

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

Time Allowed : 3.00 Hours]

**CHEMISTRY**

[Max. Marks : 70

**PART - I**

1. **Choose the correct answer.** 15x1=15
- Carbon forms two oxides namely carbon monoxide and carbon dioxide. The equivalent mass of which element remains constant?
    - Carbon
    - Oxygen
    - Both Carbon and Oxygen
    - Neither Carbon and Oxygen
  - Two electrons occupying the same orbital are distinguished by
    - Azimuthal quantum number
    - Spin quantum number
    - Magnetic quantum number
    - Orbital quantum number
  - Assertion** : Helium has the highest value of ionisation Energy among all the elements known  
**Reason** : Helium has the highest value of electron affinity among all the elements known
    - both assertion and reason are true, reason is the correct explanation of Assertion
    - both assertion and reason are true but the reason is not the correct explanation of Assertion.
    - assertion is true but the reason is False
    - both assertion and reason are False
  - Water is a -----
    - basic oxide
    - acidic oxide
    - amphoteric oxide
    - none of these
  - Which alkali metal is used in devising photo electric cell?
    - Sodium
    - Cesium
    - Potassium
    - Francium
  - Use of hot air balloon in sports and meteorological observation in an application of
    - Boyle's law
    - Newton's law
    - Kelvin law
    - Brownin's law
  - Heat of Combustion is always
    - positive
    - negative
    - zero
    - either positive or negative
  - An Equilibrium constant of  $3.2 \times 10^{-6}$  for a reaction means the Equilibrium is
    - largely towards forward direction
    - largely towards reverse direction
    - never established
    - none of these
  - Which one of the following binary liquid mixtures exhibit positive deviation from Raoult's law?
    - Acetone + Chloroform
    - water + nitric acid
    - HCl + water
    - ethanol + water
  - Bond order in nitrogen molecule is
    - 2
    - 1
    - 3
    - 0
  - A liquid which decomposes at its boiling point can be purified by
    - Distillation at atmospheric pressure
    - Distillation under reduced pressure
    - Fractional distillation
    - Steam distillation
  - The geometrical shape of a carbocation is
    - Linear
    - tetrahedral
    - planar
    - pyramidal
  - Some meta - directing substituents in Aromatic substitution are given. Which one is most deactivating?
    - COOH
    - NO<sub>2</sub>
    - C≡N
    - SO<sub>3</sub>H
  - of the following compounds, which has the highest boiling point?
    - n - Butyl Chloride
    - Isobutyl Chloride
    - t - butyl Chloride
    - n - Propyl chloride
  - Bhopal Tragedy is due to the release of a toxic gas is -----
    - Methyl isocyanate
    - Methyl cyanide
    - Methyl isocyanide
    - Ethyl iso cyanate

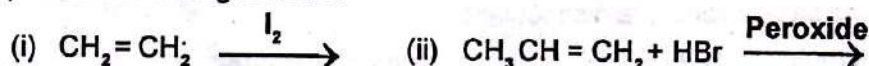
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## PART - II

6x2=12

- II. Answer any six questions. Question No. 24 is compulsory.
16. What do you understand by the term mole?
  17. Define Orbital? What are the n and l values for  $3p_x$  and  $4d_{x^2-y^2}$  electron?
  18. What is water gas shift reaction?
  19. Distinguish between diffusion and effusion?
  20. Write the  $K_p$  and  $K_c$  for the following reaction?  

$$2 \text{CO}_{(g)} + \text{CO}_{2(g)} + \text{C}_{(s)}$$
  21. Which bond is stronger  $\sigma$  or  $\pi$ ? why?
  22. What is functional Isomerism? Give an example?
  23. What are degradable and non-degradable Pollutants.
  24. Complete the following reaction:



## PART - III

6x3=18

- III. Answer any six questions. Question No. 33 is compulsory.
25. State and Explain Pauli's Exclusion Principle.
  26. Define Electronegativity?
  27. Give the uses of Gypsum?
  28. What is the effect of adding inert gas on the reaction at Equilibrium.
  29. Give the limitations of Henry's law?
  30. Explain inductive effect with example?
  31. How does Huckel rule help to decide the aromatic character of a compound?
  32. How is DDT Prepared? Give its uses.
  33. If an automobile engine burns petrol at a temperature of  $816^\circ\text{C}$  and if the surrounding temperature is  $21^\circ\text{C}$ . Calculate its maximum possible efficiency?

## PART - IV

5x5=25

## IV. Answer all the questions.

34. a) i) Define oxidation Number. (2) (OR)  
 ii) Balance the following equation by oxidation number method. (3)  

$$\text{KMnO}_4 + \text{FeSO}_4 + \text{H}_2\text{SO}_4 \longrightarrow \text{MnSO}_4 + \text{Fe}_2(\text{SO}_4)_3 + \text{K}_2\text{SO}_4 + \text{H}_2\text{O}$$
 (OR)
- b) i) What is screening effect? (2)  
 ii) State the trends in the variation of Electronegativity in groups and Periods?
35. a) i) Give the uses of heavy water? (2)  
 ii) How is temporary hardness of water removed by Clark's method? (3) (OR)  
 b) Explain Castner-Kellner method of preparation of sodium hydroxide? (5)
36. a) i) Define Joule - Thomson effect? (2)  
 ii) Give the application of the Bomb calorimeter? (3) (OR)  
 b) Explain VSEPR theory. Applying this theory to Predict the shapes of  $\text{IF}_7$  and  $\text{SF}_6$ . (5)
37. a) Derive  $K_p$  and  $K_c$  for the dissociation of  $\text{PCl}_5$ ? (5) (OR)  
 b) i) Why Chlorination of methane is not Possible in dark (2)  
 ii) What happens when ethene reacts with Ozone? (3)
38. a) i) Give the general formula for the following. Classes of organic Compounds. (2)  
 (a) Aliphatic monohydric alcohol  
 (b) Aliphatic amines.  
 ii) Give the IUPAC names of the following (3)  
 Compounds. (i)  $\text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \underset{\text{Br}}{\text{CH}} - \text{CH}_3$  (ii)  $\text{CH}_3 - \text{O} - \text{CH}_3$   
 (iii)  $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH}_2$  (OR)  
 b) What are the various methods you suggest to Protect our environment from Pollution? (5)