



CHEMISTRY

BOOKS - SUNSTAR CHEMISTRY (KANNADA ENGLISH)

II PUC CHEMISTRY (ANNUAL EXAM QUESTION PAPER MARCH - 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 ?



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



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

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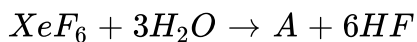
4. What happens to the half life period for a first order reaction, if the initial concentration of the reactants is increased?

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

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6. Identify the product A in the following reaction.



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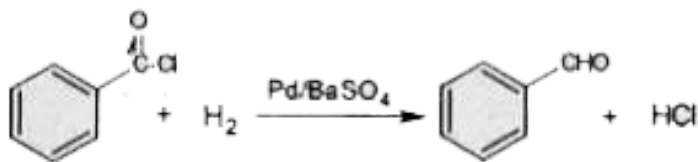
7. How many moles of $AgCl$ will be precipitated when an excess of $AgNO_3$ solution is added to one molar solution of $[CrCl(H_2O)_5]Cl_2$?

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8. Name the organic compound formed when chlorobenzene is treated with sodium in dry ether.

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9. Name the following reaction.



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10. Deficiency of which vitamin causes the disease pernicious anaemia?

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Part B

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. For the electrode reaction $Zn^{+2} + 2e^{-} \rightarrow Zn_{(s)}$, what quantity of electricity in coulombs is required to deposit one mole of zinc.

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

i) Write the differential rate equation.

ii) How is the rate of the reaction affected on increasing the concentration of B by two times?

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4. Give any two differences between lanthanoids and actinoids.

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5. Name the product formed when phenol is treated with acidified solution of $Na_2Cr_2O_7$. Give equation.

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6. Identify A and B in the following reaction.



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

- i) Sodium benzoate.
- ii) Aspartame.

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8. Explain saponification of oils/fats with equation.

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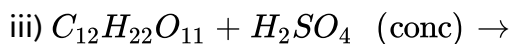
1. Describe the three steps involved in the leaching of bauxite to get pure alumina (equations not expected).

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2. Write the equations involved in the preparation of nitric acid by Ostwald's process by maintaining the reaction conditions.

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3. Complete the following equations



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

[X=F,Cl,Br,I]

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

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6. Give reason (one each) for the following.

- Transition metals are good catalytic agents.
- Second ionisation Enthalpy of copper is very high.
- The spin only magnetic moment of Sc^{3+} is zero ($Z = 21$).

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

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

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Part D

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

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2. Which set of d-orbitals of a metal atom/ion experience more repulsion in octahedral field created by the ligands?

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

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

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5. A solution containing 18g of non-volatile non-electrolyte solute is dissolved in 200g of water and freezes at 272.07K. Calculate the molecular mass of solute. Given $K_f = 1.86 \text{ kg/mol}$ and freezing point of water = 273K



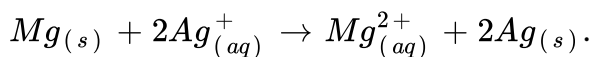
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6. Define isotonic solution. What happens when the blood cell is dipped in a solution containing more than normal saline concentration?



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7. Calculate the EMF of the cell for the reaction



(Given : $E^\circ Mg^{2+} / Mg = -2.37V$, $E^\circ Ag^+ / Ag = 0.80V$, $[Mg^{2+}] = C$



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8. What are fuel cells ?



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9. Derive an integrated rate for the first order reaction.

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

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11. Write any two differences between physisorption and chemisorption.

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12. Name the phenomenon/effect for the following

i) Collidal particles are in zig zag motion.

ii) When an electrical potential is applied across two platinum electrodes dipping in a collidal solution, particles move towards one or the other

electrodes.

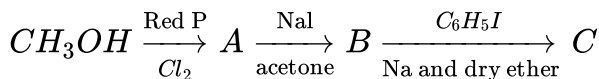
iii) Scattering of light by colloidal sol.

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

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



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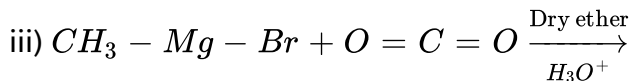
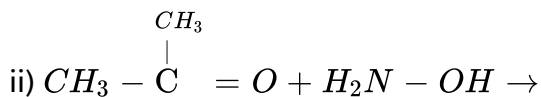
15. Write the mechanism of acid catalysed dehydration of ethanol to ethene.

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16. Explain Williamson's reaction. Write the general equation.

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17. Write the organic compound formed in the following equations.

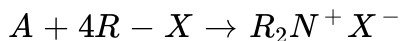


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18. Explain HVZ (Hell-Volhard-Zelinsky) reaction with equation.

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19. Identified the reactant A in the following reaction :



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20. Explain Hoffmann bromamide degradation for the preparation of methanamine.

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

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22. Write Haworth structure for maltose.

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23. What is meant by denaturation of protein ? Which level of structure remains intact during denaturation of globular protein ?

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24. Name the base present only in DNA but not in RNA.

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25. Write the partial structure of

i) Neoprene ii) Terylene(Dacron) iii) Nylon-6

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

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