



CHEMISTRY

BOOKS - SUNSTAR CHEMISTRY

(KANNADA ENGLISH)

II PUC CHEMISTRY (P.U. BOARD LATEST MODEL QUESTION PAPER - 2)

Part A

1. 68% aqueous nitric acid cannot be concentrated by further fractional distillation.

Give reason.



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2. The cryoscopic constant and freezing point of benzene is $5.12 \text{ K kg mol}^{-1}$ and 278.6 K respectively. At what temperature will one molal solution of benzene containing a nonelectrolyte ($i = 1$) freeze?





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3. E° of three metals A, B, C are $+0.44V$, $+1.37V$ and $-1.35V$. Arrange the metals in increasing order of their reducing power.



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4. Mention one difference between a catalyst and an inhibitor.



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5. Write the mathematical expression for Freundlich adsorption isotherm.



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6. Name the purest form of commercial iron.



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7. A noble gas has the property to diffuse through rubber. Name the noble gas.



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8. Explain Swartz reaction.



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9. $CH_3CHO \xrightarrow[2) \Delta]{1) \text{ dil. NaOH}} X$. Give the IUPAC name of X.



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10. Name the pentose sugar present in RNA molecule.



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Part B

1. What do you mean by anisotropic solid?



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2. When is ferrimagnetism observed in a substance?



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3. Λ_m of 0.05 M weak electrolyte is $50 \text{ Sm}^2 \text{ mol}^{-1}$, θ° of it is $440 \text{ Sm}^2 \text{ mol}^{-1}$. Calculate α (degree of dissociation) of the electrolyte.



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4. Draw a plot of $\ln[R]$ versus t for a first order reaction. What is slope of the line equal to?



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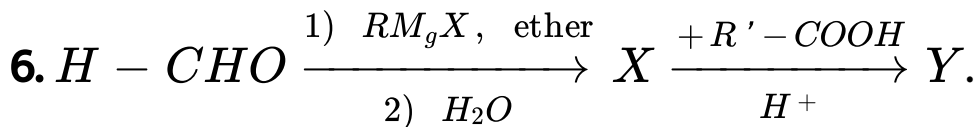
5. Give reason:

i) Actinoid contraction is greater from element to element.

ii) Actinoids show variable oxidation states.



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What are the structures of X and Y?

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7. Complete the equation and name the reaction:



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8. Give reasons:

i) Aspirin finds use in prevention of heart attacks.

ii) Sodium laurylsulphate is a anionic detergent



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9. What is a broad-spectrum antibiotic? Is penicillin a broad spectrum or a narrow spectrum antibiotic?

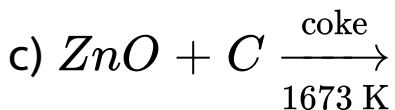
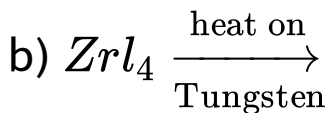
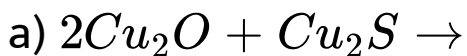




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Part C

1. Complete the following equations:



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2. Give reasons:

i) Nitrogen exists as a diatomic molecule

ii) Nitrogen cannot form a pentahalide

iii) Aluminium does not dissolve in conc.



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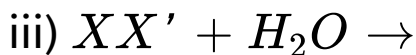
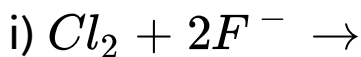
3. Write the equations involved in the manufacture of sulphuric acid in contact process.





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4. Complete the following equations:



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5. Give reasons:



ii) Ionisation enthalpy increases along

transition elements from left to right

iii) Zn has highest value for $E^\circ (M^{3+} / M^{2+})$

among 3d series elements



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6. Write the two steps involved in the commercial process of converting MnO_2 to potassium permanganate.



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7. Give the structure of chromate ion?



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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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9. a) What type of isomerism is exhibited by the square planar complex of type M_{ABXY} ?

How many of these isomers are possible?



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10. b) How is a metal-carbon π bond formed in metal carbonyls?



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



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2. Explain with an example how impurity defect develops in $NaCl$ crystal.



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3. Calculate the mole fraction of CO_2 , in one litre of soda water sealed under a pressure of 3.5 bar at 298 K. $K_H = 1.67 \times 10^3$ bar



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4. What are these?

i) solid solutions ii) colligative properties iii)

isotonic solution



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5. a) i) Name the product liberated at anode when dil. H_2SO_4 is electrolysed.



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6. ii) What Faraday of current is required to electrolyse one mole of water?



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7. b) i) Between mercury cell and nickel-cadmium cell, which is a secondary cell?



