uterus
(C) Fallopian Tube
(D) Urethra
-

26. What type of movement is present in female fallopian tract?

- (A) flagellate
(B) ciliated
(C) Ameboidal
(D) None
-

27. Which is not an Ex-situ conservation?

- (A) Seed bank
 - (B) National Park
 - (C) Cryopreservation
 - (D) Zoological park
-

28. Coralloid roots are associated with

- (A) Pinus
 - (B) Cycas
 - (C) Gingko
 - (D) Equisetum
-

29. Two units of insulin bind through

- (A) H-bond
 - (B) Peptide Bond
 - (C) Di-sulphide Bond
 - (D) None
-

30. In which type of cell are Nissl granules found?

- (A) Neuron
 - (B) Schwann cell
 - (C) Myelin sheath
 - (D) None of the above
-

31. Match the given under column

Column I	Column II
(Excretory organs)	(Animals)
A. <u>Mollusca</u>	I. Flame Cell
B. <u>Arthropoda</u>	II. Nephridia
C. <u>Annelida</u>	III. Radula
D. <u>Platyhelminthes</u>	IV. Malpighian tubules

- (A) A-II, B-IV, C-II, D-I
(B) A-III, B-IV, C-II, D-I
(C) A-II, B-I, C-IV, D-III
(D) A-IV, B-II, C-I, D-III
-

32. Stele is made up of in plant

- (A) Pericycle
(B) Vascular Tissue
(C) Pith
(D) All
-

33. Reason of rising of dough

- (A) production of CO_2
(B) multiple of yeast
(C) produce H_2
(D) emulsify of fat
-

34. The coding strand of DNA is: 5'-AATTCAAATAGG-3'

What is the sequence of mRNA?

- (A) 3'-TTAAGTTTAATCC-5'
(B) 5'-AAUUCAAAUUAGG-3'

(C) 3'-AAUUCAAAUUAGG-5'

(D) 5'-TTAAGTTTAATCC-3'

35. Which is not a homopolymer?

(A) Insulin

(B) Chitin

(C) Glycogen

(D) Collagen

36. Which of the following represents the correct formula for Net Primary Productivity (NPP)?

(A) $GPP - R$

(B) $GPP + R$

(C) $R - GPP$

(D) $GPP \times R$

37. Which Pyramid is always upright?

(A) energy

(B) Biomas

(C) Number

(D) All

38. Which one of the following is odd one out?

(A) zeatin

(B) kinetin

- (C) IAA
 - (D) gibberlin
-

39. Which term is used for cells performing similar functions and cells collecting intracellular material?

- (A) Division
 - (B) Organ
 - (C) Organ system
 - (D) Tissue
-

40. Dubb Sound originate

- (A) Closer of Semilunar valve
 - (B) Open of Semilunar valve
 - (C) Closer of AV valve
 - (D) Open of AV valve
-

41. ERV

- (A) 2500–3000
 - (B) 1100–1200
 - (C) 1000–1100
 - (D) N.O.T
-

42. Which is not affect Hardy Weinberg equilibrium

- (A) Natural selection

- (B) Random mating
 - (C) crossing over
 - (D) Mutation
-

43. Which of the following correctly describes Atrial Natriuretic Factor (ANF)?

- (A) Released from the atria
 - (B) Acts as a vasodilator
 - (C) Causes low blood pressure
 - (D) None of the above
-

44. In which of these animals, antennal gland functions as excretory organ?

- (A) Cockroach
 - (B) Planaria
 - (C) Prawn crustacean
 - (D) cephalochordata
-

45. Arrange the following geological periods in the correct chronological order:

- I. Carboniferous
 - II. Jurassic
 - III. Cretaceous
 - IV. Tertiary
 - V. Triassic
- (A) I, II, III, V, IV
 - (B) I, V, II, III, IV
 - (C) I, II, V, III, IV
 - (D) I, V, III, II, IV

