

Government General Degree College, Dantan-II

1st Semester B. Sc (H) Internal Examination-2021

Subject: Chemistry

Paper: CC-2T

F.M: 20

Time: 1h

Answer the following questions (*any 10*)

10×2

1. Average kinetic energy can't be calculated using average velocity. – Explain.
2. Write down the assumptions for Maxwell's distribution law of molecular speed.
3. What is mean free path? What is the effect of pressure on mean free path.
4. At what temperature $C_{r.m.s}$ of He will be same as $\langle C \rangle$ of O_2 at 900 K.
5. Write down the limitations of van der Waal's equation.
6. For a gas obeying van der Waal's equation state, $T_c = 304.2\text{ K}$ and $P_c = 72.8\text{ atm}$. Calculate van der Waal's constant 'b'.
7. What is reduced equation of state?
8. What is Boyle temperature? Draw PV vs. P plot for a real gas at Boyle temperature.
9. Density is intensive property. – Comment.
10. What do you mean by thermodynamic equilibrium?
11. What is internal energy?
12. Show that for one mole of an ideal gas, $C_p - C_v = R$.
13. "In case of an ideal gas P-V adiabatic is steeper than P-V isothermal". – Explain.
14. Derive an expression of work for isothermal reversible expansion of an ideal gas.
15. Is dU always equal to $C_v dT$?
16. Show that for an ideal gas $\left(\frac{\partial C_v}{\partial V}\right)_T = 0$.
17. An ideal gas expands adiabatically against a constant pressure P_2 until it doubles its volume. If the initial temperature and pressure be T_1 and P_1 respectively, calculate the final temperature.
18. " ΔH is a state function". – Comment.