CHEMISTRY

BOOKS - JEEVITH PUBLICATIONS CHEMISTRY (KANNADA ENGLISH)

SUPPLEMENTARY EXAM QUESTION PAPER JUNE 2018

Part A

1. In a binary solution, mole fraction of one component is 0.068. What is the mole fraction of another component?

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2. State Henry's law.

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3. Why does the conductivity of a solution decrease with dilution?

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4. A chemical reaction has the rate expression $Rate = K[A]^2[B]$.

What is its overall order?

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5. Give the principle involved in zone refining process.

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6. Which noble gas does not occur in atmosphere?

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7. What is the value of co-ordination number of Fe in $K_4\left[Fe(CN)_6\right]$

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8. In aryl halides, what is the hybridisation of carbon atom to which halogen is attached?

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9. Write the IUPAC name of $CH_3COCH_2CH_2CH_3$.

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10. Name the nitrogen base present only in DNA not in RNA.

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Part B

1. Calculate the number of particles (atoms) per unit cell in a FCC crystal lattice.

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2. Draw a neat labelled diagram of $H_2 - O_2$ fuel cell and write overall cell reaction.

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3. The rate constant of a first order reaction is $1.15 \times 10^{-3} s^{-1}$. Calculate its half life period $(t1/2)$.

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4. Give reason:

(a) What is lanthanoid contraction?

(b) Which is the general oxidation state shown by actinoids?

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5. How does phenol react with conc. nitric acid? Give equation.

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6. Explain Cannizzaro reaction with an example.

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7. What are analgesics? Give one example for non-narcotic analgesie.

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8. What is saponification? Give the equation to form sodium stearate by this method.

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Part C

1. With a neat labelled diagram,describe the extraction of aluminium by Hall - Haroult process.

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2. Write the equations with conditions for the manufacture of nitric acid by Ostwald's process.

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3. Complete the following equations:

(i) $SO_2 + Cl_2 \xrightarrow{\text{charcoal}}$

(ii) $S + 2H_2SO_4 \xrightarrow[\text{conc.}]{}$

(iii) $NO + O_3 \rightarrow$

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4. (a) Write any two anomalous properties of fluorine.

(b) Give an equation for the reaction of chlorine with hydrogen

sulphide.

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5. Transition metals show catalytic property: Give reasons.

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6. Write the balanced equations in the manufacture of potassium dichromate from chromite ore.

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7. Explain the hybridisation, geometry and magnetic property of $[CoF_6]^{3-}$ based on VBT.

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8. What is an ambidentate ligand ? Name the type of structural isomerism arises when such ligand present in the complex.

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Part D

1. (a) Calculate the packing efficiency in body centered cubic lattice.

(b) What is Schottky defect?

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2. 5.8 g of non - volatile, non - electrolyte solute was dissolved in 100 g of carbon disuiphide (CS_2). The vapour pressure of the solution was found to be 190 mm of Hg. Calculate molar mass of the solute.

Given : Vapour of pure CS_2 is 195 mm of Hg and molar mass of CS_2 is $76g/mol$.

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3. Calculate the e.m.f. of the cell in which the following reaction takes place.

$Ni_{(s)} + 2Ag^{+}_{(0.002M)} \rightarrow Ni^{2+}_{(0.160M)} + 2Ag_{(s)}$, Given $E^{\circ}_{\text{cell}} = 1.05V$

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4. Derive an integrated rate equation for the rate constant of a zero order reaction.

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5. (a) Write any two characteristics of chemical adsorption.

(b) What is Brownian movement? What is the cause for it?

(c) What is homogeneous catalysis?

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Part E

1. Write equations for the steps in S_N1 mechanism of conversion of tertiary butyl bromide into tertiary butyl alcohol.

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2. (a) Write the mechanism of acid catalysed dehydration of ethanol to ethene.

(b) How does anisole react with bromine in ethanoic acid? Give equation.

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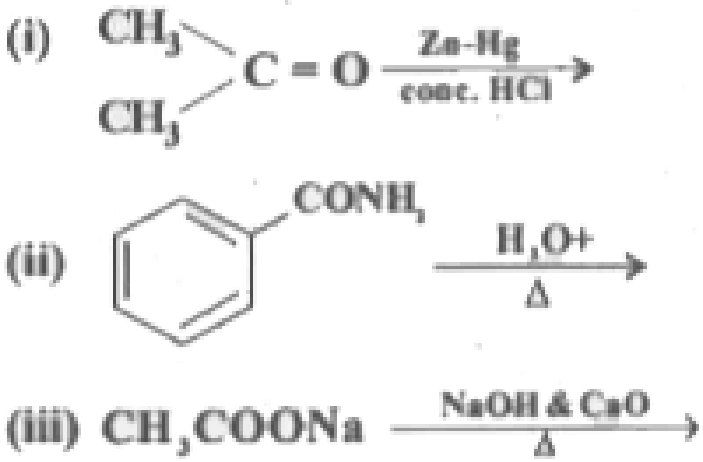
3. Complete the following equations:



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4. (a) How is methanamine prepared by Hoffmann bromamide degradation reaction? Give equation.

(b) How is aniline converted to Benzene diazonium chloride? Give equation.

(c) Between ammonia and aniline, which is more basic?

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5. (a) Write Haworth structure of maltose.

(b)What are non-essential amino acids? Name naturally occuring amino acid which is not optically active.

(c) Which vitamin deficiency causes the disease 'scurvy'?

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6. (a) How is nylon 6, 6 prepared? Give equation.

(b) Write the partial structure of

(i) Polythene (ii) Neoprene

(c) Name the monomer present in natural rubber.

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