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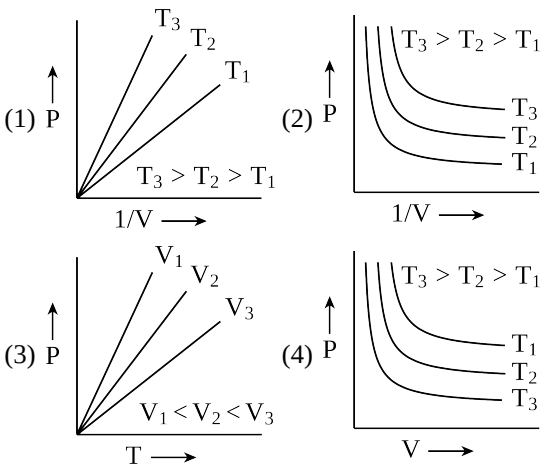
NEET STATES OF MATTER — GAS LAWS & IDEAL GAS EQUATION — PYQS

Max. Marks: 60 **Questions:** 15

Section A (MCQ) — 15 questions

Q.1 Which amongst the following options is correct graphical representation of Boyle's law?

[NEET (UG) 2023]



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Q.2 Which one is not correct mathematical equation for Dalton's Law of partial pressure? Here p = total pressure of gaseous mixture
where p_i = partial pressure of ith gas
χ_i = mole fraction of ith gas in gaseous mixture
$p_i°$ = pressure of ith gas in pure state

[NEET (UG) 2022]

(1) $p = p_1 + p_2 + p_3$
(2) $p = n_1\frac{RT}{V} + n_2\frac{RT}{V} + n_3\frac{RT}{V}$
(3) $p_i = \chi_i p$
(4) $p_i = \chi_i p_i°$

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Q.3 A 10.0 L flask contains 64 g of oxygen at 27 °C. (Assume O_2 gas is behaving ideally). The pressure inside the flask in bar is (Given R = 0.0831 L bar K^{-1} mol^{-1}) [NEET (UG) 2022]

(1) 2.5 (2) 498.6 (3) 49.8 (4) 4.9

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Q.4 A vessel contains 3.2 g of dioxygen gas at STP (273.15 K and 1 atm pressure). The gas is now transferred to another vessel at constant temperature, where pressure becomes one third of the original pressure. The volume of new vessel in L is : (Given : molar volume at STP is 22.4 L)

[NEET (UG) 2022 (Phase 2)]

(1) 67.2 (2) 6.72 (3) 2.24 (4) 22.4

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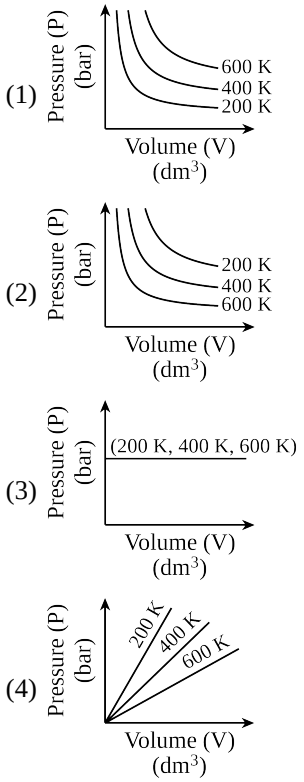
Q.5 Choose the correct option for graphical representation of Boyle's law, which shows a graph of pressure vs. volume of a gas at different temperatures : [NEET (UG) 2021]



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Q.6 Choose the correct option for the total pressure (in atm.) in a mixture of 4 g O_2 and 2 g H_2 confined in a total volume of one litre at 0°C is :

[Given R = 0.082 L atm mol^{-1} K^{-1}, T = 273 K]

[NEET (UG) 2021]

(1) 26.02 (2) 2.518 (3) 2.602 (4) 25.18

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Q.7 A mixture of N_2 and Ar gases in a cylinder contains 7 g of N_2 and 8 g of Ar. If the total pressure of the mixture of the gases in the cylinder is 27 bar, the partial pressure of N_2 is :
[Use atomic masses (in g mol^{-1}) : N = 14, Ar = 40]
[NEET (UG) 2020]

(1) 12 bar (2) 15 bar (3) 18 bar (4) 9 bar

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Q.8 Equal moles of hydrogen and oxygen gases are placed in a container with a pin-hole through which both can escape. What fraction of the oxygen escapes in the time required for one-half of the hydrogen to escape? [NEET 2016 (Phase 1)]

(1) 3/8 (2) 1/2 (3) 1/8 (4) 1/4

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Q.9 What is the density of N_2 gas at 227 °C and 5.00 atm pressure? (R = 0.082 L atm K^{-1} mol^{-1})
[NEET 2013 (Karnataka)]

(1) 1.40 g/L (2) 2.81 g/L (3) 3.41 g/L (4) 0.29 g/L

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Q.10 A certain gas takes three times as long to effuse out as helium. Its molecular mass will be
[AIPMT 2012 (Mains)]

(1) 27 u (2) 36 u (3) 64 u (4) 9 u

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Q.11 50 mL of each gas A and of gas B takes 150 and 200 seconds respectively for effusing through a pin hole under the similar conditions. If molecular mass of gas B is 36, the molecular mass of gas A will be
[AIPMT 2012 (Prelims)]

(1) 96 (2) 128.74 (3) 20.25 (4) 64.42

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Q.12 A bubble of air is underwater at temperature 15°C and the pressure 1.5 bar. If the bubble rises to the surface where the temperature is 25°C and the pressure is 1.0 bar, what will happen to the volume of the bubble? [AIPMT 2011 (Mains)]

(1) Volume will become greater by a factor of 1.6.
(2) Volume will become greater by a factor of 1.1.
(3) Volume will become smaller by a factor of 0.70.
(4) Volume will become greater by a factor of 2.5.

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Q.13 Two gases A and B having the same volume diffuse through a porous partition in 20 and 10 seconds respectively. The molecular mass of A is 49 u. Molecular mass of B will be [AIPMT 2011 (Prelims)]

(1) 50.00 u (2) 12.25 u (3) 6.50 u (4) 25.00 u

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Q.14 A gaseous mixture was prepared by taking equal moles of CO and N_2. If the total pressure of the mixture was found to be 1 atmosphere, the partial pressure of the nitrogen (N_2) in the mixture is
[AIPMT 2011 (Prelims)]

(1) 0.5 atm (2) 0.8 atm (3) 0.9 atm (4) 1 atm

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Q.15 The pressure exerted by 6.0 g of methane gas in a 0.03 m^3 vessel at 129°C is (Atomic masses : C = 12.01, H = 1.01 and R = 8.314 J K^{-1} mol^{-1})
[AIPMT 2010 (Mains)]

(1) 215216 Pa (2) 13409 Pa
(3) 41648 Pa (4) 31684 Pa

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ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	**1**	**4**	**4**	**2**	**1**	**4**	**2**	**3**	**3**	**2**	**3**
Ques.	12	13	14	15							
Ans.	**1**	**2**	**1**	**3**							