

11

Register no:

FIRST MID TERM TEST AUGUST - 2024

Time: 1:30

CHEMISTRY

Marks: 50

PART - A

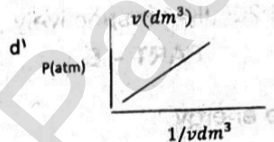
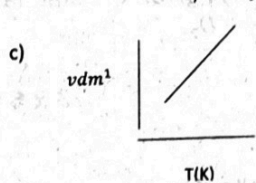
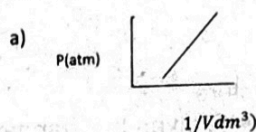
10 x 1 = 10

Answer all the questions.

Choose the best answer

- Which one of the following represents 180 g of water?
 - 5 moles of water
 - 90 moles of water
 - 6.022×10^{24} molecules of water
 - $\frac{6.022 \times 10^{23}}{180}$ molecules of water
- The equivalent mass of KMnO_4 (potassium permanganate) in alkaline medium is

$$\text{MnO}_4^- + 2\text{H}_2\text{O} + 3\text{e}^- \rightarrow \text{MnO}_2 + 4\text{OH}^-$$
 - 31.6
 - 52.7
 - 79
 - none of these
- Which of the following parts of d - orbitals will have electron density along the axes?
 - dz^2, dxz
 - dxz, dyz
 - dxy, dx^2, dx^2-y^2
 - dz^2, dx^2-y^2
- What is the maximum number of electrons that can be associated with the following set of Quantum numbers?
 $n = 3, l = 1, \text{ and } m = -1$
 - 4
 - 6
 - 2
 - 10
- Conditions at which gases behave ideally
 - low temperature and low pressure
 - high temperature and high pressure
 - high temperature and low pressure
 - low temperature and high pressure
- Which of the following diagrams correctly describes behaviour of a gas for Boyle's law?



- In an adiabatic process which of the following is true?
 - $q = w$
 - $q = 0$
 - $\Delta E = q$
 - $P\Delta V = 0$
- Which of the following is path function?
 - G
 - U
 - H
 - q
- Most of the organic compounds are inflammable because they have _____.
 - Vander Waals forces
 - Covalent coordinate bond
 - Covalent bond
 - Ionic bond
- Match

1. 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) - (ii), (3) - (i), (4) - (ii)
 - (1) - (iii), (2) - (i), (3) - (iv), (4) - (ii)

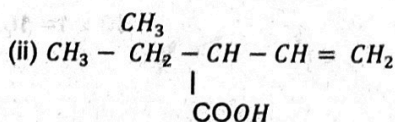
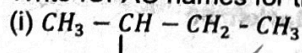
PART – II

Answer any five. question number 18 is compulsory.

5 X 2 = 10

11. Write short notes on homologous series?

12. Write IUPAC names for the following



13. State Boyle's law

14. What is compressibility factor (Z)? Give equation.

15. Differentiate intensive and extensive properties?

16. State Kelvin Plancks of II law of thermodynamics.

17. State Heisenberg's uncertainty principle

18. Calculate mass / amount of H₂O produced by the combustion of 32g of methane.

PART – III

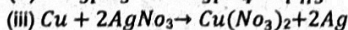
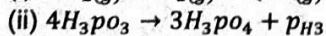
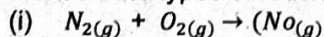
Answer any five Question number 26 is compulsory.

5 x 3 = 15

19. Short notes: (i) Equivalent mass of an acid

(ii) Equivalent Mass of an Oxidising agent

20. Mention the types of redox reaction.



21. Drive De – Broglie equation.

22. Explain Azimuthal quantum number

23. Define the following with expressions

(i) Dalton's law (ii) Graham's law

24. Define (i) Joule - Thomson's effect

ii) Inversion temperature

25. Explain the classification of organic compound on the basis of structure.

26. Calculate the standard entropy change for the following reaction ΔS°_f , given the standard entropies of $\text{CO}_{2(g)}$, $\text{C}_{(s)}$ and $\text{O}_{2(g)}$ as 213.6, 5.740 and 205 JK⁻¹ respectively. $\text{C}_{(s)} + \text{O}_{2(g)} \rightarrow \text{CO}_{2(g)}$

PART – B

3 x 5 = 15

Answer all the questions

27. Explain the characteristics of Gibb's free energy.

(OR)

B) what is functional group? Mention the functional group for the following:

(i) Ethyl methyl ether (ii) Acetone

(iii) Formic acid (iv) Ethyl amine

28. A) Give the relationship between ΔH and ΔU for an ideal gas equation. Explain each term involved in the equation.

(OR)

B) (i) Drive the ideal gas equation.

(ii) Mention are different methods of liquefaction of gases.

29. A) (i) Define oxidation and reduction in terms of electrons.

(ii) Find out the oxidation number for the following underlined elements.

a) CO₂ b) H₂SO₄ c) KO₂

(OR)

B) Explain the postulates of Bohr's atomic model.