46. The endomembrane system includes:

Endoplasmic reticulum (ER)

Golgi complex

Lysosomes

Vacuoles

(A) Only ER and Golgi complex

(B) Only lysosomes and vacuoles

(C) All of the above

(D) None of the above

Physics

47. The RMS speed of an ideal gas is:

(a) Directly proportional to density d

(b) Inversely proportional to density d

(c) Inversely proportional to \sqrt{d}

(d) None of the above

48. In LCR circuit total potential is 10V and L-C-R connected in series the potential on L and C are 5v and 11 v respectively find the potential drop on R.

(A) 2

(B) 8

(C) 7

(D) 9

49. Given two force vectors:

$$\vec{F}_1 = 2\hat{i} + 3\hat{j} - \hat{k}, \quad \vec{F}_2 = \hat{i} + \hat{j} + \hat{k}$$

What is the magnitude of the resultant force?

- (A) 3 N
 - (B) 4 N
 - (C) 5 N
 - (D) 6 N
-

50. In a diffraction experiment, the fringe width β is 0.3 mm, the distance from the slit to the screen D is 5 cm, and the slit width d is 3 mm. What is the wavelength λ ?

- (A) 500 nm
 - (B) 600 nm
 - (C) 400 nm
 - (D) 300 nm
-

51. Given the dipole moment p and the electric field E , find the work done to move the dipole from a parallel orientation to an antiparallel orientation with respect to the electric field.

- (A) pE
 - (B) $-pE$
 - (C) $2pE$
 - (D) $-2pE$
-

52. Given that the surface charge density on a sphere is $200 \mu\text{C}/\text{m}^2$, what is the electric field at the surface of the sphere?

- (A) $1.13 \times 10^4 \text{ N/C}$

- (B) $2.26 \times 10^4 \text{ N/C}$
(C) $2.26 \times 10^6 \text{ N/C}$
(D) $1.13 \times 10^6 \text{ N/C}$
-

53. A solenoid has a radius of 10 cm, 200 turns per meter, and carries a current of 2 A. What is its inductance per unit length?

- (A) $4\pi \times 10^{-3} \text{ H/m}$
(B) $8\pi \times 10^{-3} \text{ H/m}$
(C) $4\pi \times 10^{-5} \text{ H/m}$
(D) $8\pi \times 10^{-5} \text{ H/m}$
-

54. What is the dimensional formula of the energy density of an electromagnetic wave?

- (A) $[ML^{-1}T^{-2}]$
(B) $[ML^{-2}T^{-2}]$
(C) $[ML^{-1}T^{-3}]$
(D) $[ML^{-2}T^{-3}]$
-

55. An object is placed at a distance of 10 cm from a lens with a focal length of 30 cm. What is the magnification of the image?

- (A) -1.5
(B) $+1.5$
(C) -2.0
(D) $+2.0$
-

56: How many times greater is the radius of an atom compared to the radius of its nucleus?

- (A) 10^2 times
 - (B) 10^3 times
 - (C) 10^4 times
 - (D) 10^5 times
-

57. What is the work done to increase the radius of a soap bubble from 1 cm to 1.1 cm, if the surface tension of the soap solution is 0.025 N/m?

- (A) 1.32×10^{-5} J
 - (B) 2.64×10^{-5} J
 - (C) 1.32×10^{-6} J
 - (D) 2.64×10^{-6} J
-

58. What is the force on a charge placed on an equipotential surface?

- (A) Zero
 - (B) Along the surface
 - (C) Perpendicular to the surface
 - (D) None of the above
-

59. Two blocks of mass 20 kg and 30 kg are placed in contact on a smooth horizontal surface. A force $F = 60$ N is applied to the 20 kg block. Find the force exerted by the 20 kg block on the 30 kg block.

- (1) 12 N
 - (2) 24 N
 - (3) 30 N
 - (4) 36 N
-