



INDIAN SCHOOL AL WADI AL KABIR

Class: XI	Department: SCIENCE - 2020 -21 SUBJECT : CHEMISTRY	Date of submission: 30.04.2020
Worksheet No: 01	Chapter: STATES OF MATTER	Note: A4 FILE FORMAT
NAME OF THE STUDENT	CLASS & SEC:	ROLL NO.

Read the passage and answer the questions 1 – 5 that follow

One day Seema and Smriti decided to cook the food at a hill station. Seema takes a pan to cook food while Smriti started cooking the food in a pressure cooker at the same place.

1. Who will cook rice faster?
2. What is the effect of pressure on boiling point?
3. What is standard boiling point?
4. State Charles law.
5. What is the principle involved in distillation under reduced pressure?

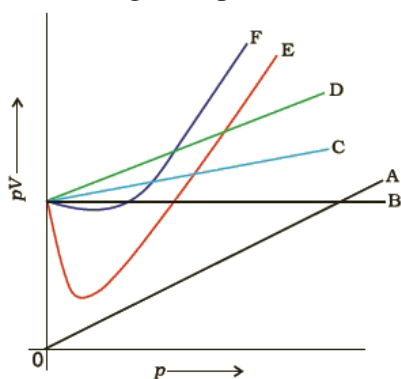
Questions 6 – 10 are one-word answers

6. Define the term Absolute zero.
7. Write the van der Waals gas equation and explain the terms.
8. Give one example for London or Dispersion forces.
9. Unit of viscosity of liquids is _____
10. What is the effect of temperature on Surface tension?

Questions 11 – 15 are Multiple Choice Questions.

11. Increase in kinetic energy can overcome intermolecular forces of attraction. How will the viscosity of liquid be affected by the increase in temperature?
 - a. Increase
 - b. No effect
 - c. Decrease
 - d. No regular pattern will be followed
12. If a gas expands at constant temperature, it indicates that
 - a. Kinetic energy of molecules remains the same.
 - b. Number of gas molecules increases.
 - c. Kinetic energy of molecules increases.
 - d. Pressure of gas increases.

13. Which curve in the figure represents the curve of ideal gas?



- a. B only
 b. C and D only
 c. E and F only
 d. A and B only

14. As the temperature increases, average kinetic energy of molecules increases. What would be the effect of increase of temperature on pressure provided the volume is constant?

- a. increases
 b. decreases
 c. remains same
 d. becomes half

15. Charles law is represented by

- a. $V \propto n$ at T and p
 b. $pV/T = \text{constant}$
 c. $V \propto T$ at constant n and p
 d. $p \propto 1/V$ at constant n and T

Questions 16 - 20 are Assertion Reason type questions

- a. If both *Assertion* and *Reason* are correct and *Reason* is the correct explanation of *Assertion*.
 b. If both *Assertion* and *Reason* are correct but *Reason* is not the correct explanation of *Assertion*.
 c. If *Assertion* is correct and *Reason* is wrong.
 d. If *Assertion* is wrong and *Reason* is correct.

16. *Assertion* : Three states of matter are the result of balance between intermolecular forces and thermal energy of the molecules.

Reason : Intermolecular forces tend to keep the molecules together but thermal energy of molecules tends to keep them apart.

17. *Assertion* : The temperature at which vapour pressure of a liquid is equal to the external pressure is called boiling temperature.

Reason : At high altitude atmospheric pressure is high.

18. *Assertion*: Liquids tend to have maximum number of molecules at their surface.

Reason : Small liquid drops have spherical shape.

19. *Assertion*: The value of a is higher for NH_3 in comparison to N_2 .

Reason: H- bonding occurs in NH_3 .

20. *Assertion* : Ethanol is more viscous than glycerol.

Reason : Interparticle forces in glycerol is greater than ethanol.

