



CHEMISTRY

BOOKS - JEEVITH PUBLICATIONS CHEMISTRY (KANNADA ENGLISH)

SUPER MODEL QUESTION PAPER (FOR ANSWER)

Part A

1. Define : (i) Molality of a solution (ii) Isotonic solutions



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2. Which halogen has highest electron affinity or electron gain enthalpy ?

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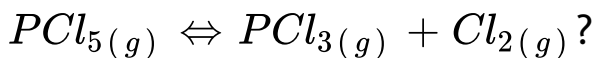
3. On what parameter do the elements are classified in the modern periodic table?

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4. What type of Van der waals force exists between HCl molecules?

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5. What is the relationship between ΔH and ΔU for the reaction



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6. The value of Ionic Product of water at 298 K is 1×10^{-14} , what is its $[H^+]$?



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7. Name any two gases responsible for Green house effect.

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8. What is the role of Heavy water in a nuclear reactor?

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9. What is Catenation?

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10. What type of isomerism is shown by the But-1-yne and But-2-yne?

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11. Which one of the following acids is not present in Acid rain?

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12. Write the value of Avagadro's number:

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13. Name the fundamental particles in an atom.

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14. Write the general electronic configuration of transition elements.

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15. State Law of Conservation of Energy of mass.

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16. When is $\Delta H = \Delta u$ in a reaction?

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17. Define solubility product of weak electrolyte.

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18. What is the valency of hydrogen in hydride ion?

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19. Name the isotope of hydrogen which used in nuclear reactor.

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20. Name any four alkali metals.

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21. What is the self linking property of an atom known as?

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22. Write the IUPAC name of $\text{CH}_3\text{-CH}=\text{CH}_2$?

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Part B

1. Express (i) 5 litre of milk in cubic meter (m^3) (ii) 25°C in Kelvin.

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2. Which of the following species are Isoelectronic with Ne?

(Atomic no of $Ne = 10$). N^{3-} , Na^+ , Al^{3+} , Ar , Rb^+
& F^-



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3. Mention the type of Hydrogen bond in the following compounds.

(i) Water (ii) ortho-Nitrophenol



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4. Write Van der Waals equation for one mole of a gas and name any two terms in it.

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5. Calculate the pH of a solution whose Hydroge ion conc.is $1.5 \times 10^3 M$.

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6. What is the composition of Permutit (Zeolite)? How does it works in softening of hard water?

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7. What is the action of heat on orthoboric acid ?

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8. Calculate the wave number, wavelength and frequency of the first line in the Balmer series.

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9. What is electron negativity ? How does it change in a period as well as in a group ?

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10. Mention any two characteristics of ionic compounds.

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11. Write the acidity and calculate equivalent weight of following base.

a. $Ca(OH)_2$ b. $Fe(OH)_3$

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12. Among NH_3 , H_2O and HF, which would you expect to have highest magnitude of hydrogen bonding and why?

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13. Calculate the $[OH^-]$ of a solution whose pH is 9.62.

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14. Name the oxides of nitrogen. What are the sources?

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Part C

1. Mention one significance for each of the four quantum numbers.

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2. Write the energy level diagram of oxygen molecule.

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3. Calculate the heat of reaction of the following reaction



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4. A buffer solution of pH 8.3 is prepared from ammonium chloride and ammonium hydroxide. Dissociation constant of ammonium hydroxide is 1.8×10^{-5} . What is the mole proportion of ammonium chloride and ammonium hydroxide?

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5. A colourless liquid A contains H and O elements only. It decomposes slowly on exposure to light. It is stabilized by mixing urea to store in the presence of light. (i) Suggest possible structure of A. (ii) Write chemical equations of its decomposition reaction in light.



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6. Give three uses each of the different allotropic forms of carbon.



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7. Explain the mechanism of halogenation or chlorination of benzene.

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8. Name the product obtained when Benzene is hydrogenated in presence of heated Nickel catalyst.

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9. 4 g of copper chloride on analysis was found to contain 1.890 g of copper (Cu) and 2.110 g of chlorine

(Cl). What is the empirical formula of copper chloride?

[At. Mass of Cu= 63.5 u, Cl = 35.5 u].

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10. Explain the structure of water molecule ?

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11. Explain th partical nature of EMR.

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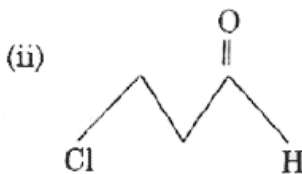
12. Define reduction in terms of electronic concepts?

