CHEMISTRY

BOOKS - JEEVITH PUBLICATIONS

CHEMISTRY (KANNADA ENGLISH)

ANNIUAL EXAM QUESTION PAPER

WITH ANSWER (2015)

Part A

1. At a given temperature and pressure nitrogen gas is more soluble in water than Helium gas. Which one of them has higher value of K_n ?

2. On mixing equal volumes of acetone and ethanol, what type of deviation from Raoult's law is expected?

3. What happens to molar conductivity when one mole of KCI dissolved in one litre is diluted to five litres?

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4. What happens to the half life period for a first order reaction, if the initial concentration of the reactants is increased?

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5. Name the process usually employed for the purifacation of -Nickel.

6. Identify the product A in the following reaction.

$$XeF_6 + 3H_2O \rightarrow A + 6HF$$

7. How many moles of Arc will be precipitated when an excess of $AgNO_3$ solution is added to one molar solution of $[\text{Circle} \ (H_2O)_5]Cl_2$?]
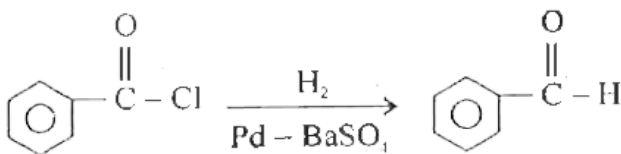
8. Name the organic compound formed when chlorobenzene is treated with sodium in dry ether.

9.

Name the above reaction.

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10. Deficiency of which vitamin causes the diseasee perncious anaemia?

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1. What is meant by the term coordination number in solids? What is the coordination number in a face centered cubic close packing structure?

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2. State Faraday's first law of electrolysis.

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3. A reaction is first order with respect to the reactant A and second order with respect to the reactant B in a reaction $A + B \rightarrow$ product

Write the differential rate equation.

4. A reaction is first order with respect to the reactant A and second order with respect to the reactant B in a reaction $A + B \rightarrow$

product

How is the rate of the reaction affected on increasing tile concentration of B by two times.

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5. Give-any two differences between lanthanoids and actinoids.
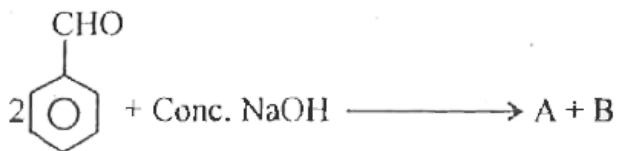
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6. Name the product formed when phenol is treated wilh acidified solution of $Na_2Cr_2O_7$ Give equation.

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7. Identify A and B in the following reaction :

2 CHO–C$_6$H$_5$ + Conc. NaOH ⟶ A + B

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8. What is the role of these as food additives?

Sodium benzoate

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9. What is the role of these as food additives?

Aspartame

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10. Explain saponfication of olis/fats with equation.

Part C

1. Describe the three steps involved in the leaching of bauxite to get pure alumina (equations not expected).
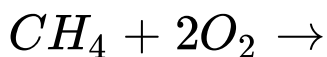
2. Write the equations involved in the preparation of nitric acid by Ostwalld's process by maintaining the reaction conditions.

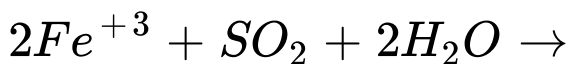**3.** complete the following equations:

$$CH_4 + 2O_2 \rightarrow$$
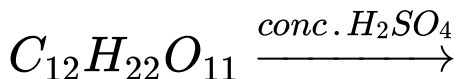
4. complete the following equations:

$$2Fe^{+3} + SO_2 + 2H_2O \rightarrow$$

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5. complete the following equations:

$$C_{12}H_{22}O_{11} \xrightarrow{conc.\,H_2SO_4}$$

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6. Which is the strongest acid among the hydrogen halides? Give one reason

[X=F,Cl,Br,I]

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7. Write the structure of Chloric acid $(HClO_3)$

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8. Give reason (one each) for the following :

Transition metal are good catalytic agent

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9. Give reason (one each) for the following :

Second ionisation enthalpy of copper is very high.

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10. Give reason (one each) for the following :

The spin only magnetic moment of Se^{3+} is zero (Z=21)

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11. Write the equations involved in the preparation of potassium dichromate from chromite ore.