2 Marks Questions

21. What is equation of state for an ideal gas? Why is it called so?
22. Give reasons for the following statements.
- Water rises in a capillary tube.
 - The size of weather balloon increases as it ascends into higher altitudes.
23. 200 cm^3 of a gas at 0.5 atm pressure is allowed to expand till the pressure is 0.9 atm keeping the temperature constant. Calculate the volume of the gas.
24. Two flasks A and B have equal volumes. Flask A contains Hydrogen at 300 K while flask B has same mass of CH_4 at 600 K.
- Which flask contains larger number of molecules?
 - In which flask is the pressure greater?
 - In which flask the molecules move faster?
 - In which flask is the number of collisions with the walls greater?
25. Which postulates of Kinetic theory do not hold good for real gases?
26. How many moles of oxygen are present in 400 cm^3 sample of the gas at a pressure of 76 mm Hg at a temperature of 300 K? (760 mm Hg = 1 atm)

3 Marks Questions

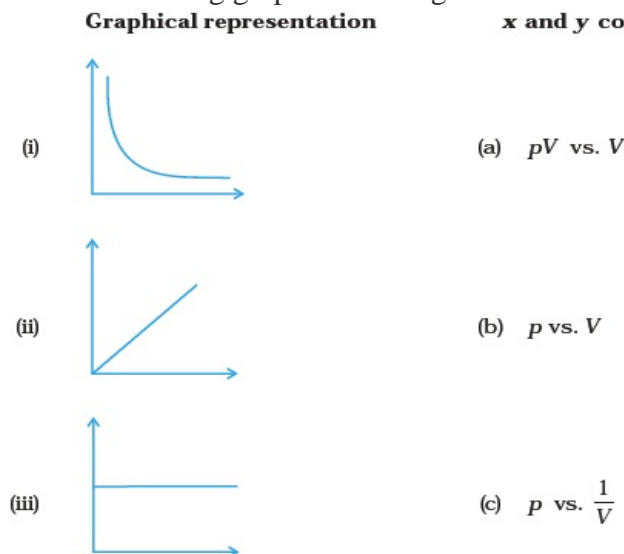
27. A discharge tube containing nitrogen gas at 25°C is evacuated till the pressure is 2 mm Hg. If the volume of the discharge tube is 2 L, calculate the number of nitrogen molecules still present in the tube.
28. The density of a certain gaseous oxide at 1.5 bar at 10°C is same as that of dioxygen at 20°C and 4.5 bar pressure. Calculate the molar mass of the gaseous oxide.
29. Define the terms.
- Boyle point
 - Critical pressure
 - Aqueous tension
30. a. Derive a relation between density and molar mass of a gaseous substance.
b. Explain Dipole -Dipole interactions using an example.
31. Explain the terms.
- Surface energy
 - Viscosity
 - Laminar flow

5 Marks Questions

32. a. What will be the pressure of a gaseous mixture when 0.5L of H_2 at 0.8 bar and 2.0 L of O_2 at 0.7 bar are introduced in a 1L empty vessel at 27°C ?
- b. A mixture of hydrogen and oxygen at one bar pressure contains 20% by mass of H_2 . Calculate the partial pressure of H_2 .
33. a. Write the conditions under which gas approaches ideal behaviour.

- b. Account for the following properties of gases on the basis of Kinetic Molecular Theory.
- High compressibility
 - Gases occupy whole of the volume available to them.
- c. What would have been the effect on gas pressure if the collisions between the gas molecules were not elastic?

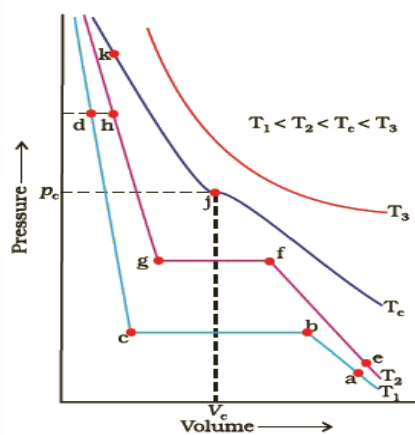
34. a. Match the following graphs of ideal gas with their coordinates.



b. The sharp glass edge becomes smooth on heating it up to its melting point in a flame. Explain the property of liquids which is responsible for this phenomenon.

c. State Daltons Law of Partial pressures.

35. Isotherms of CO_2 at various temperatures are represented below. Answer the following questions based on this figure.



- In which state will CO_2 exist between the points a and b at temperature T_1 ?
- At what point will CO_2 start liquefying when temperature
- At what point will CO_2 be completely liquefied when temperature is T_2 .
- Will condensation take place when the temperature is T_3 .
- What portion of the isotherm at T_1 represent liquid and gaseous CO_2 at equilibrium?