CHEMISTRY

BOOKS - SUNSTAR CHEMISTRY (KANNADA ENGLISH)

II PUC CHEMISTRY (P.U. BOARD LATEST MODEL QUESTION PAPER - 3)

Part A

1. Name the phenomenon involved: A raw mango in a concentrated salt solution loses water and shrinks.

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2. How does the solubility of a solute vary with increase in temperature if the dissolution process is exothermic?

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3. What is the oxidising agent in mercury cell?

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4. Half life period of a reaction is directly proportional to initial concentration of the reactant. What is the order of this reaction?

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5. What should be the value of 1/n in the Freundlich adsorption isotherm, to show that adsorption can be independent of pressure ?

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6. An ore contains PbS and ZnS. Sodium cyanide is used as depressant. Which of these sulphide comes with the froth?

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7. Noble gases have vary low boiling point. Why?

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8. What is retention of configuration?

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9. Name the type of carbonyl compound which on oxidation gives a carboxylic acid with lesser

number of carbon atoms.

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10. Name the element of group 17 present in Thyroxine hormone.

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Part B

1. Mention the two crystal systems in which all edge lengths in their unit cell are the same.

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2. A fuel cell generates a standard electrode potential of 0.7 V, involving 2 electrons in its cell reaction. Calculate the standard free energy change for the reaction. Given $\mathrm{F}=96487\ \mathrm{C\ mol^{-1}}$.

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3. The ratio of rate constants of a reaction at 300K and 291K is 2. Calculate the energy of activation.

$\left(\text{Given} \quad R = 8.314\text{JK}^{-1} \quad \text{mol}^{-1}\right).$

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4. Write the general electronic configuration of tripositive lanthanoid ion.

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5. ii) Name the element of lanthanide with maximum paramagnetic property.

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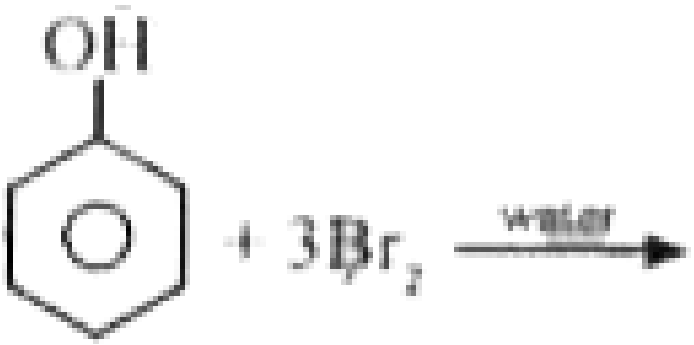
6. Complete the following :

i) $CH_3 - CH = CH - CH_2OH \xrightarrow{PCC}$

ii)



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7. Write the chemical equation to convert acetic acid to monochloro acetic acid. Name this reaction.

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8. a) What do we call a drug that binds to the receptor site and inhibit its natural function

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9. What is the therapeutic use of iodoform?

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10. Classify the following into cationic and anionic detergents: Sodium dodecylbenzene sulphonate and Cetyltrimethyammonium bromide.

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Part C

1. Name the reducing agent used in the extraction of zinc from zinc oxide. Write the chemical equation for this reaction.

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2. Write the composition of copper matte.

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3. In the manufacture of nitric acid by Ostwald's process, Write

a) the catalyst for the oxidation of ammonia by atmospheric oxygen.

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4. In the manufacture of nitric acid by Ostwald's process, Write

the chemical equation for the dissolution of NO_2 in water.

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5. In the manufacture of nitric acid by Ostwald's process, write

the dehydrating agent used to convert $68\,\%$ by mass of HNO_3 to $98\,\%$.

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6. Complete the following equations:

i) $NO + O_3 \rightarrow$

ii) $5SO_2 + 2MnO_4^- + 2H_2O \rightarrow$

iii) $C + 2H_2SO_4 \ (\text{conc.}) \rightarrow$

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7. a) Write the balanced chemical equation for the oxidation of acidified ferrous sulphate solution by chlorine.

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8. b) Give the composition of carnallite.

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9. Fluorine does not exhibit positive oxidation state. Why?

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10. Why VO_2^+ has lesser oxidizing power than $Cr_2O_7^{2-}$?

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11. What is the oxidation state of nickel in $Ni(CO)_4$?

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12. Write the unit for magnetic moment.

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13. Write the balanced chemical equation involved in the manufacture of potassium-

dichromate from chromite ore.

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14. Using VBT, explain the geometry and magnetic property of $\left[CO(NH_3)_6\right]^{+3}$.

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15. Explain synergic effect in the formation of metal carbonyls.

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16. Give an example of a Heteroleptic complex.

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Part D

1. a) Calculate the packing efficiency of particles in a body centred cube.

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2. b) Atoms of element B form hep lattice and those of element A occupies $2/3^{rd}$ of tetrahedral voids. Calculate the formula of the compound formed by A and B.

