

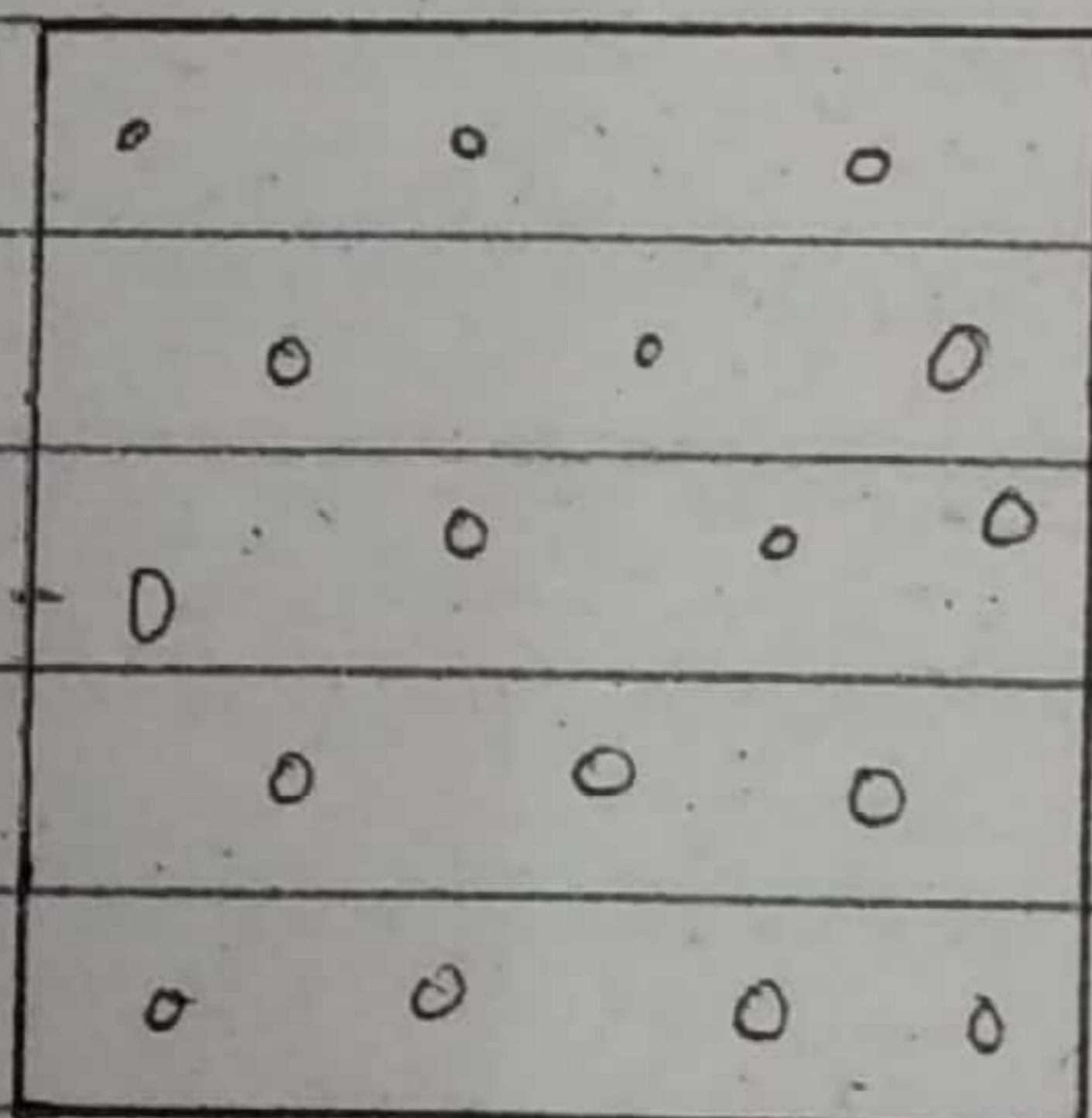
KINETIC MOLECULAR THEORY OF GASES

Mathematical Theory by Maxwell and Boltzmann in 1859 to explain the behaviour of gases and the gas laws.

