CHEMISTRY

BOOKS - JEEVITH PUBLICATIONS CHEMISTRY (KANNADA ENGLISH)

ANNUAL EXAMINATION QUESTION PAPER SOUTH-2018

Part A

1. Express 0.00035 in scientific notation.

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2. State Boyle's law.

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3. Give an example of heterogeneous equilibrium.

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4. Write the IUPASC name of the element with atomic number 104.

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5. What is the oxidation number of Mn is MnO_4^- ?

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6. Which alkali metal is the strongest reducing agent?

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7. What is the composition of producer gas?

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8. Name the allotropic form of carbon whose structure resembles soccer ball.

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9. Write the bond line structure of $HC = C - CH = CH_2$

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10. Complete the following equation $3CH = CH \xrightarrow[\text{Iron tube 873K}]{\text{red hot}}$ .....

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Part B

1. Mention any two postulates of Dalton's atomic theory.

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2. Give the expression for

Van der Waal's equation for n moles of a gas

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3. Give the expression for

Compressibility factor (z)

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4. Write the lewis dot structure for (i) CO_2 (ii) CH_4

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5. Give any two anomalous behaviour of Beryllium.

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6. How to prepare diborane in laboratory ?

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7. State Markovnikov's rule.

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8. Write the Newman's projections of ethane.

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9. How is Ozone layer formed in the stratosphere? Name a chief chemical that causes its depletion.

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Part C

1. What are Iso-electronic species? Arrange the following in the increasing order of their ionic radius N^{-3}, Mg^{+2}, Na^{+} and O^{-2}.

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2. Explain the structure of methane molecule on the basis of hybridisation.

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3. Define hydrogen bond. Give an example for the molecule having

(i)Intermolecular hydrogen (ii) intramolecular hydrogen bond.

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4. Write any three postulates of Molecular orbital theory.

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5. Balance the Redox -reaction by using Oxidation number method in acidic medium

$$Cr_2O_7^{2-}(aq) + SO_3^{2-}(aq) \xrightarrow[\text{Acid medium}]{} Cr^{+3}(aq) + SO_4^{2-}(aq)$$

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6. What are ionic hydrides? Give one example.

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7. What are the uses of Heavy Water ?

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

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9. Complete the following equations.

$SiO_2 + 4HF \rightarrow \ ? \ + 2H_2O$

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10. Complete the following equations.

$$HCOOH \xrightarrow[Conc.\,H_2SO_4]{373K} ? + H_2O$$

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11. Complete the following equations.

`ZnO+C ---->

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Part D

1. An organic compound contains 4.05% hydrogen, 24.26% carbon and 71.67% chlorine. Its milecular 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. Define molarity of a solution.

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3. Write any three postulates of Rutherford's nuclear model of an atom.

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4. Calculate the energy of one mole of photon of radiation whose frequency is $5 \times 10^{14} Hz$(Given $h = 6.626 \times 10^{-34} Js$).

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5. State (i) Pauli's exclusion principle.

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6. Describe the orbital with following quantum numbers using s,p,d or f notations.

(i) when $n = 2, l = 0$

(ii) when $n = 4, l = 2$

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7. Write any tree postulates of Kinietic theory of gases.

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8. Define criticial temperature (T_e)

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9. Calculate the standard enthalpy of formation of liquid benzene (C_6H_6). Given the enthalpies of combustion of Carbons (s), Hydrogen (g) and Benzene (I) are -393.5kJ, -285.83kJ and -3267.0 respecitvely.

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10. What is an Intensive property.

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11. What is a spontaneous process? Write the criteria for spontaneity of a process in terms of ΔG.

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12. Find out the value of equilibrium constant for the following reaction at 298 K.

$2NH3(g) + CO_2(g) \leftrightarrow NH_2CONH_2(aq) + H(O)(I)$

Standards Gibbs energy change ΔG° at the given temperature is-13.6 kJ mol^(-1).

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13. What is chemical equilibrium? Write Kp and Kc for the reaction.

$N_{2(g)} + 3H_{2(g)} \Leftrightarrow NH_{3(g)}$

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14. Explain Lewis acid base concept with an example.

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15. What is the buffer solution? Give an example.

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16. State Le-Chatelier's principle.

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17. Mention the conjugate base of H_2SO_4

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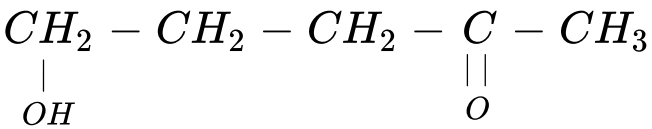
Part E

1. Mention the IUPAC name of the following compound.



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2. What is position isomerism? Give an example.

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3. Write the chemical equations when sodium fusion extract is prepared from an organic compound containing nitrogen and sulphur.

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4. Give two differences between inductive effect and electromeric effect.

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5. Write principles involved in estimatioin of halogen by Carius method.

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6. How is ethene prepared from bromoethane?

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7. Explain the mechanism of nitration of benzene .

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