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3. 18g of glucose is dissolved in 1000g of water at 300K. At what temperature does this solution boil?(Kb for water is 0.52 K kg/mol.Molar mass of glucose is 180 g/mol, boiling point of water = 273.15 K)

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4. What are the conditions of pressure and temperature under which solubility of carbon dioxide in water can be increased?

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5. a) For the electrochemical cell represented as: $Cu_{(s)}\left|Cu^{2+}_{(aq)}\right| \mid Ag^{+}_{(aq)}\left|Ag_{(s)}\right.$, write the

half cell reaction that occurs at (i) anode (ii) cathode

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6. Write the relationship between equilibrium constant of the reaction and standard potential of the cell.

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7. c) Resistance of a conductivity cell containing 0.1 M KCl solution is 100Ω. Cell constant of the cell is 1.29/cm. Calculate the conductivity of the solution at the same temperature.

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8. Derive an expression for half life period of a first order reaction.

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9. Explain the influence of a catalyst on rate of reaction.

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10. c) For the reaction, $H_2 + I_2 \rightarrow 2HI$, the rate of disappearance of $H2$ is $1 \times 10^{-4} Ms^{-1}$. What is the rate of appearance of HI.

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11. What is Brownain movement ? What is the cause for it ?

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12. Write the difference between physisorption and chemisorption with respect to

i) type of attractive forces between adsorbate and adsorbent

ii) number of layers of adsorption.

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13. Name the enzyme that catalyses the reaction:

$H_2NCONH_2 + H_2O \rightarrow 2NH_3 + CO_2.$

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14. a) Write S_N1 mechanism for the hydrolysis of 2-Bromo-2-methyl propane. Why are S_N1 reactions generally carried in polar protic solvents?

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15. In the preparation of aryl halides by Sandmeyer's reaction, name the i) catalyst used ii) gas liberated.

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16. Write the chemical equation for the conversion of,

i) phenol to salicylaldehyde ii) Salicylic acid to aspirin.

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17. Explain Williamson's ether synthesis.

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18. Which class of alcohols do not readily form turbidity with Lucas reagent?

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19. Explain Clemmensen reduction with an example.

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20. Name the reaction to obtain benzaldehyde from:

i) toluene ii) benzene iii) benzoyl chloride.

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21. How are primary amines prepared from nitro compounds? Write the equation.

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22. How does Hinsberg's reagent react with ethyl amine? Write the equation.

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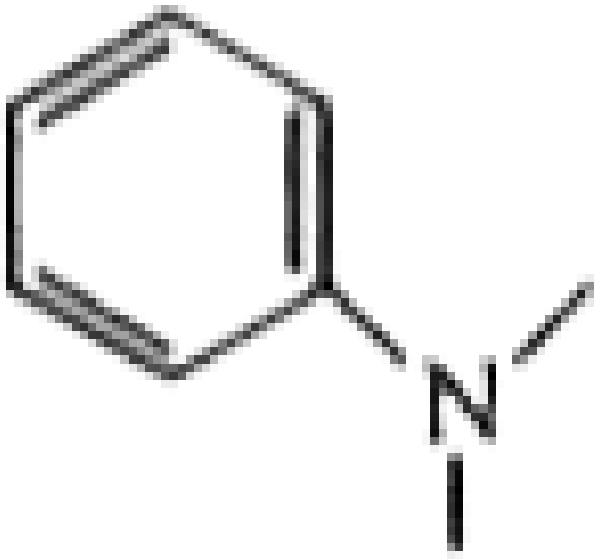
23. Write the IUPAC name of



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24. a) Name the water insoluble component of starch.

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25. Name the type of linkage between two nucleotides in nucleic acid.

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26. With respect to proteins, what do you mean by

i) primary structure ii) denaturation

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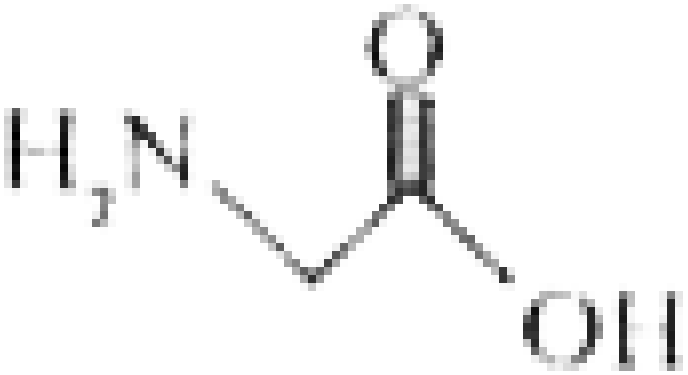
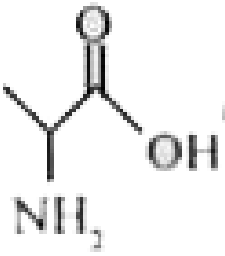
27. Write an equation for the formation of a dipeptide between



(glycine) and  (alanine).

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28. What is addition polymerization? Give one example for a copolymer.

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29. Write the name of monomers required to manufacture Buna-N rubber. Write the polymerization reaction for the same.

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30. What is Zeigler-Natta catalyst?

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