11 R

Tiruppur district

Reg. No.

First Revision Test - 2023

CHEMISTRY

Time : 3.00 hrs.

23.01.2023

Max. Marks : 70

PART - A

Choose the correct answer **15 x 1 = 15**

1. What is the mass of preceipitate formed when 50 ml of 8.5% solution of $AgNO_3$ mixed with 100 ml of 1.865% KCl solution?
   a) 3.59 g b) 7 g c) 14 g d) 28 g
2. Electron densityh in the yz plane of 3d x^2-y_2 orbital is a) 0 b) 0.50 c) 0.75 d) 0.90
3. IE_1 and IE_2 of Mg are 179 and 348 $KCalmol^{-1}$ respectively. The energy required for the reaction $mg \rightarrow mg^2 + 2e^-$ is.....
   a) + 169 Kcal mol^{-1} b) –169 Kcal mol^{-1} c) +527 $Kcalmol^{-1}$ d) –527 Kcal mol^{-1}.
4. The reaction $H_3PO_2 + D_2O \rightarrow H_2DPO_2 + HDO$ indicates that hypo-phosphorous acid is
   a) tribasic acid b) dibasic acid c) monobasic acid d) none of these
5. Sodium is stored in a) alcohol b) water c) kerosene d) none of these
6. The temperature at which real gases obey the ideal gas laws over a wide range of pressure is called..
   a) critical temperature b) Boyle temperature c) Inversion temperature d) reduced temperature
7. In a reversible process, the change in entropy of the universe is
   a) >0 b) ≥0 c) <0 d) = 0
8. Osomatic pressure of a solution is given by the raltion
   a) $\pi = nRT$ b) $\pi V = nRT$ c) $\pi RT = n$ d) none of these
9. The correct order of 0 - 0 bond length in H_2O_2, O_3, O_2 is a) $H_2O_2 > O_3 > O_2$
   b) $O_2 > O_3 > H_2O_2$ c) $O_2 > H_2O_2 > O_3$ d) $O_3 > O_2 > H_2O_2$
10. Which one of the following is diamagnetic?
    a) O_2 b) O_2^{2-} c) O_2^+ d) none of these
11. The IUPAC name of the compound $CH_3 – CH = CH – C \equiv CH$ is a) pent-4-yn - zene
    b) pent - 3en - l-yne c) Pent - zen – 4 - yne d) pent - 1 - yn = 3ene
12. The geometrical shape of carbocation is
    a) linear b) tetrahedral c) planar d) pyramidal
13. Which of the following is aliphatic saturated hydrocarbon
    a) C_8H_{18} b) C_9H_{18} c) C_8H_{14} d) All of these
14. Bhopal gas Tragedy is a case of.....
    a) thermal pollution b) air pollution c) nuclear pollution d) land pollution
15. Ethylidene chloride on treatment with aqueous KOH gives
    a) acetaldehyde b) ethylene glycol c) formaldehyde d) glycoxal

PART - II

Answer any six of the following questions. Q.No.24 is compulsory. **6 x 2 = 12**

16. Find the oxidation number of oxygen in super oxide (KO_2).
17. Define exchange energy?
18. Difference between H_2O and H_2O_2 structure.
19. An unknown gas diffuses at a rate of 0.5 time that of nitrogen at the same temperature and pressure. Calcualte the molar mass of the unknown gas.

20. If an automobile engine burns petrol at a temperature of 816°C and if the surrounding temperature is 21°C. Calculate the maximum possible efficiency.
21. What is colligative properties? Wrigte the colligative properties?
22. What are the various methods of chromatography?
23. What are mesomeric effect?
24. What are Freons?

PART - III

Answer any six of the following questions. Q.No.33 is compulsory. **6 x 3 = 18**

25. In what period and group will an element with z = 118 will be present?
26. Write the three types of hydrides?
27. An alkali metal (X) forms a hydrated sulphate, X_2SO_4. $10H_2O$. Is the metal more likely to be sodium or potassium?
28. Write Markovnikoff's Rule with suitable example.
29. Explain E_1 mechanism?
30. Define reaction qujotient 'Q'?
31. What are particulate pollutant?
32. State - Normality.
33. Explain co-ordinate covalent bond.

PART - IV

Answer all questions. **5 x 5 = 25**

34. a) (i) Define gram equivalent mass. 2
    ii) What is screening effect. 3
    (OR)
    b) Explain briefly the time independent schrodinger wave equation?
35. a) Explain ortho and para hydrogen? 5
    (OR)
    b) i) Alkaline earth metal (A) belongs to 3rd period reacts with oxygen and nitrogen to form compound (B) and (C) respectively. It undergo metal displacemernt reactions with $AgNO_3$ solution to form Compound (D). Identify A, B, C D 3
    ii) Write Joule - Thomson effect. 2
36. a) i) Define - Gibbs free energy. 2
    ii) State law of mass action. 3
    (OR)
    b) Write the factors responsible for deviation from Raoult's law. 5
37. a) Draw molecular orb ital diagram for Nitrogen (N_2) molecule. 5
    (OR)
    b) 0.30 g of a substance gives 0.88 g of CO_2 and 0.54 g of H_2O. Calculate the percentage of carbon and hydrogen in it.
38. a) Compare SN^1 and SN^2 mechanism. 5
    (OR)
    b) Differentiate the following. 5
    i) BOD and COD 2
    ii) Viable and non-viable particulate pollutants. 3