CHEMISTRY

BOOKS - SUNSTAR CHEMISTRY (KANNADA ENGLISH)

SUPPLEMENTARY EXAM QUESTION PAPER JULY - 2018

Part A

1. In a binary solution, mole fraction of one component is 0.068. What is the mole fraction of another component?

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2. State Henry's law.

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3. Why does the conductivity of a solution decrease with dilution?

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4. A chemical reaction has the rate expression $Rate = K[A]^2[B]$.

What is its overall order?

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5. Give the principle involved in zone refining process.

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6. Which noble gas does not occur in atmosphere?

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7. What is the value of co-ordination number of Fe in $K_4\left[Fe(CN)_6\right]$

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8. In aryl halides, what is the hybridisation of carbon atom to which halogen is attached?

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9. Write the IUPAC name of $CH_3COCH_2CH_2CH_3$.

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10. Name the nitrogen base present only in DNA not in RNA.

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Part B

1. Calculate the number of particles (atoms) per unit cell in a FCC crystal lattice.

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2. Draw a neat labelled diagram of $H_2 - O_2$ fuel cell and write overall cell reaction.

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3. The rate constant of a first order reaction is $1.15 \times 10^{-3} s^{-1}$. Calculate its half life period $(t1/2)$.

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4. What is lanthanoid contraction? Mention the cause for it.

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5. Which is the general oxidation state shown by actinoids ?

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6. How does phenol react with conc. Nitric acid ? Give equation.

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7. Explain Cannizzaro reaction with an example.

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8. What are analgesics ? Give one example for non-narcotic analgesic.

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Part C

1. What is saponification? Give the equation to form sodium stearate by this method.

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2. Draw a neat labelled diagram of electrolytic cell used in the extraction of Aluminium by Hall - Heroult Process. Write the reactions take place at cathode and anode.

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3. Write the equations with conditions for the manufacture of nitric acid by Ostwald's process.

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4. Complete the following equations:

(i) $SO_2 + Cl_2 \xrightarrow{\text{charcoal}}$

(ii) $S + 2H_2SO_4 \xrightarrow[\text{conc.}]{}$

(iii) $NO + O_3 \rightarrow$

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5. Write any two anomalous properties of fluorine.

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6. Give an equation for the reaction of chlorine with hydrogen sulphide.

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7. Transition metals show catalytic property: Give reasons.

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8. Between $Cu^{2+}_{(aq)}$ and $Cu^{+}_{(aq)}$ which is more stable?

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9. Write the balanced equations in the manufacture of potassium dichromate from chromite ore.

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10. On the basis of VBT explain the hybridization, geometrical shape and magnetic property of $[CoF_6]^{3-}$, hexafluorido cobaltate (III) ion.

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11. What is an ambidentate ligand ? Name the type of structural isomerism arises when such ligand present in the complex.

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Part D

1. Write the IUPAC name of $K_2\left[Zn(OH)_4\right]$.

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

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3. What is Schottky defect ?

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4. 5.8 g of non - volatile, non - electrolyte solute was dissolved in 100 g of carbon disuiphide (CS_2). The vapour pressure of the solution was found to be 190 mm of Hg. Calculate molar mass of the solute. Given : Vapour of pure CS_2 is 195 mm of Hg and molar mass of CS_2 is $76 g/mol$.

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5. Mention any two differences between ideal and non-ideal solutions.

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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. State the Faraday's first law of electrolysis. How many Faraday of electricity is required for the reduction of 1 mole of Mg^{2+} ions?

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8. Derive an integrated rate equation for the rate constant of a zero order reaction.

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9. 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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10. Write any two characteristics of chemical adsorption.

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

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12. What is homogenous catalysis? Give an example.

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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. Explain Wurtz-Fitting reaction with equation.

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15. $CH_3Cl + NaI \xrightarrow{\text{Dry acetone}} CH_3I + NaCl.$ Name the above reaction.

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

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17. How does anisole react with bromine in ethanoic acid ? Give equation.

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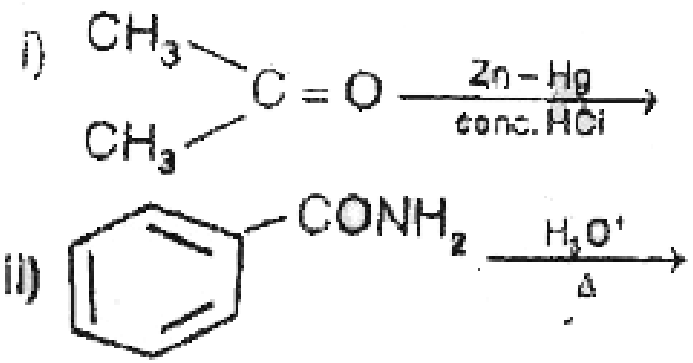
18. Complete the following equations :



(i)

(iii) $CH_3COONa \xrightarrow[\Delta]{NaOH \,\&\, CaO}$

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19. Explain esterification reaction with an example.

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20. How is methylamine prepared by Hoffmann bromamide degradation reaction ? Give equation.

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21. How is aniline converted to Benzene diazonium chloride ? Give equation.

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22. b) What is Hinsberg's reagent? Between CH_3NH_2 and $C_6H_5NH_2$ which is more basic?

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23. Write Haworth structure for maltose.

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24. What are non - essential amino acids? Name naturally occurring cc - amino acid which is not optically active.

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25. Which vitamin deficiency causes the disease 'scurvy' ?

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26. How is nylon 6,6 prepared ? Give equation.

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27. Write the partial structure of i) Polythene ii) Neoprene.

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28. Name the monomer present in natural rubber.

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