CUET CHEMISTRY MOCK TEST

Total Questions: 50 | Attempt Any 40

Q1. Which of the following colligative properties decreases with increase in solute particles?

(A) Vapour pressure
(B) Boiling point
(C) Freezing point
(D) Osmotic pressure

Q2. The Van’ t Hoff factor (i) for a 0.1 M Na2SO4 solution is:

(A) 1
(B) 2
(C) 3
(D) 0

Q3. Which of the following statements about Raoult’ s law are correct?

1. It applies to ideal solutions

2. It is independent of temperature

3. Relative lowering of vapour pressure depends on mole fraction

(A) 1 and 3 only
(B) 2 and 3 only
(C) 1 and 2 only
(D) All of the above

Q4. Match the following:

| A. Elevation of boiling point | I. π = CRT
| B. Depression of freezing point | II. ΔTb = Kb·m
| C. Osmotic pressure | III. ΔTf = Kf·m

Options:
(A) A–II, B–III, C–I
(B) A–III, B–I, C–II
(C) A–I, B–II, C–III
(D) A–II, B–I, C–III

Q5. Which relation correctly represents Nernst equation for EMF of a galvanic cell?

(A) $E = E^\circ - 0.0591/n \times \log[\text{products/reactants}]$
(B) $E = E^\circ + 0.0591n \times \log[\text{products/reactants}]$
(C) $E = -E^\circ + RT/nF$
(D) $E = E^\circ + \log[\text{reactants/products}]$

Q6. Which of the following is true for electrolytic conductance?

(A) Increases with dilution
(B) Molar conductivity decreases with dilution
(C) Kohlrausch's law applies to weak electrolytes only
(D) Strong electrolytes show infinite conductivity

Q7. The standard electrode potential of Cu^{2+}/Cu is +0.34 V and for Zn^{2+}/Zn is − 0.76 V. The EMF of the cell $Zn \mid Zn^{2+} \parallel Cu^{2+} \mid Cu$ is:

(A) 1.10 V
(B) –1.10 V
(C) 0.42 V
(D) 0.76 V

Q8. Which of the following shows first-order kinetics?

(A) Radioactive decay
(B) Decomposition of N2O5
(C) Hydrolysis of ester in acid
(D) All of the above

Q9. Half-life of a first-order reaction is:

(A) Independent of concentration
(B) Directly proportional to concentration
(C) Inversely proportional to concentration
(D) Dependent on pressure only

Q10. In the Arrhenius equation, the plot of ln k vs 1/T gives a straight line with slope:

(A) –Ea/R
(B) Ea/R
(C) R/Ea
(D) ln A

Q11. Which d-block elements are coloured in aqueous solution due to d – d transition?

(A) Zn^{2+}
(B) Ti^{3+}
(C) Sc^{3+}
(D) Cu^{+}

Q12. The lanthanoid contraction is responsible for:

(A) Similar atomic sizes of 4d and 5d elements
(B) Increase in ionic radius
(C) Decrease in ionization enthalpy
(D) High reactivity of lanthanoids

Q13. Which is a common oxidation state of actinoids?

(A) +2
(B) +3
(C) +4
(D) +7

Q14. $KMnO_4$ acts as an oxidizing agent in:

(A) Acidic medium
(B) Basic medium
(C) Neutral medium
(D) All of the above

Q15. Match the compound with its colour:

| A. $KMnO_4$ | I. Orange
| B. $K_2Cr_2O_7$ | II. Purple
| C. $CuSO_4$ | III. Blue

Options:
(A) A–II, B–I, C–III
(B) A–I, B–III, C–II
(C) A–III, B–II, C–I
(D) A–II, B–III, C–I

Q16. Coordination number in $[Co(NH_3)_6]^{3+}$ is:

(A) 4
(B) 5
(C) 6
(D) 2

Q17. In crystal field theory, strong field ligands cause:

(A) d-orbital splitting
(B) Low spin complexes
(C) High magnetic moment
(D) Weak bonding

Q18. Which compound exhibits linkage isomerism?

(A) $[Co(NH_3)_5Cl]Cl_2$
(B) $[Co(NO_2)(NH_3)_5]^{2+}$
(C) $[Fe(CN)_6]^{3-}$
(D) $[PtCl_2(NH_3)_2]$

Q19. Haloalkanes undergo nucleophilic substitution via:

(A) SN1 mechanism
(B) SN2 mechanism
(C) Either SN1 or SN2
(D) Electrophilic substitution

Q20. Chlorofluorocarbons cause:

(A) Ozone depletion
(B) Acid rain
(C) Global warming
(D) Soil pollution

Q21. Which of the following gives iodoform test?

