

VNR11C

Virudhunagar District  
Common Half Yearly Examination - December 2024

11066

**Standard 11**  
**CHEMISTRY**

Time Allowed: 3.00 Hours

Maximum Marks: 70

**PART-I**

Choose the correct answer:

**15×1=15**

- The number of water molecules in a drop of water weighing 0.018g is  
a)  $6.022 \times 10^{26}$     b)  $6.022 \times 10^{23}$     c)  $6.022 \times 10^{20}$     d)  $9.9 \times 10^{22}$
- Two electrons occupying the same orbital are distinguished by:  
a) Azimuthal quantum number    b) Spin quantum number  
c) Magnetic quantum number    d) Principal quantum number
- Which of the following is the least electronegative element?  
a) Bromine    b) Chlorine    c) Iodine    d) Hydrogen
- Tritium is a \_\_\_\_\_ emitter.  
a)  $\alpha$     b)  $\beta$     c)  $\gamma$     d) none of these
- \_\_\_\_\_ is used in devising photoelectric cells.  
a) Lithium    b) Sodium    c) Potassium    d) Caesium
- The mathematical expression of compressibility factor is \_\_\_\_\_.  
a)  $Z = \frac{P}{nRT}$     b)  $Z = \frac{V}{nRT}$     c)  $Z = \frac{PVR}{nT}$     d)  $Z = \frac{PV}{nRT}$
- Which of the following is not a thermodynamic function?  
a) entropy energy    b) internal energy  
c) fractional energy    d) enthalpy
- The differential form of Van't Hoff equation is \_\_\_\_\_.  
a)  $\frac{d(\ln k)}{dT} = \frac{\Delta H^\circ}{RT}$     b)  $\frac{d(\ln k)}{dT} = \frac{\Delta H^\circ}{RT^2}$     c)  $\frac{d(\ln k)}{dT} = \frac{\Delta H^\circ}{R}$     d)  $\frac{d(\ln k)}{dT} = \frac{\Delta H}{RT^2}$
- In solution, acetic acid deviates from \_\_\_\_\_ law.  
a) Raoult's Law    b) Henry's Law  
c) Avogadro's Law    d) Charles Law
- According to valence bond theory a bond between two atoms is formed when  
a) fully filled atomic orbitals overlap  
b) half filled atomic orbitals overlap  
c) non-bonding atomic orbitals overlap  
d) empty atomic orbitals overlap
- In an Organic compound, phosphorus is estimated as  
a)  $Mg_2P_2O_7$     b)  $Mg_3(PO_4)_2$     c)  $H_3PO_4$     d)  $P_2O_5$
- Among the following which one is - M group  
a)  $>C=O$     b) - OH    c) - SH    d) - OR
- $CaCO_3$  supported in Palladium partially deactivated with sulphur or gasoline is  
a) Adam's catalyst    b) Adkins catalyst  
c) Lindlar's catalyst    d) Baeyer's reagent
- The name  $C_2F_4Cl_2$  is \_\_\_\_\_.  
a) Freon-112    b) Freon-113    c) Freon-115    d) Freon-114
- The pH of normal rain water is  
a) 5.6    b) 6.5    c) 7.5    d) 4.6

**PART-II****Note : Answer any six questions. Question no.24 is compulsory. 6×2=12**

- Calculate the molar mass of Boric acid [ $H_3BO_3$ ] and sulphuric acid [ $H_2SO_4$ ].
- Give the electronic configuration of  $Cr^{3+}$  ion.
- Mention the uses of plaster of Paris.
- State Le-chatelier principle.
- Mention the three types of covalent hydrides.

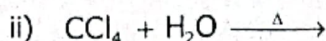
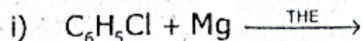
VNR11C

2

- 21) Give a balanced chemical equation for the equilibrium reaction for which the equilibrium constant is given by expression.

$$K_c = \frac{[\text{NH}_3]^4 [\text{O}_2]^5}{[\text{NO}]^4 [\text{H}_2\text{O}]^6}$$

- 22) What is molal depression constant?  
 23) What are Particulate pollutants? Give example.  
 24) Complete the following reactions.



### PART-III

**Note:** Answer any six questions. Question number 33 is compulsory.  $6 \times 3 = 18$

- 25) How many moles of hydrogen is required to produce 10 moles of ammonia?  
 26) What would be the temporary name, IUPAC name and temporary symbol for 118 element?  
 27) Write a short notes on about liquefaction of gases by adiabatic process.  
 28) Define Law of mass action.  
 29) Define the term isotonic solution.  
 30) State octet rule.  
 31) Write any three Meta directing groups.  
 32) Write shote notes on hyperconjugation.  
 33) Give an example for each of the following type of Organic compounds.  
 i) Non-benzenoid aromatic compound  
 ii) Aromatic heterocyclic compound  
 iii) Carbocyclic compound

### PART-IV

**Note:** Answer all the questions.

**5 × 5 = 25**

- 34) a) i) An organic compound presence in Vinegar has 40% Carbon, 6.6% Hydrogen and 53.4% Oxygen. Find the empirical formula of the compound.  
 ii) Calculate the oxidation number of Cr and S from the following.  
 a)  $\text{Cr}_2\text{O}_7^{2-}$       b)  $\text{SO}_2$

(OR)

- b) i) Describe the Aufbau principle.  
 ii) Why halogen's act as oxidising agents?  
 35) a) i) Describe ortho and para hydrogen.  
 ii) Explain the exchange reaction of deuterium.

(OR)

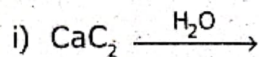
- b) Discuss briefly the similarities between Beryllium and Aluminium.  
 36) a) i) Derive ideal gas equation.  
 ii) Distinguish between diffusion and effusion.

(OR)

- b) List the characteristics of internal energy.  
 37) a) Discuss the formation of  $\text{N}_2$  molecule using MO theory.

(OR)

- b) Explain the structure of Benzene.  
 38) a) Complete the reaction.



- ii) HOW is DDT prepared?

(OR)

- b) i) Differentiate BOD and COD.  
 ii) What is green chemistry?