CHEMISTRY

BOOKS - OSWAAL PUBLICATION CHEMISTRY (KANNADA ENGLISH)

SOLVED PAPER II PUC MARCH-2016

Part A

1. State Raoult's law of liquid mixtures.

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2. Define the term molality.

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3. For a reaction , $A + B \rightarrow$ product, the rate law is given by $r = k[A]^{\frac{1}{2}}[B]^{2}$. What is the order of the reaction ?

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4. Write the equations of anodic and cathodic reactions occur during rusting of iron.

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5. Name the Harmone which, regulates blood sugar level.

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6. Give an example for homogenous catalysis.

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7. Which gas is liberated when 2-Bromopropene is heated with alcoholic potash.

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8. Name the main commercial source of helium.

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9. Give reason : Acetophenone does not react with saturated sodium bisulphite solution.

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10. Among carbon and carbon monoxide which one is a better reducing agent for Fe_2O_3, above 1000 K?

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Part B

1. Explain the effect of catalyst on the activation energy of the reaction with the graph.

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2. What is Schottkyy defect? What is the effect on the density of solids?

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3. Calculate the $\overset{\circ}{\Lambda}_m$ for $MgCl_2$. The limiting molar conductivities of Mg^{2+} and Cl^{-1} ions are 106.0 S cm^2 mol^{-1} and 76.3 S $cm^2\text{mol}^{-1}$ respectively.

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4. Explain Clemmensen reduction with an example.

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5. What are analgesics ? Give one example for non-narcotic analgesic.

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6. Give reasons:

Actinoids show variable oxidation states.

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7. Give reason: Why Lanthanoids are less reactive than actinoids.

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8. What are anionic detergents? Give an example.

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9. What is the action of bromine in ethanoic acid on anisole?

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Part C

1. For the manufacture of Ammonia by Haber's process, write the equation and optimum conditions for maximum yield of ammonia.

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2. How is pure alumina obtained from bauxite by leaching process.

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3. How is chlorine prepared in the laboratory using $KMNo_4$?

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4. Inter halogen compounds are more reactive than halogens . Why ?

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5. Among the following which one is more acidic ? Give reason.

H_2O, H_2S, H_2Se and H_2Te

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6. Complete the following equation.

$H_2SO_4 + So_3 \rightarrow ?$

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7. With the help of Valence Bond theory account for hybridisation, geometry and magnetic property of $\left[Ni(CN)_4\right]^{2-}$ complex ion $[Z \text{ for } Ni = 28]$

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8. Explain the preparation of potassium permanganate from MnO_2 Write the balanced chemical equations for the reactions involved.

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9. Give reason :

SC^{3+} ions are colourless whereas V^{3+} ions are coloured.

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10. (a) What are interstitial compounds ? Write any one of their characteristics.

(b) Out of the following elements, identify theelement which does not exhibit variable oxidation state : Cr, Co, Zn.

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11. Explain the Crystal field splitting is an octahedral field.

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Part D

1. $200 cm^3$ of an aqueous solution of a protein contains 1.26 g of protein. The osmotic pressure of such a solution at 300 K is found to be 2.57×10^{-3} bar. Calculate the molar mass of the protein.

(R = 0.083 L bar $\mathrm{mol}^{-1} K^{-1}$)

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2. What are non-ideal solutions ? Mention the reason for the negative deviation from the Raoult's law.

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3. Resistance of a conductivity cell filled with 0.02 M KCl solution is 520 Ω. Calculate the conductivity and molar conductivity of that solution.

[Cell constant of the cell $= 1.29 cm^{-1}$].

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4. Draw a neat labeled diagram of Standard Hydrogen Electrode (SHE). Write its Half-Cell reaction.

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5. Calculate the packing efficiency in a simple cubic lattice.

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6. An element crystallizes in fcc lattice. If the edge length of the unit cell is 408.6 pm and the density is $10.5 g cm^{-3}$. Calculate the atomic mass of the element.

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7. Give reason for the following.

Brownian movement of colloidal particles.

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8. What is peptization ? Give an example.

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9. Derive an integrated rate equation for the rate constant of a first-order reaction.

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10. Draw the graph for [R] versus time (t) for a zero order reaction. Give the relationship

between the rate constant and the slope of the curve.

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11. Write the mechanism of acid catalysed dehydration of ethanol to ethene.

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12. What is the effect of the following groups on the acidity of phenol ?

(i) $-CH_3$ group

(ii) $-NO_2$ group.

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13. (a) Write the Haworth's structure for lactose.

(b) Give an example for the following:

(i) Naturally occurring optically inactive a-amino acid.

(i) Nitrogen base only found in R.N.A.

(c) Name the disease caused by the deficiency of vitamin A.

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14. Explain $S_N - 1$ reaction mechanism.

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15. Explain Fittig reaction with equation.

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16. What is cross aldol condensation. Give an example.

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17. Explain decarboxylation reaction with an example.

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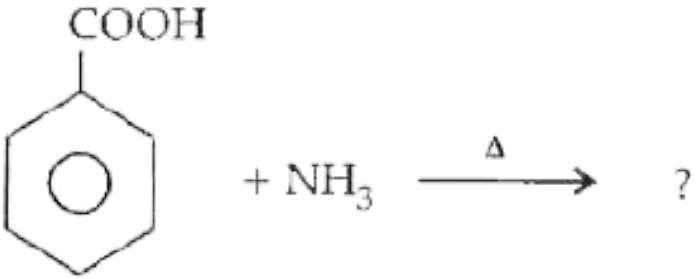
18. What is the major product of the following reaction ?



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19. What are condensation polymers? Given an example.

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20. Write the following:

(i) IUPAC name for the monomer of natural rubber.

(ii) The partial structure of polythene.

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21. Give an example for a co-polymer.

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22. Explain Hoffmann bromamide degradation for the preparation of methanamine.

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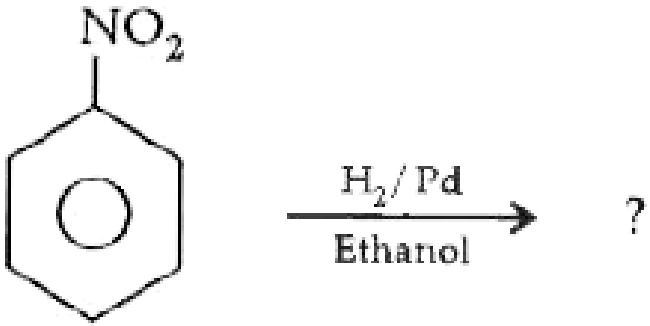
23. Complete the following reactions :



(i)

(ii) $C_6H_5NH_2 + NaNO_2 + 2HCl \xrightarrow{273-278K}$

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24. Give reason:

Ammonia is more basic than aniline.

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