Part - D

IV. Answer all the questions. 5 x 5 = 25

34. a) i) What do you understand by the term mole?

ii) Explain the diagonal relationship.

(OR)

b) Write the assumptions of Bohr atom model.

35. a) i) Differentiate hard water and soft water.

ii) How temporary hardness can be removed by Clark's method.

(OR)

b) Derive the values of critical constants in terms of Vander Waal's constants.

36. a) i) Define Hess's law of constant heat summation.

ii) Define entropy.

(OR)

b) Derive the relationship between Kp & Kc

37. a) Using molecular orbital theory, explain the formation of NO molecule.

(OR)

b) Describe any two types of constitutional isomers.

38. a) Explain the structure of Benzene.

(OR)

b) How is acid rain formed? Discuss the harmful effects of acid rain.

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SECOND REVISION TEST - 2025

A

Standard XI

CHEMISTRY

Reg.No. | | | | | | |

Time : 3.00 hrs *Marks : 70*

Part - A

I. Choose the correct answer: 15 x 1 = 15

1. 40 ml of methane is completely burnt using 80 ml of oxygen at room temperature. The volume of gas left after cooling at room temperature is

a) 40 ml CO_2 gas b) 40 ml CO_2 gas and 80 ml H_2O gas

c) 60 ml CO_2 gas and 60 ml H_2O gas d) 120 ml CO_2 gas

2. Assertion : The spectrum of He^+ is expected to be similar to that of hydrogen

Reason : He^+ is also one electron system

a) Both assertion and reason are true and reason is the correct explanation of assertion

b) Both assertion and reason are true but reason is not the correct explanation of assertion

c) Assertion is true but reason is false

d) Both assertion and reason are false

3. What would be the IUPAC name for an element with atomic number 107?

a) Ununseptium b) Unnilseptium

c) Unnilquadium d) Unnilpentium

4. For decolourisation of 1 mole of acidified $KMnO_4$, the moles of H_2O_2 required is

a) $\frac{1}{2}$ b) $\frac{3}{2}$

c) $\frac{5}{2}$ d) $\frac{7}{2}$

5. Among the following the least thermally stable is

a) K_2CO_3 b) Na_2CO_3 c) $BaCO_3$ d) Li_2CO_3

6. Maximum deviation from ideal gas is expected from

a) $CH_{4(g)}$ b) $NH_{3(g)}$ c) $H_{2(g)}$ d) $N_{2(g)}$

7. The temperature of the system, decreases in an

a) Isothermal expansion b) Isothermal compression

c) Adiabatic expansion d) Adiabatic compression

8. $\frac{K_c}{K_p}$ for the reaction, $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$ is

a) $\frac{1}{RT}$ b) $\sqrt{RT}$ c) RT d) $(RT)^2$

9. Which of the following concentration terms is / are independent of temperature?

a) Molality b) Molarity c) Mole fraction d) Both (a) and (c)

10. Which of the following compounds is trigonal bipyramidal in shape?

a) PCl_5 b) NH_3 c) CH_4 d) BF_3

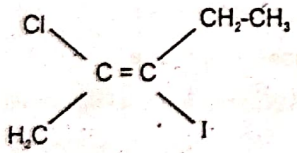
11. Sodium nitropruside reacts with sulphide ion to give a purple colour due to the formation of

a) $[Fe(CN)_5 NO]^{3-}$ b) $[Fe(NO)_5 CN]^{+}$ c) $[Fe(CN)_5 NOS]^{4-}$ d) $[Fe(CN)_5 NOS]^{3-}$

12. What is the hybridisation state of benzyl carbonium ion?

a) sp^2 b) spd^2 c) sp^3 d) sp^2d

13. The IUPAC name of the following compound is



a) trans-2-chloro-3-iodo-2-pentene b) cis-3-iodo-4-chloro-3-pentane

c) trans-3-iodo-4-chloro-3-pentene d) cis-2-chloro-3-iodo-2-pentene

14. Chloroform reacts with nitric acid to produce

a) Nitro toluene b) Nitro glycerine c) Chloropicrin d) Chloropicric acid

15. Bhopal gas tragedy is a case of

a) Thermal pollution b) Air pollution c) Nuclear pollution d) Land pollution

Part - B

II. Answer any 6 questions. (Q.No.24 is compulsory) **6 x 2 = 12**

16. Define relative atomic mass.

17. State Aufbau principle.

18. What are the uses of heavy water?

19. State Dalton's law of partial pressure.

20. Define intensive properties. Give an example.

21. Give the balanced chemical equation for the equilibrium reaction for which the equilibrium constant is given as $K_c = \frac{[NH_3]^4 [O_2]^5}{[NO]^4 [H_2O]^6}$

22. Give the IUPAC names of the following compounds.

i) $CH_3 - \underset{CH_3}{CH} - \underset{Br}{CH} - CH_3$ ii) $CH_2 = CH - CH = CH_2$

23. What is Resonance?

24. Complete the following reactions :

i) $C_6H_5Cl + 2NH_3 \xrightarrow{250^\circ C / 5 atm}$

ii) $C_6H_5Cl + 2Na + Cl - C_6H_5 \xrightarrow{Ether / \Delta}$

Part - C

III. Answer any 6 questions. (Q.No.33 is compulsory) **6 x 3 = 18**

25. Balance the following equations by oxidation number method.

i) $KMnO_4 + Na_2SO_3 \longrightarrow MnO_2 + Na_2SO_4 + KOH$

ii) $Cu + HNO_3 \longrightarrow Cu(NO_3)_2 + NO_2 + H_2O$

26. Define electronegativity.

27. Write the uses of sodium bicarbonate.

28. Write the Vander Waal's equation for real gases and explain the terms involved.

29. Mention the differences between ideal and non-ideal solution.

30. Define Electrophile and Nucleophile.

31. Write Sabatier-Sendersen's reaction.

32. Which is considered to be Earth's protective umbrella? Why?

33. $C_{(s)} + O_{2(g)} \longrightarrow CO_{2(g)}$. Calculate the standard entropy change for the above reaction, given the standard entropies of $CO_{2(g)}$, $C_{(s)}$ and $O_{2(g)}$ are 213.6, 5.740 and 205 JK^{-1} respectively.