

# COMMON HALF YEARLY EXAMINATION - 2024

Standard XI

Reg No. 

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CHEMISTRY

Time : 3.00 hrs

Part - A

Marks : 70

15 x 1 = 15

I. Choose the correct answer:

- The equivalent mass of ferrous oxalate is
  - $\frac{\text{Molar mass of ferrous oxalate}}{1}$
  - $\frac{\text{Molar mass of ferrous oxalate}}{2}$
  - $\frac{\text{Molar mass of ferrous oxalate}}{3}$
  - none of these
- The maximum number of electrons in a sub shell is given by the expression
  - $2n^2$
  - $2l + 1$
  - $4l + 2$
  - None of these
- In a given shell the order of screening effect is
  - $s > p > d > f$
  - $s > p > f > d$
  - $f > d > p > s$
  - $f > p > s > d$
- Zeolite used to soften hardness of water is hydrate
  - Sodium aluminium silicate
  - Calcium aluminium silicate
  - Zinc aluminium borate
  - Lithium aluminium hydride
- Which of the following is not an alkaline earth metal?
  - Ca
  - Rb
  - Mg
  - Ba
- The critical temperature of  $\text{CO}_2$  is
  - $31.1^\circ\text{C}$
  - $30.1^\circ\text{C}$
  - $21.1^\circ\text{C}$
  - $35.5^\circ\text{C}$
- The amount of heat exchanged with the surrounding at constant pressure is given by the quantity
  - $\Delta E$
  - $\Delta H$
  - $\Delta S$
  - $\Delta G$
- For NaCl the theoretical molar mass is 58.5 and experimental molar mass is 38.75 then Van't-Hoff factor is
  - 0
  - 1
  - 1.50
  - 2.5
- Match the following :
 

1) $-\text{NO}_2$	i) Propyl
2) $-\text{OCH}_3$	ii) Amino
3) $-\text{CH}_2-\text{CH}_2-\text{CH}_3$	iii) Methoxy
4) $-\text{NH}_2$	iv) Nitro

  - (1) - (iii), (2) - (ii), (3) - (iv), (4) - (i)
  - (1) - (iii), (2) - (iv), (3) - (i), (4) - (ii)
  - (1) - (iv), (2) - (iii), (3) - (i), (4) - (ii)
  - (1) - (ii), (2) - (i), (3) - (iv), (4) - (iii)
- $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{SO}_3(\text{g})$   $\Delta_{\text{ng}}$  value of this reaction is
  - 2
  - 2
  - 1
  - 1
- Shape of  $\text{ClF}_3$  is
  - Planar triangular
  - Pyramidal
  - 'T'-shaped
  - None of these
- Which of the following carbocation will be most stable?
  - $\text{Ph}_3\text{C}^+$
  - $\text{CH}_3-\text{CH}_2^+$
  - $(\text{CH}_3)_2-\text{CH}^+$
  - $\text{CH}_2=\text{CH}-\text{CH}_2^+$
- The compound that will react most readily with gaseous bromine has the formula
  - $\text{C}_3\text{H}_6$
  - $\text{C}_2\text{H}_2$
  - $\text{C}_4\text{H}_{10}$
  - $\text{C}_2\text{H}_4$

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XI Chemistry

14. The name of  $\text{CFCl}_3$  is  
 a) Freon - 111      b) Freon - 113      c) Freon - 112      d) Freon - 11
15. The pH of normal rain water is  
 a) 6.5      b) 7.5      c) 5.6      d) 4.6

## Part - B

II. Answer any 6 questions. (Q.No.24 is compulsory)

6 x 2 = 12

16. Define gram equivalent mass.
17. Mention the three types of covalent hydrides with example.
18. Give the systematic names for the following : 1) Milk of magnesia      2) Soda ash
19. Define inversion temperature.
20. Which bond is stronger  $\sigma$  or  $\pi$  ? Why?
21. Short note - Hyper conjugation
22. State Markovnikoff's rule with example.
23. What is green chemistry?
24. The molality of the solution containing 45 g of glucose dissolved in 2 kg of water.

## Part - C

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

6 x 3 = 18

25. State Aufbau principle.
26. Define electron affinity.
27. Mention the uses of Plaster of Paris.
28. Write the characteristics of internal energy.
29. Write the  $K_p$  and  $K_c$  for  $2\text{CO}_g \rightleftharpoons \text{CO}_{2g} + \text{C}_s$
30. Draw the Lewis structure for the following : 1)  $\text{H}_2\text{O}$       2)  $\text{HNO}_3$
31. What is Cis and Trans isomerism? Give example.
32. Differentiate Nucleophile and Electrophile.
33. Write the structure of the following compounds :  
 1) 2-chloro-3-methyl pentane      2) 1-bromo-2,3-dichlorobutane.

## Part - D

IV. Answer all the questions.

5 x 5 = 25

34. a) i) 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. (3)  
 ii) Distinguish between oxidation and reduction. (2) (OR)
- b) i) Describe the Pauling method for the determination of ionic radius. (3)  
 ii) Write short note on spin quantum number. (2)
35. a) Explain ortho and para hydrogen. (5) (OR)
- b) i) What are the reasons for the anomalous properties of Beryllium? (2)  
 ii) State Kelvin-Planck statement. (3)
36. a) Derive the values of critical constants in terms of Vander Waals constants. (5) (OR)
- b) i) Write the limitation of Henry's law. (3)  
 ii) Define the term "isotonic solution". (2)
37. a) i) Discuss the formation of  $\text{O}_2$  molecule using MO Theory. (3)  
 ii) What is sublimation? Give example. (2) (OR)
- b) i) Explain the mechanism of  $\text{SN}^1$  reaction. (3)  
 ii) Define inductive effect. (2)
38. a) Write note on (1) Ozonolysis (2) Polymerisation (3) Birch reduction (OR) (2+1+1+1)
- b) How is acid rain formed? Explain its effects.

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