Class : 11

Register Number

COMMON HALF YEARLY EXAMINATION 2023 - 24

Time Allowed : 3.00 Hours] **CHEMISTRY** [Max. Marks : 70

PART – I

I. Answer the following: 15x1=15

1. Which of the following is / are true with respect to Carbon - 12.
   a) Relative Atomic Mass is 12 U
   b) Oxidation Number of Carbon is +4 in all its Compounds
   c) 1 mole of Carbon - 12 Contain 6.022×10^{22} Carbon atom
   d) All of these
2. Which of the following pairs of d - Orbitals will have electron density along the axis?
   a) d_{x2}, d_{xz} b) d_{xz}, d_{yz} c) $d_{z2}, d_{x^2-y^2}$ d) $d_{xy}, d_{x^2-y^2}$
3. What would be the IUPAC name for an element with atomic number 116?
   a) bibibiium b) ununduim c) ununbium d) Ununhexium
4. Ionic Hydrides are formed by
   a) Halogens b) Chalogens c) Inert gas d) None
5. Which of the following Compounds will not evolve H_2 Gas on reaction with metals?
   a) Ethanoic acid b) Ethanol c) Phenol d) None of these
6. The Temperatures 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 an Adiabatic process, Which of the following is true?
   a) $q = w$ b) $q = 0$ c) $\Delta E = q$ d) $P\Delta V = 0$
8. $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$ Find K_p, K_c relationship.
   a) $K_p > K_c$ b) $K_p < K_c$ c) $K_p = K_c$ d) $K_p = {}^1/_{K_c}$
9. Osmatic Pressure (π) of a solution is given by the relation.
   a) $\pi = nRT$ b) $\pi V = nRT$ c) $\pi RT = n$ d) None
10. Shape and Hybridisation of IF_7 are
    a) Trigonal bipyramidal Sp^3d^2 b) Trigonal bipyramidal sp^3d
    c) Pentagonal bipyramidal sp^3d^3 d) Octahedral sp^3d^2
11. The IUPAC name of the Compound $CH_3CHOHCOOH$.
    a) 2 - hydroxy propionic acid b) 2 - hydroxy Propanoic acid
    c) Propan - 2 - ol - 1 - oic acid d) 1 - Carboxyethanol
12. Which of the following species is not Electrophilic in nature?
    a) Cl^+ b) BH_3 c) H_3O^+ d) $^+NO_2$
13. Which of the following is optically active.
    a) 2 - methyl pentane b) Citric acid c) Glycerol d) None of these
14. The name of $C_2F_4Cl_2$ is ---------
    a) Freon - 112 b) Freon 113 c) Freon 114 d) Freon - 115
15. Haemoglobin of the blood forms Carboxy Haemoglobin with.
    a) CO_2 b) CCl_4 c) CO d) Carbonic acid

PART - B

II. Answer any six questions. Question No. 24 is compulsory. 6x2=12

16. What are Isoelectronic ions? Give example.
17. State Aufbau Principle.
18. Define Molality.
19. State Third Law of Thermodynamics.
20. Write General Expression for the equilibrium constant Kp and Kc for the formation of HI reaction.
21. State Charle Law.
22. Describe Fajan's rule.
23. What is Green Chemistry.
24. Find out the product Nitration of Chloroform and Write its uses.

PART - C

III Answer any six questions. Question No. 33 is compulsory. 6x3=18

25. Define Effective Nuclear Charge.
26. Do you think that heavy water can be used for drinking purposes?
27. Define Isotonic Solution.
28. Preparation of DDT.
29. How is acid rain formed? Explain its effect.
30. Write the preparation and uses of BHC.
31. Define Bond Order.
32. Define Gibb's Free Energy.
33. Give the Structure for the following Compound.
    a) Acetaldehyde b) Dimethyl ether c) Toluene

PART - D

IV Answer all the questions. 5x5=25

34. a) List the Characteristic of Gibbs Free Energy. (5)

(OR)

b) (i) Why is Chemical Equilibrium considered Dynamic in Nature. (3)
(ii) State and Path Function 2 examples. (2)

35. a) Calculate the Empirical and Molecular formula of the compound containing 76.6% Carbon, 6.38% of Hydrogen and rest Oxygen its vapour density is 47. (5)

(OR)

b) (i) What are the 'n' and 'l' values for $3P_x$, and $4d_{x^2-y^2}$ electron. (2)
(ii) Write Hund's rule with an example (3)

36. a) i) What are Degradable and Non degradable Pollutants? (2)
ii) What are Electrophiles and Nucleophiles give examples for each. (3)

(OR)

b) Discuss Benzene Structure. (5)

37. a) Explain Markonikoff's rule with suitable example.(5)

(OR)

b) Discuss the Formation of N_2 molecule using MO Theory. (5)

38. a) (i) Write the preparation and uses of Plaster of Paris. (3)
(ii) What are the limitation in Henry's Law. (2)

(OR)

b) (i) Define Modern Periodic Law. (2)
(ii) Ionisation of N is higher than Oxygen. Why? (3)