

O Level Pure Physics MCQs

Kinetic Particle Theory Test 2.0

Q1

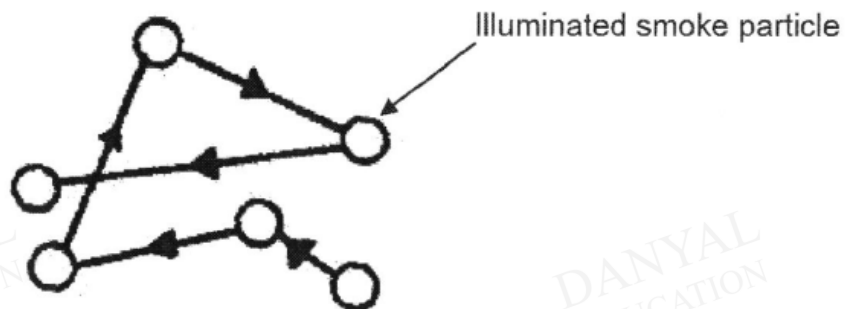
The volume of a gas is halved at constant temperature.
Which of the following changes is/are correct?

- 1 The frequency of collision increases.
- 2 The kinetic energy of the gas molecules increases.
- 3 The force of each collision increases.

- A** 1 only
- B** 2 only
- C** 1 and 3
- D** 2 and 3

Q2

An illuminated smoke particle, suspended in air, is viewed with a microscope.
It is seen to move randomly as shown below.



What does the motion of smoke particle tell us about the molecular movement of air molecules?

- A** air molecules are in continuous motion
- B** air molecules move in clusters
- C** air molecules move just as fast as smoke particles
- D** air molecules have the same amount of average kinetic energy at different temperatures

Q3

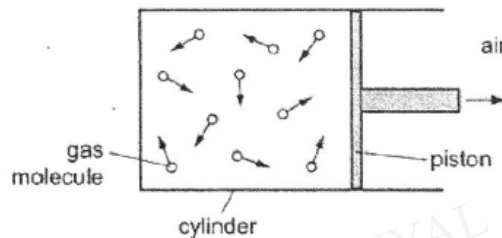
A fixed mass of gas is sealed in a container of fixed volume.
If the gas is heated, which of the following quantities will increase?

- (I) average speed of the gas molecules
- (II) average frequency of collision between gas molecules and container walls
- (III) average distance between the molecules

- A (I) only
- B (I) and (II) only
- C (I) and (III) only
- D (I), (II) and (III)

Q4

Gas inside a cylinder is heated slowly to a higher temperature. The pressure inside the cylinder remains constant as the piston moves outwards.



How do the speed of the gas molecules and their rate of collision with the piston compare with their initial values at the lower temperature?

- | | <u>speed of molecules</u> | <u>rate of collision</u> |
|---|---------------------------|--------------------------|
| A | greater | same |
| B | greater | greater |
| C | greater | reduced |
| D | same | greater |

Q5

19. A smoke cell observed under a microscope gives evidence for Brownian motion. This evidence is _____.

- A looking at smoke particles colliding with air molecules
- B observing smoke particles moving in a random manner
- C realizing that smoke particles can be seen when light falls on them from the side
- D determining that smoke particles travel at different speeds

Q6

Which statement explains how a pressure is exerted by a gas on a container?

- A Gas molecules collide with other gas molecules in the container.
- B Gas molecules collide with the walls of the container.
- C Gas molecules exert strong attractive forces on each other.
- D Gas molecules exert strong repulsive forces on each other.

Q7

A fixed mass of gas is heated while kept at constant volume. How do the properties of the molecules of the gas change?

	average speed	frequency of collision with walls	average distance apart
A	increases	decreases	increases
B	increases	increases	unchanged
C	decreases	unchanged	unchanged
D	decreases	increases	unchanged

Q8

A liquid is being heated.

Which statement is incorrect?

- A The molecules expand.
- B The molecules gain energy.
- C The molecules move further apart.
- D The molecules move faster.

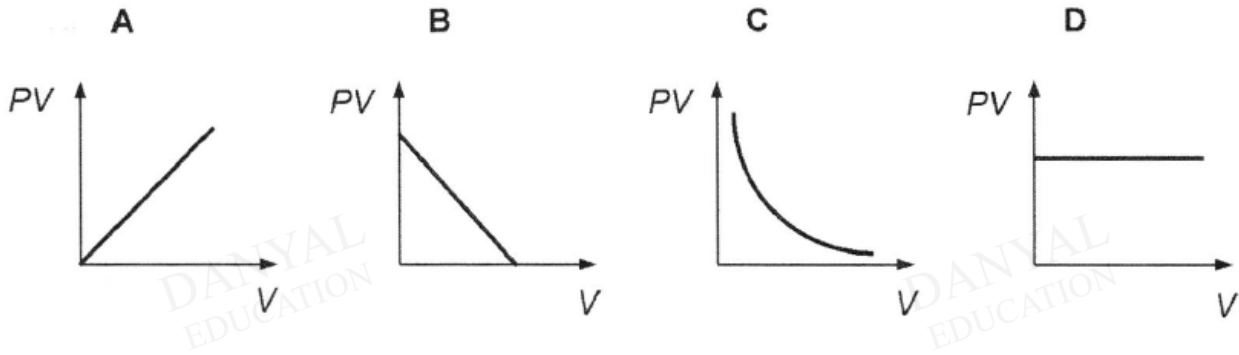
Q9

When a gas is heated in a closed metal container, the pressure rises because the gas molecules

- A expand.
- B hit the walls of the container more.
- C vibrate more often.
- D hit the walls of the container less.

Q10

An experiment is conducted to determine the relationship between the volume V of a fixed mass of gas and the gas pressure P in a closed container. Which of the following PV against V graphs is correct?



Answers

Kinetic Particle Theory Test 2.0

Q1 A

Q2 A

Q3 B

Q4 C

Q5 B

Q6 B

Q7 B

Q8 A

Q9 B

Q10 D

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