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

13. For the given complex $\left[Co(NH_3)_5Br\right]SO_4$, write the IUPAC name and its ionisation isomer.

14. Which set of d-orbitals of metals ion or atom experience more repulsion in octahedral field created by the ligand.

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Part D

1. Caleulate the packing efficiency in a unit cell of Cubic Close Packing(CCP) structure.

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2. Name the crystal defect which lowers the density in an ionic crystal

3. A solution containing 18g of non - volatile non - electrolyte solute is dissolved in 200g of water freezes at 272.07K. Calculate the molecular mass of solute. Given $K_f = 1.86 kg/mol$ and freezing point of water = 273K
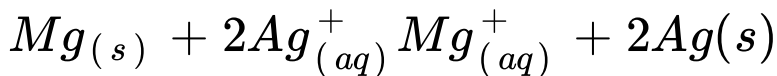
4. Define isotonic solution. What happens when the blood cell is dipped in a solution containing more than normal saline concentration?

5. Calculate the EMF of the cell for the reaction.

$$Mg_{(s)} + 2Ag^+_{(aq)} \rightarrow Mg^+_{(aq)} + 2Ag(s)$$

Given: $E° Mg^{2+}/Mg = -2.37V$

$E° Ag^+/Ag = 0.08V$

$[Mg^{2+}] = 0.001M, [Ag^+] = 0.0001M$

$\log 10^5 = 5$

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6. What are fuel cells ?

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7. Derive an intergrated rate for the first order reaction.

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8. According to collision theory, what are the two factors that lead to effective collisions

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9. Write any two differences between physisorption and chemisorption.

10. Name the phenomenon/effect for the following :

Colloidal particles are in zig-zag motion

11. Name the phenomenon/effect for the following :

When an electrical potential is applied across two platinum electrodes dipping in colloidal solution, particles moves towards one or the other electrodes

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12. Name the phenomenon/effect for the following :

Scattering of light by colloidal sol

Part E

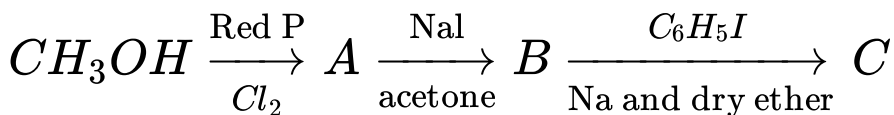**1.** Write equations for the steps in SN^1 mechanism of the conversion of tert.butyl bromide into tert.butyl alcohol.

2. Identify the products A, B and C in the following equation.

$$CH_3OH \xrightarrow[Cl_2]{\text{Red P}} A \xrightarrow[\text{acetone}]{\text{NaI}} B \xrightarrow[\text{Na and dry ether}]{C_6H_5I} C$$

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

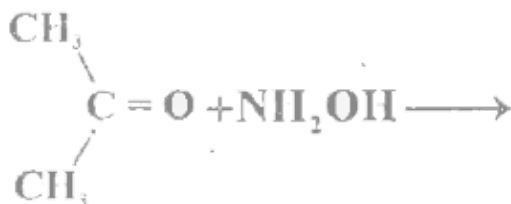**4.** Explain Williamson's reaction. Write the general equation.

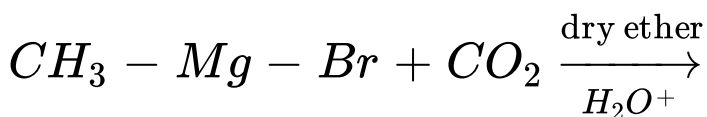**5.** Write the organic compound formed in tht following equations

$$\bigcirc + CH_3COCl \xrightarrow[\text{AlCl}_3]{\text{Anhydrous}}$$

6. Write the organic compound formed in tht following equations

$$CH_3 \\ \quad\quad C=O + NH_2OH \longrightarrow \\ CH_3 \diagup$$

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7. Write the organic compound formed in tht following equations

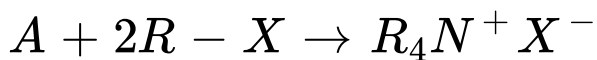$$CH_3 - Mg - Br + CO_2 \xrightarrow[H_2O^+]{\text{dry ether}}$$

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8. Explain HVZ (Hell-Volhard-Zelinsky) reaction with equation.

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9. Identify the reactant 'A' in the following reaction

$$A + 2R - X \rightarrow R_4 N^+ X^-$$

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10. Explain Hoffmann's bromamide degradation reaction for the preparation of methanamine.

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11. Which is more basic among aqueous solutions of aniline and ammonia ? Give one reason.

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12. Write Haworth structure for maltose.

13. What is meant by denaturation of protein ?

Which level of structure remains intact during

denaturation of globular protein ?

14. Write the partial structure of

Neoprene

15. Write the partial structure of

Terylene (Dacron)

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16. Write the partial structure of

Nylon-6

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17. Explain the preparation of Buna-N with equation.