(A) Ethanol
(B) Acetone
(C) 2-Propanol
(D) All of the above

Q22. Dehydration of alcohol follows:

(A) Nucleophilic addition
(B) Elimination E1
(C) Free radical substitution
(D) Rearrangement only

Q23. Phenol reacts with bromine water to give:

(A) o-Bromophenol
(B) p-Bromophenol
(C) 2,4,6-Tribromophenol
(D) Bromobenzene

Q24. Ether cleavage with HI follows:

(A) SN1
(B) SN2
(C) Elimination
(D) Rearrangement

Q25. Acetophenone reacts with HCN to form:

(A) Alcohol
(B) Cyanohydrin
(C) Ester
(D) Aldol

Q26. The most reactive carbonyl compound is:

(A) Formaldehyde
(B) Acetone
(C) Benzaldehyde
(D) Acetophenone

Q27. Carboxylic acids are acidic due to:

(A) Resonance stabilization of carboxylate ion
(B) Polar OH bond
(C) Inductive effect
(D) All of the above

Q28. Match the reagents with reaction:

| A. Fe/HCl | I. Reduction of nitro group
| B. $HNO_3 + H_2SO_4$ | II. Nitration
| C. $NaOH + Br_2$ | III. Hoffmann bromamide
| D. $HCl + NaNO_2$ | IV. Diazotisation

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

Q29. Which amine gives no reaction with Hinsberg’ s reagent?

(A) Primary
(B) Secondary
(C) Tertiary
(D) All

Q30. Which of the following is not a property of diazonium salts?

(A) Explosive
(B) Stable at low temperature
(C) React with phenol
(D) Basic in nature

Q31. Which of the following carbohydrates is a disaccharide?

(A) Glucose
(B) Fructose
(C) Sucrose
(D) Starch

Q32. Starch gives blue colour with:

(A) Fehling’s solution
(B) Benedict’s reagent
(C) Iodine
(D) HCl

Q33. Which of the following is not a polysaccharide?

(A) Glycogen
(B) Cellulose
(C) Maltose
(D) Starch

Q34. Match the following:

| A. Primary protein structure | I. Helix
| B. Secondary structure | II. Amino acid sequence
| C. Tertiary structure | III. Folding
| D. Enzymes | IV. Biological catalyst

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

Q35. Hormones are:

(A) Enzymes
(B) Biocatalysts
(C) Organic messengers
(D) Antibodies

Q36. DNA contains:

(A) Ribose
(B) Deoxyribose
(C) Both
(D) Glucose

Q37. The sugar present in RNA is:

(A) Ribose
(B) Glucose
(C) Fructose
(D) Deoxyribose

Q38. Which vitamin is fat soluble?

(A) B1
(B) C
(C) D
(D) B2

Q39. Which vitamin prevents night blindness?

(A) B12
(B) D
(C) A
(D) K

Q40. Which compound gives positive Tollen’ s test?

(A) Benzaldehyde
(B) Acetone
(C) Acetophenone
(D) CH_3CH_2OH

Q41. The IUPAC name of CH3CH2CH2NH2 is:

(A) 1-Aminopropane
(B) Propan-1-amine
(C) Aminopropanol
(D) A and B both

Q42. Sucrose is made of:

(A) Glucose + Glucose
(B) Glucose + Fructose
(C) Fructose + Fructose
(D) Galactose + Glucose

Q43. Rate of reaction doubles for every:

(A) 5°C rise in temp
(B) 10°C rise in temp
(C) Doubling of reactant
(D) Decrease in pressure

Q44. The oxidation state of Mn in KMnO4 is:

(A) +3
(B) +4
(C) +6
(D) +7

Q45. Number of unpaired electrons in Fe^{3+} (Z = 26):

(A) 3
(B) 5
(C) 2
(D) 1

Q46. In reverse osmosis:

(A) Pressure is applied to solvent
(B) Solvent moves against concentration gradient
(C) Used for desalination
(D) All of the above

Q47. The freezing point of 1 molal NaCl solution is:

(A) Lower than water
(B) Higher than water
(C) Same as water
(D) Not predictable

Q48. Which of the following is correct for a zero-order reaction?

(A) Rate = k
(B) Half-life is constant
(C) Rate depends on concentration
(D) Integrated rate law is exponential

Q49. Which one shows optical isomerism?

(A) 2-Butanol
(B) 2-Propanol

(C) Propanal
(D) Acetic acid

Q50. Which of the following shows maximum basicity?

(A) CH3NH2
(B) NH3
(C) (CH3)2NH
(D) Aniline