

NEET STATES OF MATTER — REAL GASES & VAN DER WAALS EQUATION — PYQS

Max. Marks: 28

Questions: 7

Section A (MCQ) — 7 questions

- Q.1** A gas at 350 K and 15 bar has molar volume 20 percent smaller than that for an ideal gas under the same conditions. The correct option about the gas and its compressibility factor (Z) is -

[NEET (UG) 2019]

- (1) $Z < 1$ and attractive forces are dominant
- (2) $Z < 1$ and repulsive forces are dominant
- (3) $Z > 1$ and attractive forces are dominant
- (4) $Z > 1$ and repulsive forces are dominant

Scan or tap for the full solution



- Q.2** Given van der Waals' constant for NH_3 , H_2 , O_2 and CO_2 are respectively 4.17, 0.244, 1.36 and 3.59, which one of the following gases is most easily liquefied?

[NEET 2018]

- (1) NH_3 (2) H_2 (3) O_2 (4) CO_2

Scan or tap for the full solution



- Q.3** The correction factor 'a' to the ideal gas equation corresponds to

[NEET 2018]

- (1) density of the gas molecules
- (2) volume of the gas molecules
- (3) electric field present between the gas molecules
- (4) forces of attraction between the gas molecules

Scan or tap for the full solution



- Q.4** A gas such as carbon monoxide would be most likely to obey the ideal gas law at

[AIPMT 2015]

- (1) low temperatures and high pressures
- (2) high temperatures and high pressures
- (3) low temperatures and low pressures
- (4) high temperatures and low pressures

Scan or tap for the full solution



- Q.5** Maximum deviation from ideal gas is expected from

[NEET 2013]

- (1) $\text{CH}_{4(g)}$ (2) $\text{NH}_{3(g)}$ (3) $\text{H}_{2(g)}$ (4) $\text{N}_{2(g)}$

Scan or tap for the full solution



- Q.6** For real gases van der Waals equation is written as

$$\left(p + \frac{an^2}{V^2}\right)(V - nb) = nRT$$

where a and b are van der Waals constants. Two sets of gases are

(I) O_2 , CO_2 , H_2 and He(II) CH_4 , O_2 and H_2

The gases given in set-I in increasing order of b and gases given in set-II in decreasing order of a, are arranged below. Select the correct order from the following

[AIPMT 2012 (Mains)]

- (1) (I) $\text{He} < \text{H}_2 < \text{CO}_2 < \text{O}_2$ (II) $\text{CH}_4 > \text{H}_2 > \text{O}_2$
- (2) (I) $\text{O}_2 < \text{He} < \text{H}_2 < \text{CO}_2$ (II) $\text{H}_2 > \text{O}_2 > \text{CH}_4$
- (3) (I) $\text{H}_2 < \text{He} < \text{O}_2 < \text{CO}_2$ (II) $\text{CH}_4 > \text{O}_2 > \text{H}_2$
- (4) (I) $\text{H}_2 < \text{O}_2 < \text{He} < \text{CO}_2$ (II) $\text{O}_2 > \text{CH}_4 > \text{H}_2$

Scan or tap for the full solution



- Q.7** Van der Waals real gas acts as an ideal gas at which conditions?

[AIPMT 2002]

- (1) High temperature, low pressure
- (2) Low temperature, high pressure
- (3) High temperature, high pressure
- (4) Low temperature, low pressure

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7				
Ans.	1	1	4	4	2	3	1				