



CHEMISTRY

BOOKS - SUNSTAR CHEMISTRY (KANNADA ENGLISH)

ANNUAL EXAM QUESTION PAPER MARCH - 2018

Part A

1. State Henry's law.



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2. Van't Hoff's factor for a solution is less than one .

What is the conclusion drawn from it ?

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3. How many faraday of electricity is required to reduce

1 mole of MnO_4^- ions to Mn^{2+} ions?

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4. If the unit of rate constant of a reaction is

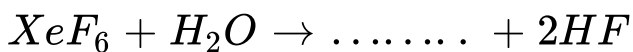
$mol^{-1}Ls^{-1}$ then mention its order.

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5. Name a metal refined by Van Arkel method.

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6. Complete the following equations.

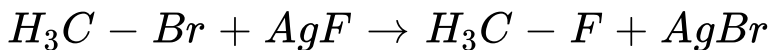


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7. What is an ambidentate ligand?

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8. Name the Following reaction.



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9. Ethanal(CH_3CHO) undergoes aldol condensation reaction. Give reason.

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10. Deficiency of which vitamin cause the disease "Rickets".

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Part B

1. What is Frenkel defect ? How does it affect density of the solid ?

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2. Draw a neat labelled diagram of $H_2 - O_2$ fuel cell.

Write the reaction occurs at cathode of the cell.

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3. A first order reaction is found to have a rate constant $K = 5.5 \times 10^{-14} \text{S}^{-1}$. Find the half-life of the reaction.

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4. Give reason :

a) Cerium (Ce) exhibits +4 oxidation state.

b) Actinoid contraction is greater from element to element than lanthanoid contraction.

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5. How anisole reacts with bromine in ethanoic acid?
write the chemical equation for the reaction.

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6. Explain the preparation of carboxylic acids from Grignard reagent . Give equation.

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7. Given an example each for
(a) Artificial sweetening agents (b) Narcotic analgesics.

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8. What are cationic detergents? Give an example.

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Part C

1. Explain the process of obtaining 'blister copper' from copper matte" with equations.

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2. Write the equation involved in the manufacture of nitric acid by Ostwalds process by maintaining reaction conditions.

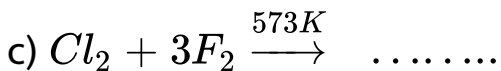
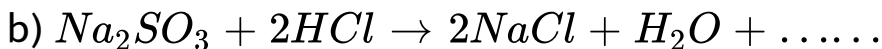
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3. (a) How is ozonised oxygen prepared in the laboratory? Give equation.

(b) Give the composition of "Oleum".

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4. Complete the following equations :



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5. How is potassium permanganate ($KMnO_4$) prepared from MnO_2 ? Write the equations.

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6. Why 3d-series of elements acts as good catalyst?

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7. Given reason : Ti^{4+} salts are colourless where as Cr^{3+} salts are coloured.

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8. Using valence bond theory (VBT), account for the geometry, type of hybridization and magnetic property of $[NiCl_4]^{2-}$.

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9. Write the IUPAC name of : $[Co(NH_3)_4(H_2O)Cl]Cl_2$

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10. Explain linkage isomerism with example.

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Part D

1. Calculate the packing efficiency in a simple cubic 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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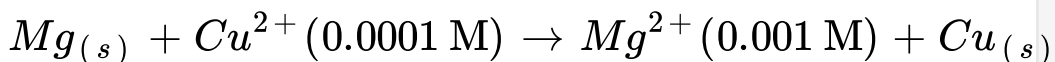
3. The boiling point of benzene is 353.23 K. When 1.80 g of a non - volatile non - ionisable solute was dissolved in 90 g of benzene, the boiling point raised to 354.11 K.

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4. Define : (i) Molality of a solution (ii) Isotonic solutions

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5. Calculate e.m.f. of cell for the reaction :



Given that : $E_{Mg^{2+}/Mg}^{\circ} = -2.37V$

$$E_{Cu^{2+}/Cu}^{\circ} = +0.34V$$

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6. i) State Kohlrausch law.

ii) What is meant by limiting molar conductance.

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

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8. Draw a graph of potential energy V/S reaction co - ordinates showing the effect of catalyst on activation energy (E_a) of a reaction.

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9. write any two differences between lyophilic and lyophobic colloids .

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10. What is heterogeneous catalysis? Give an example.

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11. Give an expression for Freundlich adsorption isotherm.

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12. Write the equations for the steps in SN-1 mechanism of the conversion of tert-Butyl bromide into tert-butyl alcohol.

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13. Explain fitting reaction .

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14. Name the reagent used in the dehydrohalogenation of haloalkanes.

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

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16. Between phenol and alcohol which is more acidic ?
Why ?

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17. Explain Rosenmund reduction with equation.

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18. How does propanone (CH_3COCH_3) reacts with hydrazine? Give equation.

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19. Name an oxidising agent used in the Etard's reaction

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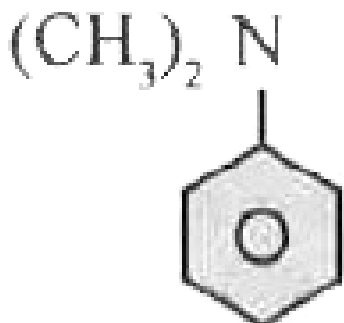
20. Explain carbyl amine reaction with equation.

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21. How does nitrobenzene is reduced to aniline ? Give equation.

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22. Write the IUPAC name of



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23. Write Howorth structure of "Lactose".

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24. (i) What are non - essential amino acids ?

(ii) Write zwitter ionic structure of "glycine "

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25. Name the nitrogenous base present in RNA but not in DNA.

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26. Explain the preparation of Nylon - 6 , 6 with equation.

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27. What are thermoplastic polymers? Give an example.

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28. Write the structure of isoprene (2-methyl -1,3-butadiene).

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