

Matter in our Surrounding Chemistry Questions with Solutions

Q1. Which of the following phenomena would increase on raising the temperature?

- (a) Evaporation, Diffusion and Expansion of Gas
- (b) Solubility, Evaporation, Diffusion and Expansion of Gas
- (c) Evaporation, Diffusion and Compression of Gas
- (d) Diffusion, Compression of Gas and Expansion of Gas

Answer: (a), Evaporation, Diffusion and Expansion of Gas increases with temperature rise.

Q2. What is the physical state of water at 100°C .

- (a) Liquid
- (b) Vapour
- (c) Both a and b
- (d) None of these

Answer: ©, At 100°C , water exist in the form of liquid and vapour.

Q3. Name the state of matter in which the particles move randomly because of a fragile force of attraction.

- (a) Solid
- (b) Liquid
- (c) Gas
- (d) All of these

Answer: ©, in gases particles, move randomly because of a fragile force of attraction.

Q4. Which of the following synthetic fibre resembles wool in its properties.

- (a) Rayon
- (b) Acrylic
- (c) Polyester
- (d) Nylon

Answer: (b), Acrylic is a synthetic fibre that resembles wool in its properties.

Q5. Which gas is used as a refrigerant in the fridge and air conditioners?

- (a) Neon
- (b) Fluorine
- (c) Freon
- (d) None of the above

Answer: ©, Freon gas is used as a refrigerant in the fridge and air conditioners.

Q6. Give reasons for the following observation:

The smell of hot sizzling food reaches you several meters away, but you have to go close to get the smell of cold food.

Answer: The smell of hot sizzling food comes several meters away because the particles of hot food have significant kinetic energy than cold food. Hence, the diffusion rate of hot food is more than that of cold food. Thus, the smell of hot sizzling food comes several meters away, but you have to go close to get the smell of cold food.

Q7. Liquids typically have less density than solids, but ice floats on water. Why?

Answer: Ice has ample space inside its 3D structure, because of which it becomes lighter than water. Thus it floats on water.

Q8. Match the following.

| Column I | Column II |
|------------------|--|
| Matter | Solid, Liquid and Gas |
| Solids | Causes cooling |
| Gases | Interparticle force of attraction is least |
| Evaporation | Synthetic process |
| States of Matter | Made of small particles |

Answer:

| Column I | Column II |
|------------------|--|
| Matter | Made of small particles |
| Solids | Incompressible |
| Gases | Interparticle force of attraction is least |
| Evaporation | Synthetic process |
| States of Matter | Solid, Liquid and Gas |

Q9. What are the requirements of a substance to be called matter?

Answer: The provisions of a substance to be called matter are mentioned below.

- It should occupy some space.
- It should have definite mass.
- It should exist in any state of matter, i.e. solid, liquid or gas.

- The five senses of our body should feel it.

Q10. What happens when you spew acetone on your palm?

Answer: Acetone has a shallow boiling point. It instantly vaporises into vapours. The evaporation of the liquid is an endothermic process. Thus, acetone takes up heat from the hand. Therefore, the palm immediately turns cold or even numb.

Q11. What is evaporation? What are various factors that affect the rate of evaporation?

Answer: Evaporation is a kind of vaporisation that generally occurs on a liquid surface and involves the transition of the liquid into a vapour state at any temperature below its boiling point. The evaporation of the liquid is affected by the following factors.

- Temperature
- Humidity
- Surface area
- Wind speed

Q12. Why do gold, silver and platinum occur in a free state?

Answer: Gold, Silver and Platinum exist in a free state because metals like platinum, gold and silver are noble metals. They do not readily mix with impurities such as silica, potassium etc. And even if they do mix, we can easily separate them by adding an acid to them. Hence, these metals are present in a free state.

Q13. Convert 49°C temperature to the kelvin scale:

Answer: Kelvin and Celsius are the two primary scales to measure the temperature. We can get its kelvin value by adding the 273 in degree Celsius scale.

Here degree celsius value is equivalent to 49°C .

Thus, its kelvin scale value would be $49 + 273 = 322\text{ K}$.

Q14. Differentiate between evaporation and boiling.

Answer:

| S. No. | Evaporation | Boiling |
|--------|--|--|
| | Evaporation is a natural process occurring when the liquid changes into a gaseous state. | Boiling is a synthetic process where the liquid gets heated up and vaporised due to heating. |
| | Evaporation takes place only at the surface of the liquid. | Boiling takes place in the entire body of the liquid. |
| | The bubbling effect is not visible in evaporation. | The bubbling effect is visual during boiling. |

| | | |
|--|-----------------------------------|------------------------------|
| | It is a prolonged process. | It is a fast process. |
|--|-----------------------------------|------------------------------|

Q15. Differentiate between solid, liquid and gas.

Answer:

| S. No. | Property | Solid | Liquid | Gas |
|--------|-------------------------|---|---|---|
| 1. | Shape | It has a fixed shape. | It has no definite shape. It attains the vessel's form in which it is kept. | It has no definite shape. It acquires the vessel's state in which it is kept. |
| 2. | Volume | It has a fixed volume. | It has a fixed volume. | It doesn't have a fixed volume. |
| 3. | Compressibility | It is incompressible. | It is slightly compressible. | It is highly compressible. |
| 4. | Rigidity/ Fluidity | They are rigid and can not flow. | They are not rigid and can flow. | They are not rigid and can flow. |
| 5. | Force of attraction | The force of attraction between particles is maximum. | The force of attraction between particles is less than solid but more than gases. | The force of attraction between particles is the least. |
| 6. | The motion of particles | Particles doesn't move freely. | Particles move freely but are confined within specific boundaries. | Particles move freely. |

Practise Questions on Matter in our Surrounding

Q1. Water as ice has a cooling effect, whereas water as steam may cause severe burns. Explain these observations.

Answer: In the case of ice, the water molecules have low energy, while in the case of steam, the water molecules have high energy. The high energy of water molecules in steam is transformed into heat and may cause burns. On the other hand, in the case of ice, the water molecules take energy from the body and thus, give a cooling effect.

Q2. We found a water sample under study to boil at 102°C at standard temperature and pressure. Is the water pure? Will this water freeze at 0°C ? Comment.

Answer: The boiling point of water is 100°C at 1atm. The freezing point of pure water is 0°C . The sample of water under study boils at 102°C at standard pressure. Hence, the sample is not pure water. Since the water sample is not pure, it will not freeze at 0°C . It will freeze at a temperature below 0°C .

Q3. How can you fasten evaporation?

Answer: Conditions that can increase the rate of evaporation of water are:

- An increase in the surface area can increase the evaporation rate of water.
- An increase in the temperature can increase the evaporation rate of water.
- An increase in the wind speed can increase the evaporation rate of water.

Q4. How will the evaporation rate affect by

- An increase in the wind speed?
- An increase in the moisture?
- A decrease in disclosed surface area?
- An increase in the temperature of the liquid?

Answer:

- The evaporation rate increases if wind speed increases.
- The evaporation rate decreases if the moisture content is high in the air.
- The evaporation rate decreases if the exposed surface area decreases.
- The evaporation rate increases if the temperature rises.

Q5. Mention a few properties of gases.

Answer: Properties of Gases:

- Gas does not have a fixed shape and a fixed volume.
- They have sizeable interparticle space and are highly compressible.
- They have the most negligible forces of attraction between the molecules.