CHEMISTRY

BOOKS - JEEVITH PUBLICATIONS CHEMISTRY (KANNADA ENGLISH)

PUE BOARD MODEL QUESTION PAPER 4 WITH ANSWERS

Part A

1. Define VantHaff's factor.

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2. What are isotonic solutions?

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3. Mention the SI unit for molar conductivity.

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4. For the reaction $A+B \rightarrow$ products. The rate becomes doubled when concentration of only A is increased by two times, the rate is increased by four times, when the concentration of B alone is doubled what is the order of the reaction?

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5. Name the enzyme used in the inversion of cane sugar.

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6. Name the method used for refining of zirconium.

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7. Complete the reaction $XeF_4 + O_2F_2 \rightarrow A + O_2$. Identify A.

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8. What is racemic mixture ?

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9. Name the product obtained when acetaldehyde reacts with hydroxyl amine.

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10. Name the nitrogenous base present in RNA only.

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Part B

1. Silver forms ccp lattice and x-ray studies of its crystals show that the edge length of its unit cell is 408.6 pm. Calculate the density of silver. (Atomic mass of Ag = 107.9 u)

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2. What is corrosion? Mention a general method to prevent it.

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3. Write the Arrhenius equation and mention what each term stands for.

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4. Give-any two differences between lanthanoids and actinoids.

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5. How does Acetyl chloride react with Anisole in presence of anhydrous aluminium chloride catalyst. Write the chemical equation of the reaction.

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6. Explain the effect of electron withdrawing groups. [EWG] on the acidity of carboxylic acids. Give examples.

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7. What are antacids? Give an example.

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8. What are food preservatives ? Give an example .

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Part C

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

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2. Write the reactions that take place during the manufacture of nitric acid by Ostwald's process.

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3. (i) What happens when potassium chlorate is heated in presence of MnO_2, write the equation for the reactions also.

(ii) Draw the structure of sulphuric acid.

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4. (i) How is chlorine prepared by using MnO_2 ?

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5. D-block elements form co-ordination compounds. Give reasons.

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6. How is potassium dichromate prepared from chromite are ?

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7. Using VBT, explainthe geometry and magnetic property of $\left[Ni(CN)_4\right]^{-2}$. (Atomic Number of Ni=28).

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8. Write any three postulates of Werner's theory of complexes.

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Part D

1. Calculate the number of particles per unit cell in fcc.

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2. The boiling point of benzene is 353.23 K when 1.80 g of a non-volatile, non-ionising solute was dissolved in 90 g of benzene, the boiling point is raised to 354.11 K. Calculate the molar mass of solute.

[Given K_b for benzene = 2.53 K kg mol^{-1}]

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3. Calculate the standard free energy change for the following reaction occurring in the galvanic cell at 298 K.

$3Mg(s) + 2Al^{3+}(aq) \rightarrow 3Mg^{2+}(aq) + 2Al(s)$

Given : $E^{\circ}_{Mg^{2+}/Mg} = -2.37V$ and $E_{Al^{3+}/Al} = -1.66V$

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4. (a) Derive the integrated rate equation for the rate constant of a first order reaction.

(b) What is pseudo first order reaction?

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5. (a) Complete and balance the following reaction

$(i) SO_2 + H_2S \xrightarrow{\text{Oxidation}}$

(ii) $FeCl_3 + H_2O \xrightarrow{\text{Hydrolysis}}$

(b) Mention two characteristics of enzyme catalysis

(c) What is the sign of ΔS for the adsorption of gas on solids?

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Part E

1. (a) Explain SN^1 mechanism by taking tertiary butyl bromide as an example.

(b) What is Wurtz Fitting's reaction? Give an example.

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2. (a) How is phenol manufactured by cumene process. Give the chemical reactions of the reaction involved.

(b) How do you prepare ethanol by using the Grignard Reagent?

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3. (a) How is benzoyl chloride converted into benzaldehyde? Name the reaction.

(b) Write the chemical reaction for the reaction between dilute NaOH and acetaldehyde, mention the name of the product formed.

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4. (a) Explain how is Hinberg's reagent is used to distinguish the primary, secondary and tertiary amines.

(b) Write the chemical reactions involved in the conversion of aniline into phenol.

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5. (a) What are carbohydrates? And how are they classified?

(b) What is a peptide bond? How many peptide bonds are present in a tetra peptide?

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6. (a) (i) What are condensation polymers? Give an example.

(ii) Give the IUPAC of the monomer of natural rubber.

(b) What are Biodegradable polymers? Give an example.

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