JAIN COLLEGE

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Bengaluru - 560 098

Date: 2019-2020 ***SUBJECT: CHEMISTRY***

II PUC
MOCK 1

Timings Allowed: 3 Hrs 15 min ***Total Marks: 70***

Instructions:
1. The question paper has FOUR parts A ,B ,C and D. All parts are compulsory.
2. Write balanced chemical equations and draw labelled diagram wherever required.
3. Use log tables and the simple calculator if necessary.

PART A

I Answer ALL the following **1 X 10 = 10**

1. Soda water bottles are sealed under high pressure. Why?
2. What are isotonic solutions?
3. Name the gas evolved at cathode during electrolysis of aqueous NaCl solution
4. The rate equation for the reaction A +B-→ C is R = k$[A]^{1/2}$ $[B]^{1}$. What is the order of the reaction?
5. What are catalytic promoters?
6. Give the principle involved in zone refining..
7. Mention the main commercial source of helium.
8. Name the IUPAC name of the product formed when ethyl alcohol reacts with PCl_5.
9. What is Tollen's reagent?
10. Name the storage polysaccharide present in plants.

PART B

II Answer any FIVE of the following **2 X 5 = 10**

11. What type of stoichiometric defect is shown by the following solids?
    i) AgCl ii) KCl
12. Calculate $\wedge^{o}m$ for $MgCl_2$. The limiting molar conductivity of Mg^{2+} and Cl^{-} ion are 106.0Scm^2/mol and 76.3 Scm^2/mol respectively.
13. Write Arrhenius equation and explain the terms.
14. Give reason
    (i)Cerium exhibits +4 oxidation state.
    (ii) Among Zn^{2+} and Cu^{2+} which is colourless.
15. Explain Williamson's ether synthesis.
16. What is the action of bromine in ethanoic acid on anisole? Give equation.
17. What is saponification? Give the equation to form sodium stearate by this method.
18. Give an example for
    (i)Non-Narcotic analgesic (ii) artificial sweetening agent.

PART C

III Answer any FIVE of the following **3 X 5 =15**

19. Describe the 3 steps involved in the leaching of bauxite to get pure alumina.
20. a) How do you prepare phosphine from calcium phosphide? Give equation.
    b) Write the structure of sulphuric acid. 2+1
21. (a) How is chlorine prepared in the lab using $KMnO_4$.?
    (b)Mention any 2 reasons for the anomalous behaviour of oxygen. 2+1
22. Complete the following reaction.
    (a) $H_2SO_4 + SO_3$ -----→
    (b) $PbS + 4O_3$ -------→ $PbSO_4$ + _____
    (c) $Na_2SO_3 + 2HCl$ ------→ $2NaCl + H_2O$ + _____ 1+1+1
23. a) Give two differences between Lanthanoids and actinoids.
    b) Between Cu^{+2} and Cu^{+} which is more stable? 2+1
24. Give reason (a) actinoids shows variable oxidation state (b) the spin only magnetic moment of Sc^{3+} is zero (atomic number of Sc = 21) (c) Zr and Hf have almost same atomic radii . 1+1+1

25. Using VBT, account for the geometry, hybridization and magnetic property of $[NiCl_4]^{2-}$. (Atomic number of Ni = 28) 3

26. (a)Explain linkage isomerism with an example.
(b)What are ambidentate ligands? 2+1

PART D

IV Answer any THREE of the following **5 X 3 = 15**

27. (a) Calculate the packing efficiency in simple cubic lattice.
(b)An element has a bcc structure with a cell edge of 288pm the density of the cell is 7.2g/cm^3
How many atoms are present in 208g of the element 3+*2*

28. *(a) 300cm^3* of an aqueous solution of a protein contains 2.12g of protein, the osmotic pressure of such a solution at 300K is found to be 3.89 X10^{-3} bar. Calculate the molar mass of the protein given R = 0.0823Lbar /mol/K
(b)What are azeotropes? Give an example of maximum boiling azeotropes. 3+2

29. (a) The electrode potential for the Daniel cell given below is 1.1V. $Zn_{(s)}|Zn^{2+}_{(aq)}||Cu^{2+}_{(aq)}|Cu_{(s)}$ write the overall cell reaction and calculate the standard Gibb's ener**gy** change for the reaction(Faraday = 96487C/mol)
(b) Define molar conductivity and give its SI unit. 3+2

30. (a) Derive integrated rate equation for zero order reaction.
(b) Mention any two factors responsible for effective collisions. 3+2

31. (a) Give reason for the following
(i) Brownian movement of the colloidal particles.
(ii) Stability of colloids.
(b)Name the adsorbent used in the removal of colouring matter from the solution.
(c) Explain the effect of catalyst on activation energy of the reaction. 2+1+2

PART E

V Answer any FOUR of the following **5 X 4 = 20**

32. (a) Explain S_N1 mechanism for the conversion of tertiary butyl bromide to tertiary butyl alcohol.
(b Define chirality?
(c) Write the general formula of Grignard reagent. 3+1+1

33. (a) Explain the mechanism of addition of HCN to carbonyl compound.
(b)What is Lucas reagent?
(c) Complete the reaction $C_2H_5OH + SOCl_2$ ----------→ 3+1+1

34. (a)How does benzaldehyde does reacts with acetophenone in the presence of dilute alkali?
(b) How does phthalic acid react with ammonia? Explain?
(C) $C_2H_5Br + NaI$ ------- $\longrightarrow C_2H_5I + NaBr$. Name the reaction 2+2+1

35. (a) Explain Gabriel Phthalimide synthesis.
(b) How does methylamine react with nitrous acid explain?
(c) Ammonia is more basic than aniline. Why? 2+2+1

36. (a)Write the Haworth structure of α – D-(+) Glucopyranose .
(b) Give an example of
(i) Non-essential amino acid
(ii)Globular protein
(c)Name the protein present in hair. 2+2+1

37. (a) Explain the process of vulcanization of rubber.
(b) Write the partial structure of Neoprene.
(c) Name the monomers used for getting the following polymers
(i) Polystyrene (ii) natural rubber. 2+1+2

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