MAHARASHTRA BOARD · CLASS 12 · CHEMISTRY

Maharashtra Board Class 12 Chemistry Guess Paper 2027

Time: 3 hours · Maximum marks: 70 · 37 questions

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Section A

Q1 ten MCQs (1 mark each) and Q2 eight very short answer questions (1 mark each)

Q1. The spin only magnetic moment of Fe+2 ion is ___. (a) 3.806 BM (b) 4.899 BM (c) 5.796 BM (d) 6.817 BM — 1 mark

Q2. The electrolyte used in H2-O2 fuel cell is _____. (a) aqueous KCl (b) aqueous KOH (c) aqueous HCl (d) aqueous KNO3 — 1 mark

Q3. Write the chemical name of Teflon. — 1 mark

Q4. The unit of rate constant is per second, the order of reaction is: (a) Zero (b) First (c) Second (d) Third — 1 mark

Q5. The shape of bromine penta-fluoride is _____. (a) Linear (b) Bent-T-Shape (c) Tetrahedral (d) Square pyramidal — 1 mark

Q6. The reagent used to convert acetyl chloride to acetaldehyde is: (a) SnCl2 + HCl (b) Zn-Hg + Conc.HCl (c) NH2-NH2/KOH,glycol (d) H2/Pd-BaSO4 — 1 mark

Q7. The pOH of 0.01 M HCl solution is _____. (a) 1 (b) 2 (c) 11 (d) 12 — 1 mark

Q8. Schottky defect is NOT observed in _____. (a) NaCl (b) KCl (c) AgBr (d) NiO — 1 mark

Q9. Anisole reacts with HI at 398K to form: (a) cyclohexanol (b) benzenol (c) iodobenzene (d) benzene — 1 mark

Q10. The relation between edge length and radius for body centered cubic structure is: (a) r=a/2 (b) r=sqrt(3)a/4 (c) r=sqrt(2)a/4 (d) r=sqrt(3)a/2 — 1 mark

Q11. Write name of monomer used to form nylon-6 polymer. — 1 mark

Q12. When 6.0g of O2 reacts with ClF as per 2ClF(g)+O2(g)->Cl2O(g)+OF2(g), the enthalpy change is 38.55 kJ. Calculate the standard enthalpy of the reaction. — 1 mark

Q13. Write the product formed when alkyl halide reacts with silver nitrite. — 1 mark

Q14. Write formula to calculate percent (%) atom economy of particular reaction. — 1 mark

Q15. Write the electronic configuration of Zn+2 ion. (Atomic number of zinc is 30). — 1 mark

Q16. Complete the following reaction: CH3-CO-NH2 (acetamide) + 4(H) --Na/C2H5OH, LiAlH4/ether--> ? + H2O — 1 mark

Q17. Draw the structure of perchloric acid. 1 mark

Q18. Complete the reaction: CH3CH2Cl + ? -> 1 mark

Section B
Short answer questions, 2 marks each (attempt any 8 of 12)

Q19. When gold crystallizes, it forms face-centered cubic cells. The unit cell edge length is 4x10-8 cm. Calculate the density of gold. Molar mass of gold is 197 g mol-1. 2 marks

Q20. What is the action of following reagents on ethyl amine? (Indicate by reaction) (a) Nitrous acid (b) Chloroform and KOH 2 marks

Q21. Write anomalous behaviour of oxygen with respect to: (i) Atomicity (ii) Oxidation state (iii) Magnetic property (iv) Nature of hydrides. 2 marks

Q22. Explain aldol condensation reaction with respect to ethanal. 2 marks

Q23. Derive an expression to calculate molar mass of non volatile solute by osmotic pressure measurement. 2 marks

Q24. Write two principles of green chemistry. 2 marks

Q25. How many coulombs of electricity is required to produce 1g of sodium metal by reduction of sodium ion? 2 marks

Q26. Write salient features of SN1 mechanism. 2 marks

Section C
Short answer questions, 3 marks each (attempt any 8 of 12)

Q27. (a) What is Lanthanoid contraction? (b) Compounds of 'd' block elements are coloured in solid state as well as in an aqueous state. Explain. 3 marks

Q28. (a) Explain Cannizzaro's reaction with the help of benzaldehyde. (b) Write the reaction for the conversion of cyclohexene to adipic acid. 3 marks

Q29. (i) Define: Common ion effect. (ii) Write preparation of glucose from starch. 3 marks

Q30. Convert the following: (a) Acetic acid to ethyl alcohol (b) Acetic acid to acetic anhydride (c) Acetyl chloride to acetamide 3 marks

Q31. (a) Write the representation of sodium hexacyanoferrate (III). (b) Write type of hybridization and magnetic behaviour of: (i) [Co(NH3)6]3+ (ii) [NiCl4]2- 3 marks

Q32. (i) What is peptide linkage? (ii) Write general characteristics of interhalogen compounds. 3 marks

Q33. Define conjugate acid-base pair. The hydroxyl ion concentration in aqueous solution of NaOH is 2x10-4 mol dm-3. Calculate pH of the solution. 3 marks

Q34. Define half life of first order reaction. Obtain the expression for half life and rate constant of the first order reaction. 3 marks

Section D
Long answer questions, 4 marks each (attempt any 3 of 5)

Q35. (a) Derive relationship between dH and dU for a gaseous chemical reaction. (b) Give reason - Ozone is a good bleaching agent. (c) Write any two uses of SO2. 4 marks

Q36. Define: (a) Standard enthalpy of combustion (b) Enthalpy of atomization. Draw the structure of D-ribose sugar. Write the uses of bronze alloy. 4 marks

Q37. (a) Define: (i) Co-ordination numbers (ii) Ambidentate ligand (b) Write a note on Clemmensen reduction of propanone. 4 marks

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