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13. Define cathode and anode.

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14. Give the IUPAC name of the following compounds.



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15. In Leibig's method 0.24 g of organic compound on combustion with dry oxygen produced of 0.62 g of CO_2 and 0.11 g of H_2O . Determine the percentage composition of the compound.

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16. Why does benzene undergo electrophilic substitution easily and nucleophilic substitution with difficulty?

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17. Write the balanced chemical equations for the combustion of the following hydrocarbons .

(i) Butane (ii) Toulene

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Part D

1. What is the mass percentage of Carbon in Methane (CH_4) (Molecular mass of $CH_4 = 16$)

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2. Express 9.8 g H_2SO_4 in mole (Molecular mass of $H_2SO_4 = 98$)

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3. What mass of Calcium carbonate is to be decomposed to obtain 4.4 of CO_2 in the following reaction $CaCO_3 \rightarrow CaO + CO_2$ (Molecular mass of $CaCO_3 = 100$)

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4. State Avogadro's law.

How many atoms of Hydrogen are present in 1 mole of water?

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5. The average kinetic energy of a gas molecule at $0^{\circ}C$ is $5.621 \times 10^{-27}J$. Calculate Boltzman constant. Also calculate the number of molecules present in one mole of the gas.

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6. How vapour pressure of liquid is related to (i) temperature (ii) nature of liquid, (iii) boiling point (iv) atmospheric pressure?

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7. What happens to the solubility of $BaSO_4$ when a few drops of $BaCl_2$ solution is added to its saturated solution? Give reason.

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8. What is meant by Conjugate acid -base pair?

Write the conjugate acids for CN^- and H_2O

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9. An aqueous solution of NH_4Cl is acidic. Give reason.

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10. Lithium shows diagonal relationship with Magnesium. Give reason.

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11. What is the effect of heat on the following compounds?

a. Magnesium chloride hexahydrate

b. Gypsum

c. Magnesium sulphate heptahydrate

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12. Between LiCl and NaCl, LiCl is soluble in Ethanol but NaCl does not give reason.

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13. Draw a neat labelled diagram & give the principle in the estimation of halogen by Carius method.

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14. Which method is employed for the estimation of carbon and hydrogen organic compounds?

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15. What is Wurtz reaction? Give example.

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16. How is Methane prepared from sodium acetate?

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17. What is the composition of Zeigler Natta Catalyst?

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18. Summarize the Bohr's Model of an atom.

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19. Mention the Merits of Bohr's theory.



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20. Explain the structure of CH_4 on the basis of VSEPR theory.



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21. Define bond order.



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22. State first law of thermodynamics write its mathematical form.



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23. What are quantum number and name them?



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24. Explain Arrhenius concept of acids and bases with example.



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25. Deduce Hendersons equation for an acidic buffer.



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26. Describe an experiment to determine the estimation of C and H by Leibig's method.

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27. What is Wurtz reaction? Give example.

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28. Discuss the structural elucidation of benzene.

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1. Draw the structure of d-orbital (Orbital whose Azimuthal quantum no= 2).

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2. What is Isobars?

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3. Define hybridization ? Explain the hybridization in Methane molecule.

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4. Which type of overlapping result in the formation of
(i) sigma bond (ii) pi bond.

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5. Between H_2S and H_2O , H_2O is more polar. Why?

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6. Explain the steps involved in Born Haber cycle for the
formation of NaCl.

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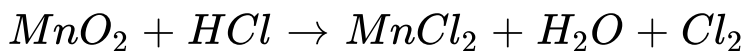
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7. Define the term Entropy. What happens to Entropy when ice melts to liquid water?



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8. Balance the following chemical equation



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9. Calculate the oxidation number of the element underlined in each of the following cases. A. Al in Al_2O_3

b. P in P_2O_5

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10. Describe an experiment to determine the estimation of C and H by Leibig's method.

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11. Write the functional group for (i) Aldehyde (ii) Ketone.

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12. Discuss Fajan's rules ?

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13. Give two difference between bonding molecular orbital and antibonding molecular orbital.

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14. Name the reagent used in the dehydrohalogenation of haloalkanes.

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15. Benzene is stable. Why?

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16. Describe the measurement of ΔU by bomb calorimeter.

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17. Write the conjugate acid for the following (i)

$C_2H_5NH_2$ (ii) CH_3COO^-

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18. What are the similar properties of Li and Mg.



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19. Distinguish between photochemical smog and classical smog.



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