# CHEMISTRY

## BOOKS - SUNSTAR CHEMISTRY (KANNADA ENGLISH)

## II PUC CHEMISTRY ( ANNUAL EXAM QUESTION PAPER MARCH - 2020)

**Part A**

**1.** What is the value of Van't Hoff's factor (i) for $K_2SO_4$?

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**2.** 10ml of liquid 'A' is mixed with 10ml of liquid 'B' the volume of the resultant solution is 19.9 ml. What type of deviation expected from

Raoult's law?

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**3.** What is secondary cell?

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**4.** Identify the order of the reaction from the rate constant $K = 2.3 \times 10^{-6} L \ \ \text{mol}^{-1} s^{-1}$

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**5.** Give reason. Zeolites are good shape-selective catalyst.

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**6.** Iron scraps are advisable and advantageous than zinc scraps for reducing the low grade copper ores. Why?

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**7.** Complete the reaction.

$XeF_4 + H_2O \rightarrow \ldots\ldots\ldots + 2HF$

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**8.** Give reason. In case of optically active alkyl halides, SN1 reactions are accompanied by racemisation

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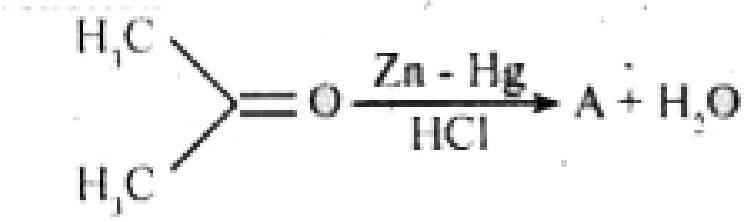
**9.** Identify "A" in the reaction

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**10.** Give an example for water soluble vitamin.

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## Part B

**1.** Calculate the number of particles present per unit cell in a B.C.C unit cell

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**2.** A solution of $Ni(NO_3)_2$ is electrolysed between platinum electrodes using a current of 5 amperes for 20 minutes. What mass of nickel is deposited at the cathode?[molar mass of Ni $= 58.7gma \ \ \mathrm{mol}^{-1}$]

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**3.** Mention any two factors which influence the rate of the reaction.

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**4.** Give two reasons the chemistry of actinoids is more complicated than Lanthnoids.

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**5.** How is phenol prepared from Aniline? Write the equation.

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**6.** Explain cannizzaro's reaction taking benzaldehyde as an example.

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**7.** Give an example for non narcotic analgesics.

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**8.** Why the use of Aspartame is limited to cold foods and soft drinks?

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**9.** Why detergents with straight chain of hydrocarbonis are preferred over branched chain hydrocarbons?

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**10.** Give one example for detergent with straight chain hydrocarbon

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## Part C

**1.** Write the equations for the reactions involved in the leaching of alumina from bauxite ore.

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**2.** Write any three anamolous properties of nitrogen.

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**3.** In the manufacturing of sulphuric acid write

the equation with condition for oxidation of $SO_2$ to $SO_3$

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**4.** In the manufacturing of sulphuric acid write

the formation of Oleum from $SO_3$.

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**5.** Complete the following reaction:

$NH_3 + 3Cl_2 \rightarrow ..... + 3HCl$

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**6.** Complete the following reaction:

$Cl_2 + F_2 \xrightarrow{437K}$ .....

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**7.** Write the structure of perchloric acid $(HClO_4)$

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**8.** Transition elements show catalytic property. Give two reasons.

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**9.** Name one 3d series element that do not show variable oxidation state.

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**10.** Describe the manufacture of potassium dichromate from chromite ore.

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**11.** Using valence bond theory explain geometry, hybridisation and magnetic property of $[CoF_6]_3^-$ (Atomic number of Co = 27).

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**12.** Write any two postulates of Werner's theory of co-ordination compounds.

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**13.** Indicate the type of Isomerism in the following set of complex compounds.

$[Co(NH_3)_5SCN]Cl_2$ and $[Co(NH_3)5NCS]Cl_2$

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## Part D

**1.** Calculate the packing efficiency in Face Centred Cubic (FCC) structure.

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**2.** Calcium metal crystallises in a face centered cubic lattice with edge length of 0.556nm. Calculate the density of the metal. [Atomic mass of calcium 40 g/mol]

$\left[N_A = 6.022 \times 10^{23} \text{ atoms/ mol}\right]$

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**3.** Vapour pressure of benzene is 200 mm of Hg. When 2 gram of a non-volatile solute dissolved in 78 gram benzene, benzene has vapour pressure of 195 mm of Hg. Calculate the molar mass of the solute. [Molar mass of benzene is 78 g/$mol^{-1}$]

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**4.** What are azeotropes? Give an example for binary solutions showing minimum boiling azeotrope.

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**5.** 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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**6.** State Kohlrausch law of independent migration of ions.

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**7.** Define limiting molar conductivity?

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**8.** Derive an intergrated rate for the first order reaction.

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

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**10.** Write a note on Dialysis.

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**11.** What is the effect on AH and AS during the process of adsorption?

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**12.** Give an example for heterogeneous catalysis.

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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.** Complete the following reactions:

$CH_3 - CH = CH_2 + HI \rightarrow$

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**15.** Complete the following reactions:


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**16.** Complete the following reactions:

$$CH_3CH_2Br \xrightarrow[\text{Aq. Ethanol}]{AgCN}$$

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**17.** Write the mechanism of acid catalysed dehydration of ethanol to ethene.

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**18.** How does anisole react with methyl chloride?

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**19.** How is benzoyl chloride converted into benzaldehyde. Write the equation and name the reaction.

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**20.** Write a general equation for the formation of carboxylic acid from Grignard reagent.

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**21.** Complete the reaction $R - \overset{\overset{O}{||}}{C} - CH_3 \xrightarrow{NaOX}$

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**22.** Mention the IUPAC name of (CH3)2NCH3

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**23.** How is Aniline prepared from nitro benzene?

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**24.** Give the equation for the conversion of aniline to 4-Bromo aniline.

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**25.** Write a chemical reactions to elucidate

Glucose contains five - OH groups.

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**26.** Write a chemical reactions to elucidate

Glucose contains six carbon atoms in a straight chain.

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**27.** Explain denaturation of proteins with example.

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**28.** Name the sugar moiety present in DNA.

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**29.** Name the monomers present in the following polymers.

PVC

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**30.** Name the monomers present in the following polymers.

Neoprene

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**31.** Name the monomers present in the following polymers.

Nylon-6

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**32.** What is vulcanisation of rubber?

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