CHEMISTRY

BOOKS - JEEVITH PUBLICATIONS CHEMISTRY (KANNADA ENGLISH)

EXAM QUESTION PAPER JULY WITH ANSWER (2015)

Part A

1. On what factor the value of colligative property depends?

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2. Give an example for liquid solution in which solute is gas.

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3. How many Coulombs of electricity required to oxidise one mole of Al to Al^{3+}?

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4. In a zero order reaction, the time taken to reduce the concentration of reactant from 50% to 25% is 30 minutes. What is the time required to reduce the concentration from 25% to 12.5%?

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

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6. Which metal is refined by Van-Arkel method?

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7. Name the noble gas which does not have general noble gas electronic configuration $ns^2.\ np^6$

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8. $R-X+NaI \xrightarrow[\text{Acetone}]{\text{dry}} R-1+NaX$ what is the name of reaction ?

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9. Which oxidising agent used in Etard's-reaction ?

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10. Write the general structure of Zwitter ion.

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Part B

1. Give any two differences between Frenkel and Schottky defects .

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2. State :

Kohlrauseh's law

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3. State :

Faraday first law of electrolysis

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4. Calculate the half-life period of a first order reaction, if the rate constant of the reaction is $6.93 \times 10^{-3} S^{-1}$.

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5. Give reasons :

Actinoids show variable oxidation states

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6. Give reasons :

Cerium (Ce) exhibits +4 oxidation state

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7. Write the IUPAC name of major product formed in Friedel-Crafts acyfation of a anisole

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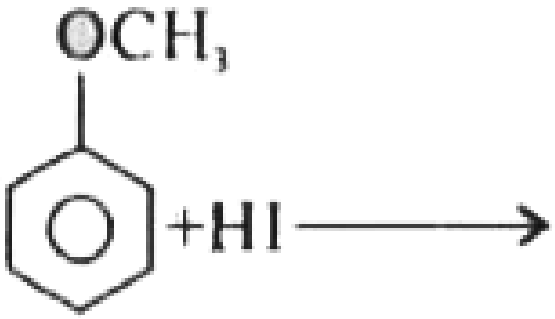
8. Complete the reaction



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9. How are carboxylic acid prepared from Grigoard reagent?

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10. What are antibiotics ? Give an example.

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11. What is Saponification? Give the equation to form sodium stearate by this method.

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Part C

1. Explain the reducing behaviour of carbon in the extraction of iron using Ellingham diagram.

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2. Name the gas liberated when zinc reacts with dil. HNO_3

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3. Give reason :

PH_3 has lower boiling point than NH_3

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4. Give reason :

Nitrogen is less reactive at room temperature.

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5. Give tbe principles involved in the manufacture of sulphuric acid by contact procces with equations :

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6. Complete the reaction

$2Cl_2 + 2H_2O + SO_2 \rightarrow$

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7. Which halogen has highest electron affinity or electron gain enthalpy ?

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8. Give the structure of perchloric acid.

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9. 3d-series elements exhibit vaiable oxidation states. Why ?

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10. Calculate the magnetic moment of Mn^{2+} ion.

[Atomic number of Mn=25]

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11. Describe the manufacture of potassium dichromate from chromite ore.

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12. With the help of Valence Bond Theory (VBT) explain hybridisation, geometry and magnetic property of $[CoF_6]^2$ heat fluoridocobaltate (III) ion.

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13. What is the IUPAC name of $\left[Cr(NH_3)_3(H_2O)_3\right]Cl_3$?

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14. Give the facial (fac) and meridional (mer) isomeric structures of $\left[Co(NH_3)_3(NO_2)_3\right]$.

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Part D

1. Calculate the number of particles in Body Centered Cubic (BCC) lattice.

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2. An element having atomic mass 107.9 u has FCC lattice. The edge length of its unit cell is 408.6 pm. Calculate density of the unit cell. $\left[\text{Given, } N_A = 6.022 \times 10^{23}\text{mol}^{-1}\right]$.

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3. 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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4. Write two differences between ideal and non-ideal solutions.

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5. Draw the neat lableled diagram of SHE and write its symbolic representation.

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6. 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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7. Derive the integrated rate equation for rate constant of Zero order reaction.

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8. Show that the rate of first order reaction is doubled when concentration of the reactant is doubled.

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9. Give any two chracteristics of chemisorption

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10. What is meant by selectivity of a catalyst ?

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11. Define

Brownian movement

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12. Define

Tyndall effect

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Part E

1. Expain the SN^2 mechanism

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2. What is the reagent used in the conversion of alkyl halide into alkene?

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3. Complete the reaction.

$$CH_3 - CH_2 - Br + \underset{\text{alco}}{AgCN} \xrightarrow[\triangle]{}$$

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4. What are enantiomers ?

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5. Explain the Kolbe's reaction.

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6. Complete the reactions :

$$R - CH_2 - OH \xrightarrow[300^\circ C]{cu}$$

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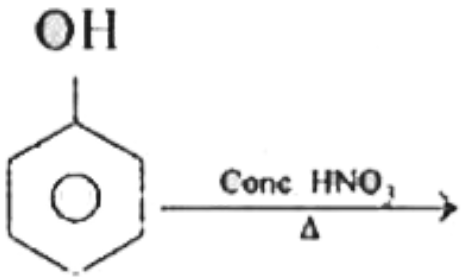
7. Complete the following reaction



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8. Write the general equation of Williamson's ether synthesis

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9. How would you prepare acetaldeyde from acetyl cholride. Name the reaction.

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10. Name the reagent used in the conversion of ketone to hydrocarbon. Name the reaction.

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11. Acetaldebydc does not undergo Cannizzaro's reaction, Why?

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12. Name the major product formed when nitrous acid is treated with

Methylamine

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13. Aniline at low temperature.

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14. Explain the Hoffmann's bromamide reaction.

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15. Write the IUPAC name of $(CH_3)_2N - CH_2 - CH_3$.

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16. Give the Haworth structure of lactos.

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17. What are hormones ? Give an example.

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18. Which nitrogenous base present in DNA but not in RNA ?

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19. How is neoprene prepared ?

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20. What is bio-degradeable polymers ? Give example.

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21. What is vulcanisation ?

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