



# CHEMISTRY

## BOOKS - JEEVITH PUBLICATIONS CHEMISTRY (KANNADA ENGLISH)

### ANNUAL EXAMINATION QUESTION PAPER SOUTH-2017

#### Part A

1. State Avogadro's hypothesis.



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2. Give the ideal gas equation for n moles of a gas.



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3. Write the conjugate base of  $\text{HCO}_3^-$ .



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4. Define electronegativity.



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5. Which metal can displace hydrogen from dilute acids from the following data.

$$E_{zn/z n^{2+}} = -0.76V. E_{Cu/Cu^{2+}} = 0.343V$$



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6. Give the chemical formula of washing soda.



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7. What is dry ice?



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8. Mention the type of hybridization of carbon in graphite.



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9. Write the IUPAC name of



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10. Name the organic product obtained when sodium benzoate is treated with sodalime.



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## Part B

1. Define mole. Calculate number of moles is 49 g  $H_2SO_4$  (Atomic Mass of  $H = 1$ ,  $O = 16$ ,  $S = 32$ )



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2. What do you mean by critical volume ( $V_c$ )? Give the unit of coefficient of viscosity.



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3. Write any two differences between sigma-bond and Pi-bond.



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4. What happens when Sodium to from sodium peroxide.



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5. Why carbon monoxide is poisonous? Explain.



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6. Write a note on geometrical isomerism in 2-butene.



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7. What are electrophiles? Give an example.



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8. Define Biochemical Oxygen Demand (BOD).



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9. Name any one gas pollutant that can pollute environment.



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## Part C

1. Write a brief note on s,p and d block elements.



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2. Explain  $Sp^2$  hybridisation taking boron trichloride ( $BCl_3$ ) as an example.



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3. Write any three postulates of VSEPR theory.



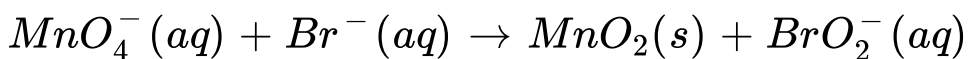
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4. Write the molecular orbital electronic configuration for carbon monoxide molecule. Calculate its bond order and comment on its magnetic property.



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5. Balance the redox reaction by oxidation number method.



(Basic medium)



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6. Complete the reaction:  $\text{C}(s) + \text{H}_2\text{O}(g) \xrightarrow{\Delta}$



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7. Complete the reaction:  $CO(g) + H_2O(g) \xrightarrow{\Delta}$



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8. Complete the reaction:  $Zn(s) + 2H^+(aq) \rightarrow$



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9. Write the equations during the preparation of sodium carbonate by solvay process.



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10. Graphite is a good conductor of electricity. Give reason.



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11. Give the chemical formula of borazine.



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12. Complete the equation  $HCOOH \xrightarrow[373k]{conc. H_2SO_4}$



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1. An organic compound contains 4.05% hydrogen, 24.26% carbon and 71.67% chlorine. Its molecular mass is 98.96. Find its empirical and molecular formula (Atomic mass of  $H = 1$ ,  $C = 12$ ,  $Cl = 35.45$ )



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2. Calculate the molar mass of glucose.



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3. Write any three postulates of Bohr's model for hydrogen atom.



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4. In which region Lyman and paschen series are appeared.



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5. Name the orbital when  $n = 3$  and  $l = 2$



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6. Name the four quantum numbers and mention what they indicate.



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7. State Aufbau principle.



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8. Write any three postulates of Kinetic theory of gases.



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9. On a ship sailing in pacific ocean where temperature is  $23.4^{\circ}\text{C}$ . a ballon is filled with 2L air What will be the volume of the balloon when ship reaches indian ocean where temperature is  $26.1^{\circ}\text{C}$ ?



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10. State Hess's law of constant heat summation.



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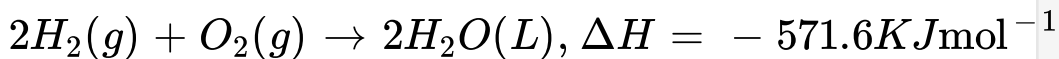
11. Calculate  $\Delta G^{\circ}$  for conversion of oxygen to ozone

$3/2\text{O}_2(g) \rightarrow \text{O}_3(g)$  at 298K if  $K_p = 2.47 \times 10^{-29}$



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12. In the equation



What is the enthalpy of formation of a water molecule.

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13. The enthalpy of combustion of one mole of benzene, carbon and hydrogen

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14. What is the change in entropy when ice melts to given water.



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15. Derive the ionic product of water and give its value at  $25^{\circ}C$ .



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16. What is buffer solution? Give one example of acidic buffer solution.



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17. If  $K_a$  of weak acid is found to be  $1.78 \times 10^{-5}$  What is the  $PK_a$  value?



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18. What happens to the PH of water when  $NH_4Cl$  solid is dissolved in it and why?



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19. Give the  $K_p$  expression of the equation  $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$ .



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## Part E

1. Write the principle involved in the estimation of carbon and hydrogen. Give diagram and calculation.



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2. Write the resonance structure of benzene.



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3. How sulphur is estimated by Carius method and give calculation.



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4. Explain position isomerism with example.



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5. Explain the mechanism of nitration of benzene .



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6. Explain Wurtz reaction with example.



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