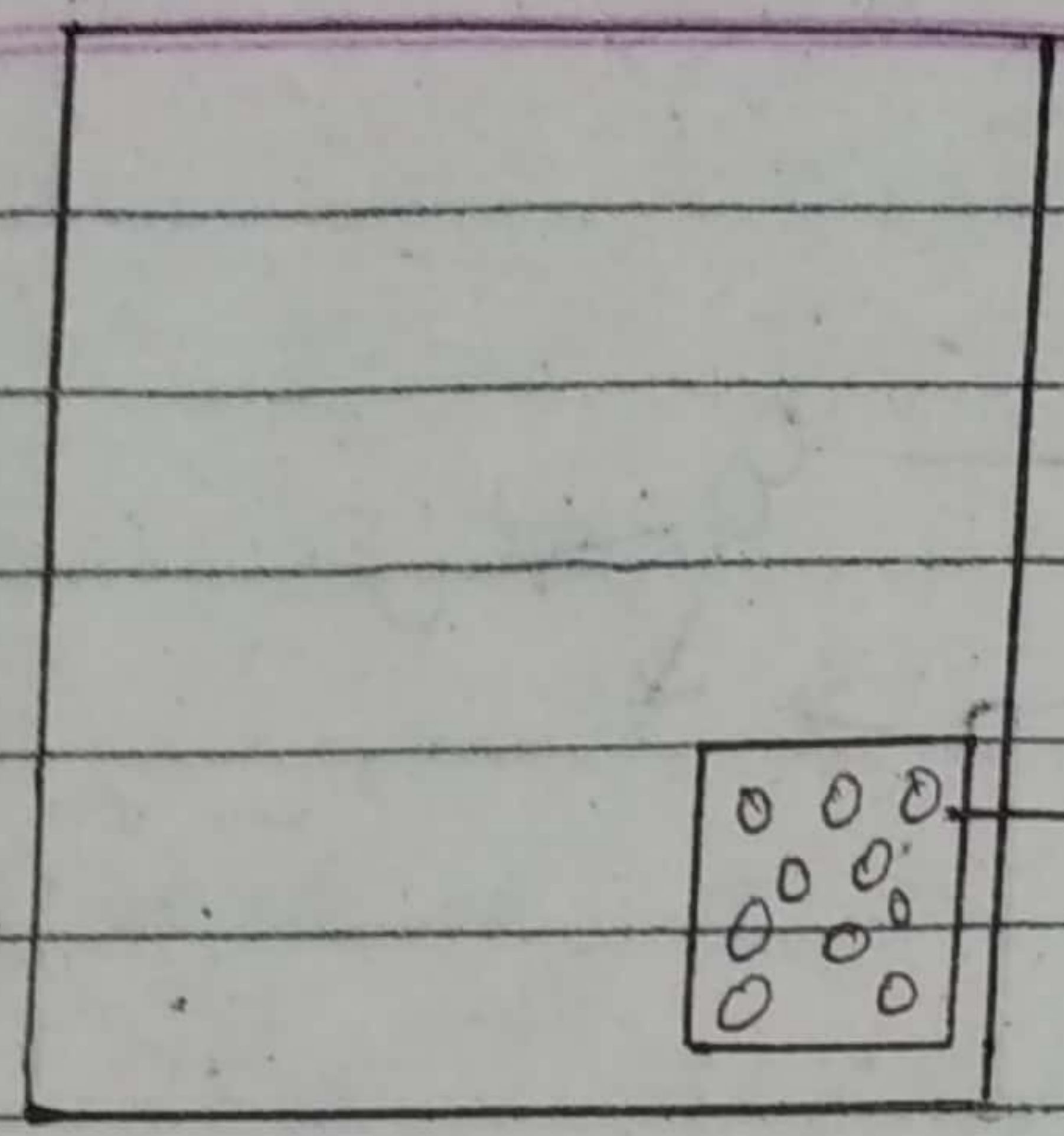
A gas is made of a large number of molecules in perpetual motion is known as kinetic theory of gases or kinetic molecular theory of gases.

Assumptions :

- i) A gas consists of extremely small discrete particles called dispersed throughout the container.

