Tenkasi District Common Examinations

Common First Mid Term Test - 2022

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Standard 11

Time: 1.30 Hrs.

CHEMISTRY

Marks: 35

PART - A

Choose the correct answer: 10×1=10

1) 7.5g of a gas occupies a volume of 5.6 litres at 0°C and 1 atm pressure. The gas is

    a) NO   b) N_2O c) CO   d) CO_2

2) The oxidation number of carbon in CH_2F_2 is _____.

    a) +4   b) –4   c) 0   d) +2

3) The energy of an electron in the 3rd orbit of hydrogen atom is –E. The energy of an electron in the first orbit will be _____.

    a) –3E   b) –E/3   c) –E/9   d) –9E

4) The effective nuclear charge decreases with increase in _____ quantum number.

    a) Principal   b) Azimuthal   c) Magnetic   d) Spin

5) The value of universal gas constant depends upon

    a) Temperature of the gas   b) Volume of the gas

    c) Number of moles of the gas   d) Units of pressure and volume

6) What is the density of oxygen gas at 227°C and 4 atm pressure? (R = 0.082 L atm K^{-1} mol^{-1})

    a) 3.12 g/L   b) 3.41 g/L   c) 2.81 g/L   d) None of these

7) If one mole of ammonia and one mole of hydrogen chloride are mixed in a closed container to form ammonium chloride gas, then

    a) $\Delta H > \Delta U$ b) $\Delta H - \Delta U = 0$ c) $\Delta H + \Delta U = 0$ d) $\Delta H < \Delta U$

8) For the reaction $PCl_{5(g)} \rightarrow PCl_{3(g)} + Cl_{2(g)}$

    a) $\Delta H > \Delta U$ b) $\Delta H < \Delta U$ c) $\Delta H = \Delta U$ d) un predictable

9) The general formula for alkadiene is

    a) C_nH_{2n} b) C_nH_{2n-1} c) C_nH_{2n-2} d) C_nH_{n-2}

10) Write the IUPAC names of $CH_3-CH_2-CH-CHO$

    a) 1-formyl propanol   b) 1-hydrony butanal

    c) 2-hydrony butanal   d) 3-hydrony butanal

PART - B

Answer any three questions. Q.No. 15 is compulsory: 3×2=6
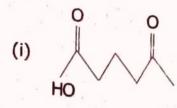
11) How many moles of ethane is required to produce 44g of $CO_{2(g)}$ after combustion?

12) Give the electronic configuration of Mn^{2+} and Cr^{3+}.

13) Liquid ammonia bottle is cooled before opening the seal. Why?

14) The equilibrium constant of a reaction is 10, what will be the sign of ΔG? Will this reaction be spontaneous?

15) Give the IUPAC names of the following compounds.

(i)

(ii) $CH_3-C = C-CH-CH_3$
$\quad\quad\quad\quad\quad\quad |$
$\quad\quad\quad\quad\quad\quad Cl$

PART - C

Answer any three questions. Q.no. 20 is compulsory: $3 \times 3 = 9$

16) $AS_2S_3 + HNO_3 + H_2O \rightarrow H_3ASO_4 + H_2SO_4 + NO$. Balance the equation by using oxidation number method.

17) Derive de-Broglie equation.

18) Name the different methods of liquefaction of gases.

19) Derive the relation between CP and CV for an ideal gas.

20) What is inversion temperature?

PART - D

Answer the following questions:

                                                                        $2 \times 5 = 10$

21) a) i)   Calculate the empirical and molecular formula of a compound containing 76.6% Carbon, 6.38% hydrogen and rest oxygen its vapour density is 47.

   ii) Calculate the equivalent mass of H_2SO_4.

(OR)

   b) i)   Write note on quantum numbers.   (3)

   ii) Write the Schrodinger, wave equation.   (2)

22) a) i)   Derive the values of critical constants in terms of Vander Waals constants.   (3)

   ii) State Boyle's Law.   (2)

(OR)

   b) i)   Explain how heat absorbed at constant volume is measured using bomb calorimeter with a neat diagram.

   ii) State the third law of thermodynamics.