

Model Question paper

Gaseous state - I 3

11th Standard

Chemistry

Reg.No. :

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I. Answer all the questions.

II. Use blue pen only.

Time : 00:45:00 Hrs

Total Marks : 35

2 x 1 = 2

Part - A

- 1) The critical temperature of a gas is that temperature
 - (a) Above which it can no longer remain in the gaseous state.
 - (b) Above which it can not be liquified by pressure
 - (c) At which it solidifies
 - (d) At which volume of gas becomes zero
- 2) The molecules of a gas A travel four times faster than the molecules of gas B at the same temperature. The ratio of molecular weight (M_A/M_B) will be
 - (a) 1/16
 - (b) 4
 - (c) 1/4
 - (d) 16

Part - B

3 x 2 = 6

- 3) Compare the partial pressures of gases A and B when 3 moles of A and 5 moles of B mixed in a constant volume, and 25° C and 1 atm pressure.
- 4) A sample of an ideal gas escapes into an evacuated container, there is no change in the kinetic energy of the gas. Why?
- 5) What are measurable properties of gases?

Part - C

4 x 3 = 12

- 6) Define Graham's law of diffusion.
- 7) Give the values of an R-gas constant in calories and Joules.
- 8) Write the significance of Vanderwaal's constants.
- 9) What is meant by inversion temperature?

Part - D

3 x 5 = 15

- 10) Calculate the pressure exerted by 5 moles of CO_2 in the one-litre vessel at 47° C using Vanderwaal's equation. Also, report the pressure of the gas if it behaves ideally in nature.
Given that $a=3.592 \text{ atm lit}^2\text{mol}^{-2}$, $b=0.0427 \text{ lit mol}^{-1}$
- 11) Vanderwaal's constant in liter atmosphere per mole for carbon dioxide are $a=3.6$ and $b=4.28 \times 10^{-2}$. Calculate the critical temperature and critical volume of the gas. $R=0.0820 \text{ lit atm K}^{-1} \text{ mol}^{-1}$
- 12) Describe Claude's process of liquefaction of gases with neat diagram.