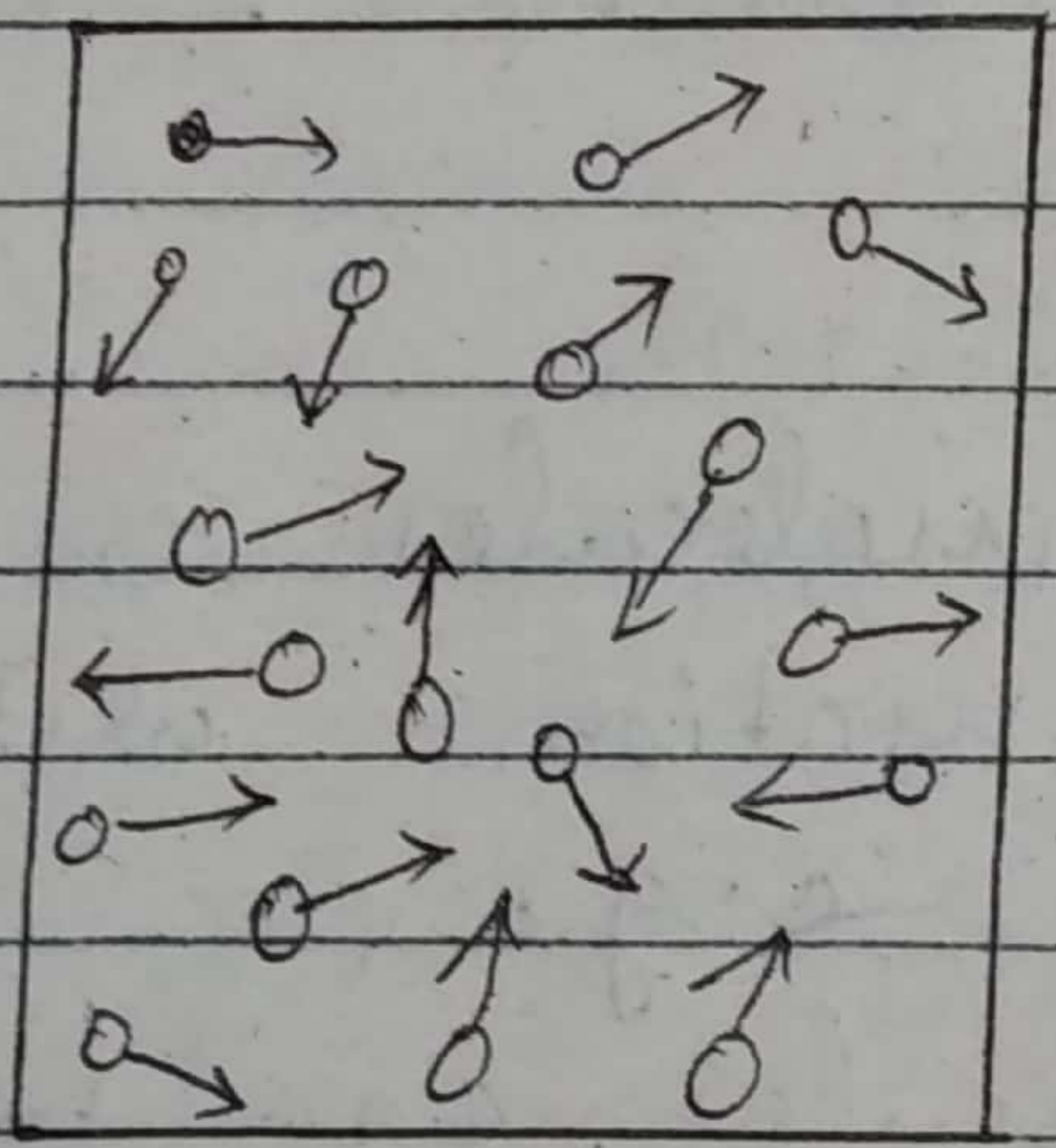


A gas is made of molecules dispersed in space in the container.



