

SECTION 'B' (Short-Answer Questions) (42)

NOTE: Attempt FIVE questions from this section. All questions carry equal marks.

2. i) Define the following:

- * Significant Figure
- * Viscosity
- * Catalyst
- * Molar Volume

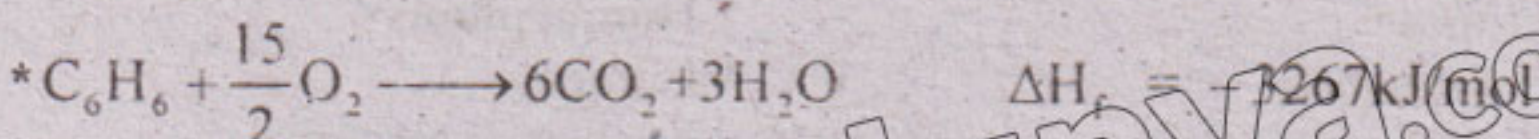
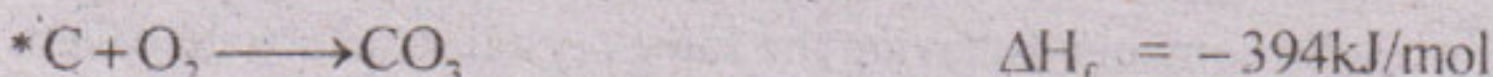
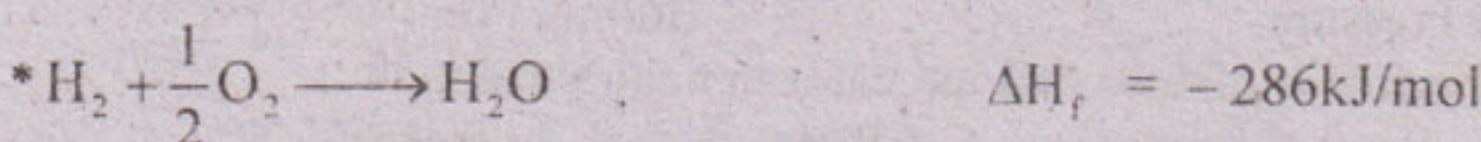
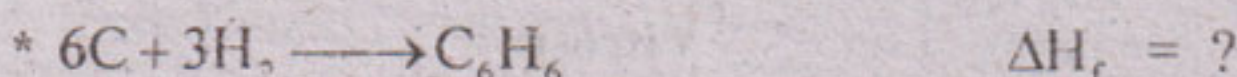
2. ii) Write the postulates of Kinetic Molecular Theory of gases.

2. iii) An organic compound producing air pollution contains 8.73% Carbon, 77.45% Chlorine and 13.82% Fluorine. Find the molecular formula of the compound if its molecular mass is 137.5 amu.

2. iv) If 53.5g of NH_4Cl is heated with $\text{Ca}(\text{OH})_2$, how many grams of NH_3 is produced? Also find the volume of NH_3 at S.T.P according to the following equation.



2. v) Calculate ΔH_f for the following data:



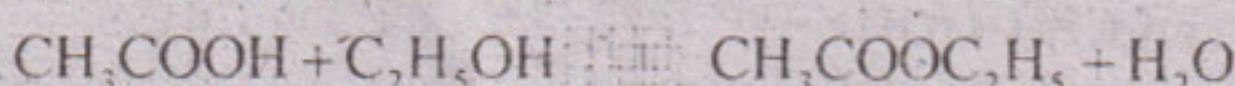
2. vi) State Pauli's Exclusion Principle. Write the electronic configuration of the following:

- * Ca^{++} ($Z = 20$)
- * Cr ($Z = 24$)
- * Br^- ($Z = 35$)

2. vii) Give scientific reason for any four of the following:

- * Free falling drop of liquid is spherical in shape
- * A liquid is less viscous at high temperature
- * Water has high boiling point than HF.
- * Evaporation is a cooling process.
- * Milk sour more rapidly in summer than in winter.

2. viii) 9.2 g of ethyl alcohol and 12g of acetic acid kept at constant temperature until equilibrium was established 4.0g of acid was left unused. Calculate K_c for the reaction:



2. ix) State first law of thermodynamics and show that:

$$* q_p = \Delta H \quad * W = P\Delta V$$

2. x) Discuss the effect of following factors on rate of reactions.

- * Concentration
- * Radiation

2. x) (OR) 1.40 dm³ volume of gas collected at a temperature of 27°C and a pressure of 900 torr was found to have a mass of 2.273g. Calculate molecular mass of the gas.

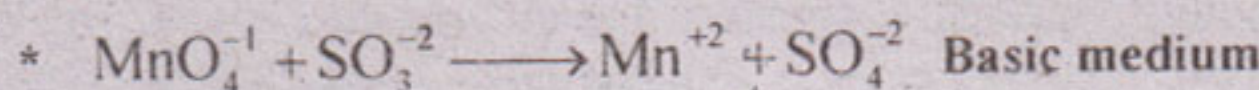
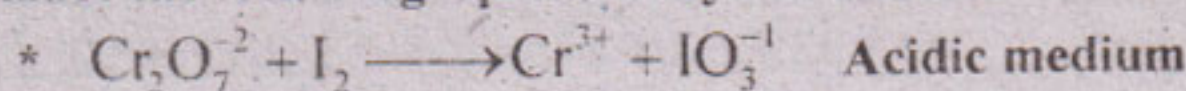
SECTION 'C' (Detailed-Answer Questions)(17)

NOTE: Attempt any One question from this section. All questions carry equal marks.

3. a) What are cathode rays? Describe the experiment of their discovery. Write their properties.

3. a) (OR) Write the postulates of Bohr Atomic Theory. Derive an expression for radius of n^{th} orbit in hydrogen atom.

3. b) Balance the following equations by ion electron method:



4. a) Write the postulates of VSEPR Theory. Explain the shape of the molecules which have:

- * three bond pair electron
- * two bond pair and two lone pair

4. b) Differentiate between:

- * Sigma Bond and Pi Bond
- * Line spectrum and Continuous spectrum
- * Hydration and Hydrolysis

5. a) Write the postulates of Arrhenius Theory of Ionization calculate Oxidation Number of the following:

- * Cr in $\text{Cr}_2\text{O}_7^{2-}$
- * S in $\text{H}_2\text{S}_2\text{O}_7$
- * N in NH_4^+

5. b) State the law of mass action. Derive K_c for general reversible reaction and predict the extent of reaction.

5. b) (OR) What is Natural Radioactivity? Write the properties of α and β particles.

نوٹ: سال 2020 میں گیارہویں اور بارہویں جماعت کے امتحانات نہیں ہوئے تھے۔