

Class : 11Register
Number**COMMON HALF YEARLY EXAMINATION 2024 - 25**

Time Allowed : 3.00 Hours]

CHEMISTRY

[Max. Marks : 70

PART - I**I. Answer the following:****15x1=15**

- Which one of the following represents 180g of water?
 - 5 moles of water
 - 90 moles of water
 - $\frac{6.022 \times 10^{23}}{180}$ molecules of water
 - 6.022×10^{24} molecules of water
- Which of the following pairs of d-orbitals will have electron density along the axes?
 - d_x^2, d_{xy}
 - d_{xy}, d_{yz}
 - $d_z^2, d_x^2 - y^2$
 - $d_{xy}, d_x^2 - y^2$
- What is the IUPAC name of an element having atomic number 109?
 - Unnilennium
 - Unilenium
 - Unnil ennium
 - Unil enium
- Ionic hydrides are formed by
 - Halogens
 - Chalcogens
 - Inert gases
 - Group one elements
- Which colour is produced by Barium in flame test?
 - Bricks Red
 - Red
 - Apple Green
 - Crimson Red
- If temperature and volume of an ideal gas is increased to twice its values, the initial pressure 'P' becomes.
 - 4P
 - 2P
 - P
 - 3P
- The values of ΔH and ΔS for a reaction are respectively 30 kJ mol^{-1} and $100 \text{ JK}^{-1} \text{ mol}^{-1}$. Then the temperature above which the reaction will become spontaneous is
 - 300 K
 - 30 K
 - 100 K
 - 20°C
- $2\text{CO}_{(g)} \rightleftharpoons \text{CO}_{2(g)} + \text{C}_{(s)}$, K_p is -----
 - $K_p = \frac{P^2 \text{CO}_2}{P^2 \text{CO}}$
 - $K_p = \frac{P \text{CO}}{P \text{CO}_2}$
 - $K_p = \frac{P^2 \text{CO}}{P \text{CO}_2}$
 - $K_p = \frac{P \text{CO}_2}{P^2 \text{CO}}$
- Normality of 1.25M sulphuric acid is
 - 1.25 N
 - 3.75 N
 - 2.5 N
 - 2.25 N
- Which one of the following is Diamagnetic?
 - O_2
 - O_2^{2-}
 - O_2^+
 - None of the above
- The isomer of ethanol is
 - Acetaldehyde
 - Dimethyl ether
 - Acetone
 - Methyl Carbinol
- Which of the group has highest +I effect?
 - CH_3-
 - CH_3-CH_2-
 - $(\text{CH}_3)_2-\text{CH}-$
 - $(\text{CH}_3)_3-\text{C}-$
- Which type of Plastic is to be Recycled easily?
 - 7
 - 5
 - 1
 - 3
- Acetone $\xrightarrow[\text{ii) } \text{H}_2\text{O} / \text{H}^+]{\text{i) } \text{CH}_3\text{MgI}}$ X. Here X is
 - 2 - Propanol
 - 2 - Methyl -2- propanol
 - 1 - Propanol
 - Acetonol
- C - X bond is strongest in
 - Chloro Methane
 - Iodo methane
 - Bromo Methane
 - Fluoro Methane

PART - II**II. Answer any 6 questions. Q.No: 24 is compulsory****6x2=12**

- Give the Electronic Configuration of Mn^{2+} and Cr^{3+} .
- State Modern Periodic Law.
- Mention the uses of Plaster of Paris.

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19. State the First Law of Thermodynamics.
20. Define the Term Isotonic Solution.
21. Give the general formula for the following class of organic compounds.
 - a) Alkanes
 - b) Alkenes
22. How can you convert benzene into BHC?
23. How is DDT Prepared?
24. 50 g of tap water contains 20 mg of dissolved Solids. What is the TDS value in ppm?

PART - III

III. Answer any 6 questions. Q.No. 33 is compulsory

6x3=18

25. Distinguish between Oxidation and Reduction.
26. How do you convert Para Hydrogen into Ortho Hydrogen?
27. Compare Diffusion and Effusion.
28. Write a Balanced Chemical Equation for an Equilibrium reaction for which the equilibrium constant is given by expression. $K_c = \frac{[\text{NH}_3]^4 [\text{O}_2]^5}{[\text{NO}]^4 [\text{H}_2\text{O}]^6}$
29. Define Bond order.
30. Explain Inductive Effect with suitable example.
31. Write Sabatier - Sendersens reaction.
32. How is Acid Rain Formed?
33. Calculate the effective Nuclear charge on 4S² and 3d electron in Scandium.

PART - IV

IV. Answer all the questions. Q.No. 38 is compulsory

5x5=25

34. a) A Compound on analysis gave the following percentage composition C = 54.55%, H = 9.09%, O = 36.36%. Determine the empirical formula of the compound. (5).
(OR)
- b) What are Quantum Numbers? Explain its type (5).
35. a) What is Hydrogen Bonding and Explain its types. (5)
(OR)
- b) Derive the values of Critical Constants in Terms of Vander - Waal's constants. (5)
36. a) i) List the characteristics of internal energy. (3)
ii) Define Entropy? Give its unit. (2)
(OR)
- b) Derive the Relations between K_p and K_c. (5)
37. a) i) Explain optical isomerism with an example. (3)
ii) Write the IUPAC name of the following compounds. (1 + 1)
 - a) $\text{CH}_3 - \text{CH} - \text{CH} - \text{CH}_3$
 $\quad \quad \quad | \quad \quad |$
 $\quad \quad \quad \text{CH}_3 \quad \text{Br}$
 - b) $\text{CH}_3 - \text{O} - \text{CH}_3$
- (OR)
- b) i) Give an example for β - Elimination reaction. (2) ii) Distinguish between BOD and COD (3)
38. a) An Organic compound (A) with molecular formula C₂H₅Cl reacts with aqueous KOH gives compound (B) and with alcoholic KOH gives compound (C). Identify A, B and C. (5)
(OR)
- b) An organic compound (A) C₂H₄ decolourises Bromine water. (A) On Reaction with Chlorine gives (B). (A) React with HBr to give (C). Identify A, B and C. (5)

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