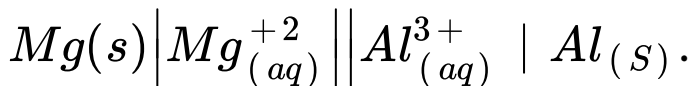
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8. Mention one advantage of $H_2 - O_2$ fuel cell.



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9. c) Write Nernst equation for the cell represented as:



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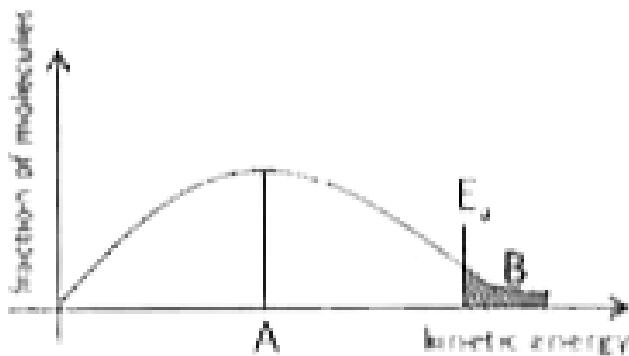
10. Show that for a first order reaction,

$$t_{99.9\%} = 10t_{1/2}.$$



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11. b) In the graph drawn what does A and the shaded region B represent?



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12. Name the phenomenon/process involved

i) mixing of hydrated ferric oxide (+ve sol)

and arsenious sulphide (–ve sol)

- ii) An impure sol is purified by removing dissolved particles using suitable membrane
- iii) Movement of dispersion medium is observed in an electric field.



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13. Mention any two characteristic of enzyme catalysis.



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14. a) Write the equation for SN^2 mechanism between CH_3Cl and $-OH$. What is the stereochemical aspect of SN^2 reaction?

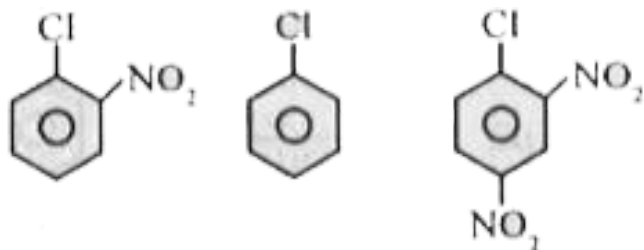


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15. b i) Aryl halide with sodium in dry ether undergoes Fitting reaction. Write the equation and name the product.

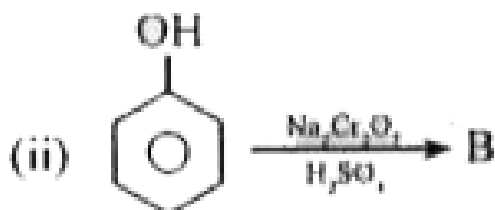
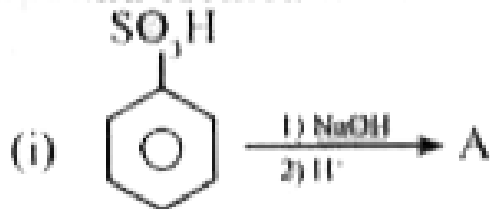
ii) Arrange the following in the increasing order of their reactivity towards nucleophilic

substitution reaction.



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16. a) What is the organic compound formed in the following :



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17. b) Give reason: -

i) o-nitrophenol and p-nitrophenol can be separated by steam distillation.

ii) There is a large difference in boiling points of alcohols and ethers.

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18. a) Write the structure of P and Q? Name the reaction that gives the product P.

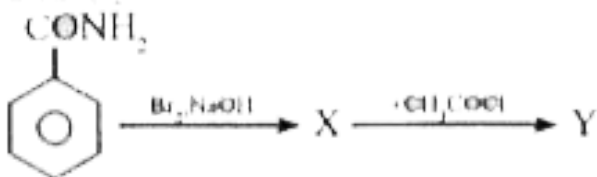


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19. Explain decarboxylation reaction with an example.

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20. a) Name the products X and Y?



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21. b) Between methyl amine and ammonia which has lower pK_b value and why?



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22. Name the final product of ammonolysis of an alkyl halide.



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23. Draw the Haworth structure of β -(D) fructofuranose.



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24. b) i) Pentaacetate of glucose does not react with hydroxyl amine. What does this indicate about the structure of glucose.

ii) Which is the most abundant polysaccharide in plants?

iii) Name the natural α -amino acid that is not optically active.



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25. What major molecular shape does the tertiary structure of protein lead to?



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26. What is a homopolymer? Give an example.



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27. Write the equation for the formation of the polymer by the interaction of ethylene glycol and terephthalic acid. Name the polymer.



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28. c) Molecular mass of polymers are expressed as an average. Give reason



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