A

COMMON HALF YEARLY EXAMINATION - 2022

Standard - XI
CHEMISTRY

Time: 3.00 hrs.

Reg.No. ☐☐☐☐☐☐

Marks: 70

PART - I

Choose the best answer: 15×1=15

1. The oxidation state of S in H_2SO_4 is
   a) +2   b) +4   c) +8   d) +6

2. Which one of the following is correct electronic configuration of Chromium
   a) $[Ar]3d^4 4s^2$ b) $[Ar]3d^5 4s^1$ c) $[Kr]3d^4 4s^1$ d) $[Ar]3d^9 4s^1$

3. The element with Atomic number III, the IUPAC name is
   a) Unununium   b) bibibium   c) Unnilbum   d) Uninseptium

4. Tritium nucleus contains
   a) 1p + 0n   b) 2p + 1n   c) 1p + 2n   d) none of these

5. Sodium is stored in
   a) alcohol   b) water   c) kerosene   d) none of these

6. Inversion temperature Ti is
   a) $\dfrac{8a}{27Rb}$ b) 3b   c) $\dfrac{2a}{Rb}$ d) $\dfrac{3a}{Rb}$

7. The temperature of the system, decrease is an
   a) Isothermal expansion   b) Isothermal compression
   c) adiabatic expansion   d) adiabatic compression

8. For which reaction $\Delta n_g = 0$
   a) $H_2 + I_2 \rightleftharpoons 2HI$ b) $N_2 + 3H_2 \rightleftharpoons 2NH_3$ c) $PCl_5 \rightleftharpoons PCl_3 + Cl_2$ d) $2SO_2 + O_2 \rightleftharpoons 2SO_3$

9. The degree of dissociation can be related to VantHoff factor (i) using
   a) $\alpha = \dfrac{i-1}{n-1}$ b) $\dfrac{1-i}{n-1}$ c) $\dfrac{1-i}{1-n}$ d) $\dfrac{n-1}{i-1}$

10. The bond order of N_2 is
    a) 0   b) 1   c) 2   d) 3

11. The coloured impurities can be removed by adding
    a) Charcoal   b) animal charcoal   c) NaOH   d) $NaHCO_3$

12. Which of the group has highest +1 effect
    a) $CH_3 -$ b) $CH_3 - CH_2 -$ c) $(CH_3)_2 - CH -$ d) $(CH_3)_3 - C -$

13. $2C_2H_5Br + 2Na \xrightarrow{\text{diethyl Ether}} C_4H_{10} + 2NaBr$ This reaction is
    a) Friedel crafts Reaction   b) Wurtz Reaction
    c) Wurtz - Fittig Reaction   d) Kolbej Electrolysis

14. Benzen reacts with Cl_2 in the presence of $FeCl_3$ and in absence of sunlight to form
    a) Chlorohenzene   b) Benzyl Chloride
    c) Benzal Chloride   d) Benzene hexachloride

15. Haemoglobin of the blood forms carboxy hemoglobin with
    a) Carbon dioxide   b) Carbon tetra chloride
    c) Carbon monoxide   d) Carbonic acid

PART - II

Write any six question. (Q.No.22 is compulsory):   6×2=12

16. Find emprical formula of fructose ($C_6H_{12}O_6$) and Caffeine $C_8H_{10}N_4O_2$

17. Define electronegativity.

18. Give the colour of the following metal in flame.
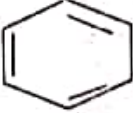   a) Barium   b) Lithium   c) Calcium   d) Sodium

19. What is lattice energy?
20. State Le - Chatelier's Principle.
21. State Lewis - Octate rule.
22. Write the function group for the following :
 1) Aldehyde 2) Ketone   3) Carboxylic acid 4) Ether
23. What happens when acetylene gas is passed through red hot iron tube.
24. Write Williamson's Ether synthesis.

PART - III

Write any 6 question (Q.No.30 is compulsory):   **6×3=18**

25. Distinguish between oxidation and Reduction.
26. State Heisenberg uncertainity principle and give its expression.
27. How is Tritium prepared. Give its half life period.
28. What are uses of Hydrogen peroxide.
29. What is diffusion and effusion.
30. If an automobile engine burns petrol at a temperature of 816°c and if the surrounding temperature is 21°C Caclulate its maximum possible efficiency.
31. What is dipole movement.
32. What is inductive effect.
33. Using Huckle rule, find out the compound [benzene structure] (Benzene) whether it is aromatic or non aromatic

PART - IV

Write all the questions: **5×5=25**

34. I) a) What is disproponation reaction give an example. **(2)**
   b) An organic compound present in Vinegar has 40% Carbon, 6.6% hydrogen and 53.4% Oxygen. Find the empirical formula of the compound. **(3)**
          (OR)
  II) a) Explain Davison and Germer experiment. **(3)**
    b) State Aufbau principle. **(2)**
35. i) a) State Modern Periodic law.
   b) The inter nuclear distance in Cl_2 molecule is 1.98A°. Find the covalent radius of Cl. **(OR)**
  ii) a) What are called inter and Intra Molecular hydrogen bonding give example. **(3)**
    b) How Para hydrogen is converted into ortho hydrogen. **(2)**
36. I) a) State Boyle's Law. **(2)**
   b) What is compressiblity factor, give z value for ideal gas **(3)**
          (OR)
  ii) Derive the relationship between ΔH and ΔU. **(5)**
37. I) a) State Law of mass action. **(2)**
   b) Define Reaction Quotient (Q) **(3)**
          (OR)
  ii) Define Ionic bond, Covalent bond, Co-ordinate covalent bond.
38. I) a) Write characeristics of organic compounds. **(3)**
   ii) Explain functional isomerism with an example. **(2)** **(OR)**
  b) I) Explain E_2 Mechanism. **(3)**
    ii) How is DDT prepared. Give its use. **(2)**