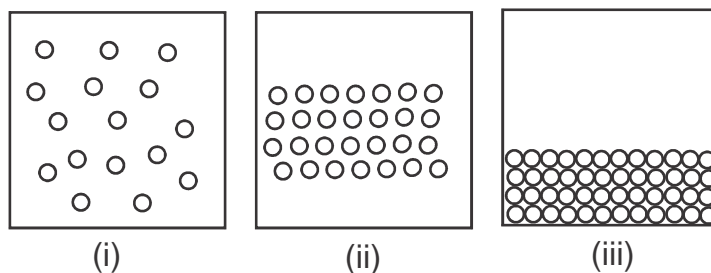


QUIZ: STATES OF MATTER

1. Given below are the figures showing particles of a matter in its three states at the same temperature and pressure and contained in separate containers of the same volume. The circles indicate the particles in the three states of a matter.



- Which figure shows minimum attraction between the particles of the matter?
- (a) Figure (i)
(b) Figure (ii)
(c) Figure (iii)
(d) The figures do not indicate any thing about the inter particle attraction.
2. Put some glass balls into a glass tumbler up to its 5-6 cm height. Add some salt to it. You will observe that there is no increase in the volume due to the addition of salt up to the level of glass balls. Considering the glass balls into a glass tumbler as particles of matter, which of the following statements is correct?
- (a) There is an attraction between the particles of matter.
(b) There is space between the particles of matter.
(c) There is repulsion between the particles of two matters.
(d) There is neither attraction nor repulsion between the particles of matter.
3. When an agarbati is lighted in one corner of a room, its fragrant smell takes just a few minutes to reach the other corner of the room. It is due to
- (a) The attraction between particles of air and fragrant vapours of agarbati.

- (b) The random collision between the particles of fragrant vapours of agarbati.
- (c) The collision between the particles of air and fragrant vapours of agarbati.
- (d) The repulsion between particles of air and fragrant vapours of lighted agarbati.

Use the following chart to answer questions **4-5**.

Given below are four sets of properties of different states of matter.

Chart

Set	Properties
(a)	Generally fixed shape and volume. On heating, it changes its state.
(b)	Fixed shape, size and volume. Change in volume on heating
(c)	No shape, fixed volume, on heating it changes its state.
(d)	No shape, no fixed volume, on heating, does not change shape.

4. Which set represents the properties of gas?

5. Which set represents the properties of liquid?

6. Which state of matter can undergo compression when pressure is applied over it?
 - (a) Solid
 - (b) Liquid
 - (c) Gas
 - (d) Both liquid & Gas

7. The graph in Fig.-1 shows the temperature changes during cooling of a gas at atmospheric pressure. Which of the following statements concerning this is/are correct?

1. Conversion of matter from liquid state to solid state is an endothermic process

2. The curve CD represents the solid state of a gas.
3. The curve BC represents latent heat of vapourisation.

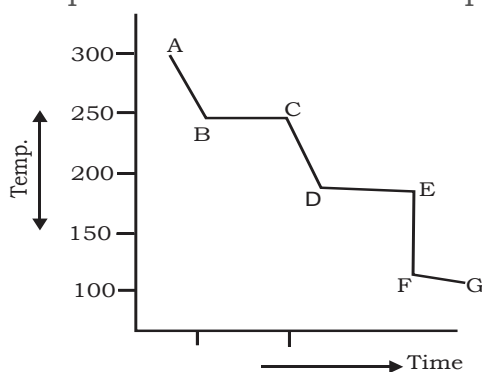


Fig. 1

- (a) 1 only
- (b) 3 only
- (c) 1 & 2 only
- (d) 2 only

Answers:

1. (a)

Options:

- (a) The attraction between the particles of the matter is related to inter particle distance. As the distance between the particles is maximum in Figure (i), the attraction between them is minimum.
- (b) The distance between the particles of matter is in between those in figure (i) and (iii). Therefore, the attraction between them is not minimum in Figure (ii)?
- (c) The inter particle distance in Figure (iii) is minimum and therefore the inter particle attraction is maximum.
- (d) The figures indicate the inter particle distances and therefore the inter particle attractions are also indirectly indicated.

2. (b)

Options:

- (a) Although there is attraction between the particles of matter but the volume increases on adding one matter into another only when (i) the space between the particles is negligibly small and (ii) the particles of matter to be added are bigger in size and do not occupy the empty inter particle space.
- (b) Correct. The salt particles occupy the space between the glass balls. The volume does not increase as long as the space between the glass balls is not filled up.

- (c) According to Van der Waals forces, there is an attraction between the particles of matter.
- (d) According to Van der Waals forces, there is an attraction between the particles of matter.

Explanation: The salt particles go down into the spaces between the glass balls.

3. (c)

Options:

- (a) The attraction between the particles of air and fragrant smell will not allow the particles of fragrant smell to travel from one place to another.
- (b) Although there occurs random collisions between the particles of fragrant smell, but the collisions are not strong enough to push them to the other corner of the room.
- (c) The collisions between the particles of fragrant smell and air push the particles of smell to the other corner of the room.
- (d) The particles of a matter or of two different matters attract each other.

Explanation:

The particles of lighted fragrant vapours collide with each other and also with the particles of air.

4. (d)

Options:

- (a) Represents properties of solid
- (b) Represents Properties of solid
- (c) Represents Properties of a liquid
- (d) Correct. Property of a gas. The particles of a gas move randomly and collide with one another.

5. (c)

Options:

- (a) Same as 4 (a)
- (b) Same as 4 (b)
- (c) Correct. Properties of a liquid. A liquid takes the shape of the vessel in which it is contained.
- (d) Properties of a gas.

6. (c)

Options:

- (c) Correct, the inter particle distance is large enough only in case of gas.

(a), (b) & (d) The particles in a solid and liquid are packed very closely. On applying pressure, these cannot be compressed further.

Explanation:

The inter particle distance between the gas particles is more than those of liquid and solid.

7. (b)

Options:

(a)-In the conversion from liquid to solid state, the particles lose energy in the form of heat and come closer. Therefore the process is exothermic.

(b)-Correct. At point B, the gas starts losing energy i.e. latent heat of vapourisation, up to point C where all the gas gets converted into liquid.

(c) & (d)- The curve CD represents liquid being cooled.

Explanation:

At point B, the gas releases heat and continues to do so up to the point C when it starts changing to liquid state.

Note for the teacher: A similar question can be framed on latent heat of fusion.