Actual volume of gas molecules

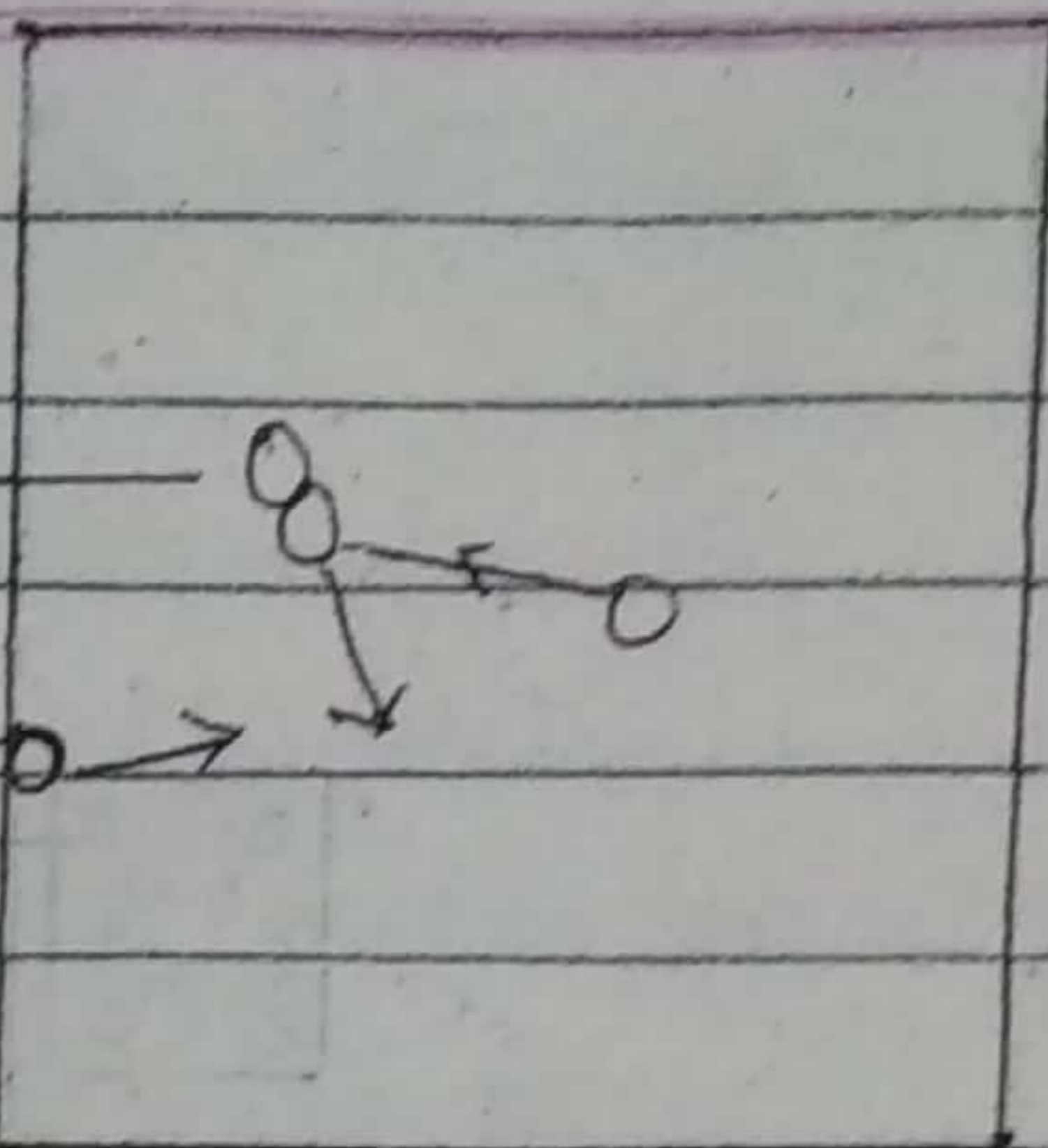
Actual volume of the gas molecule is negligible.



Gas molecules are in constant motion in all possible directions

Molecular
Collision

Collision
With Wall



Molecules move in straight line and change direction on collision with another molecule or wall of container.

(ii) Gas molecules are in constant random motion with high velocities. e.g.

Gas molecules can be compared to billiard balls in random motion, bouncing off each other and off the sides of the pool table.

(iii) The gas molecules can move freely, independent of each other. Means

Distance between the molecules are very large.

(iv) There is no loss of the kinetic energy of a molecule during a collision. means elastic

(v) The pressure of a gas is caused by the hits recorded by molecules on the walls of the container.

(vi) The average kinetic energy ($\frac{1}{2}mv^2$) of molecules is the same at a given temperature. means Average kinetic energy of the gas molecules is directly proportional to absolute temperature (Kelvin Temperature).

/// Ideal Gas: A gas that conforms to the assumptions. ///

Real gas: Cases are oppose to the assumptions i, ii and iii e.g. Hydrogen, Oxygen, Nitrogen etc.