1.

At lower temperatures, all gases except H_2 and He show:

1. Negative deviation

2. Positive deviation

3. Positive and negative deviation

4. None of the above

2.

A gas cannot be liquefied if:

1. Forces of attraction are low under ordinary conditions

2. Forces of attraction are high under ordinary conditions

3. Forces of attraction are zero under ordinary conditions

4. Forces of attraction either high or low under ordinary conditions

3.

At which one of the following temperature pressure conditions, the deviation of a gas from ideal behavior is expected to be minimum?

1. 350 K and 3 atm

2. 550 K and 1 atm

3. 250 K and 4 atm

4. 450 K and 2 atm

4.

Which gas can be most steadily liquefied?

1. NH_3

2. Cl_2

3. SO_2

4. CO_2

5.

The correct order of temperature of a real gas is:

(I) Boyle's temperature

(II) Critical temperature

(III) Inversion temperature

1. III > I > II

2. I > II > III

3. II > I > III

4. I > III > II

6.

The density of a gaseous substance at 1 atm pressure and 773 K is 0.4 g/L. If the molecular weight of the substance is 30 the dominant force existing among gas molecules are

1. Repulsive

2. Attractive

3. Both (1) & (2)

4. None of these

7.

Van der Waals equation at low pressure is

1. PV = RT - Pb

2. PV = RT - $\frac{a}{V}$

3. PV = RT + $\frac{a}{v}$

4. PV = RT + Pb

8.

The unit of van der Waals' constant 'b' is :

1. $cm^3 \, mol^{-1}$

2. litre mol^{-1}

3. $m^3 \, mol^{-1}$

4. All of these

9.

The compressibility factor for H_2 and He is usually:

1. >1

2. =1

3. <1

4. Zero

10.

At high pressure, the compressibility factor 'Z' is equal to

1. Unity

2. 1-Pb/RT

3. 1+Pb/RT

4. zero

11.

The compressibility factor for 1 mol of a van der Waals gas at $0°C$ and 100 atmospheric pressure is found to be 0.5, the volume of gas is

1. 2.0224 L

2. 1.4666 L

3. 0.8542 L

4. 0.1119 L

12.

A helium atom is two times heavier than a hydrogen molecule. At 298 K, the average kinetic energy of a helium atom is

1. Same as that of a hydrogen molecule

2. Half that of a hydrogen molecule

3. Two times that of hydrogen molecule

3. Two times that of a hydrogen molecule

4. Four times that of a hydrogen molecule

13.

The compressibility factor of a gas is less than unity at STP. Therefore

1. V_m > 22.4 L

2. V_m < 22.4 L

3. V_m = 22.4 L

4. V_m = 44.8 L

14.

Under what conditions a real gas would behave ideally?

1. At high temperature and low pressure

2. At low temperature and high pressure

3. At high temperature and high pressure

4. At low temperature and low pressure

15.

What will be the unit of 'a' when pressure is in atmosphere and volume in dm^3?

1. $atm \ dm^6 \ mol^{-2}$

2. $atm \ dm^4 \ mol^{-2}$

3. $atm \ dm^3 \ mol^{-3}$

4. $atm^{-1} \ dm^4 \ mol^{-2}$

16.

The SI unit for the quantity $\frac{pV^2 T^2}{n}$ is

1. $N \ m^2 \ K^2 \ mol^{-1}$

2. $N \ m^4 \ K \ mol^{-1}$

3. $N \ m^2 \ K^3 \ mol^{-1}$

4. $N \ m^4 \ K^2 \ mol^{-1}$

17.

Gases possess characteristic critical temperature which depends upon the magnitude of intermolecular forces between the particles. Following are the critical temperatures of some gases.

Gases	H_2	He	O_2	N_2
The critical temperature in Kelvin	33.2	5.3	154.3	126

From the above data what would be the order of liquefaction of these gases? Start writing the order from the gas liquefying first

1. H_2, He, O_2, N_2

2. He, O_2, H_2, N_2

3. N_2, O_2, He, N_2

4. O_2, N_2, H_2, He

18.

What is the SI unit of viscosity coefficient (η)?

1. Pascal

2. Nsm^{-2}

3. $km^{-2}s$

4. Nm^{-2}

19.

Increase in kinetic energy can overcome intermolecular forces of attraction. How will the viscosity of liquid be affected by the increase in temperature?

1. Increase

2. No effect

3. Decrease

4. No regular pattern will be followed

20.

How does the surface tension of liquid vary with an increase in temperature?

1. Remains same

2. Decreases

3. Increases

4. No regular pattern is followed

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