



Solution: 21

Diffusion.

Solution: 22

Diffusion.

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Diffusion.

Solution: 24

(a) Diffusion; Brownian motion.

(b) Diffusion.

(c) States.

(d) Much more.

(e) Liquid; Gaseous.

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Solution: 25

(a) Diffusion:

(i) Matter is made up of tiny particles

(ii) The particles of matter are constantly moving.

(b) Brownian motion:

(i) The particles of matter are very, very small.

(ii) The particles of matter are constantly moving.

Solution: 26

Robert Brown suspended extremely small pollen grains in water and observed it through a microscope. It was found that pollen grains were moving very rapidly throughout the water in a very irregular way. He also observed that warmer the water, faster the pollen grains move on the surface of water. This phenomenon is known as the 'Brownian Motion'.

Solution: 27

It shows that each potassium permanganate crystal is made up of millions of small particles and particles of water have spaces between them.

Solution: 28

Both bromine gas and air is made up of tiny moving particles.

When a gas jar containing air is inverted over gas jar containing bromine vapour, both bromine and air molecules move and collide with one another and bounce about in all directions due to which we see a uniform red brown colour in both the jars.

Solution: 29

When salt is added to water and stirred, the tiny salt particles break off from each solid salt granule and fill up the spaces available between the particles of water and mix with them.

Solution: 30

Air is a gas whose particles are very far apart and there are very weak forces of attraction between them. Extremely weak forces between particles of air can be overcome easily due to which we can move our hand in air. On the other hand, the particles of a solid plank of wood are very closely packed and there are very strong forces of attraction between the particles of wood. Hence, it needs a huge outside force to overcome the strong inter particle attractions which only a karate expert can apply.

Solution: 31

If two metal blocks are bound together tightly and kept undistributed for a few years, then the particles of one metal are

found to have diffused into the other metal.

Solution: 32

The diffusion between solids is a very, very slow process because the particles in solids do not move from their fixed positions.

Solution: 33

Solids diffuse the slowest as the particles in solids do not move from their fixed positions.

Gases diffuse the fastest as the particles in gases move very quickly in all directions.

Solution: 34

The particles of gases produced by the burning of incense sticks move rapidly in all directions. They collide with the particles of air present in the room, mix with air and reach every part of the room quickly.

Solution: 35

Three states of matter are:

(i) The solid state - Ice.

(ii) The liquid state - Water.

(iii) The gas state - Air.

Solution: 36

(a) Characteristics of a solid:

(i) Solids have a fixed shape and fixed volume.

(ii) Solids do not flow.

(b) Characteristics of a liquid:

(i) Liquids have a fixed volume but no fixed shape, they take the shape of the vessel in which they are placed.

(ii) They generally flow easily.

(c) Characteristics of a gas:

(i) Gases can be compressed easily.

(ii) Gases fill their container completely.

Solution: 37

A gas does not have a fixed shape or fixed volume because the particles of gases do not have fixed positions or fixed spaces between them.

Solution: 38

(i) Solids - They have a fixed shape and a fixed volume.

(ii) Liquids - They have a fixed volume but no fixed shape.

(iii) Gases - They neither have a fixed shape nor a fixed volume.

Solution: 39

Oxygen < Water < Sugar.

Solution: 40

(a) Water is a liquid at room temperature because:

(i) Water has a fixed volume (which does not change on changing its container).

(ii) Water has no fixed shape (it takes the shape of the container in which it is kept).

(b) An iron almirah is a solid because:

(i) It has a fixed shape (which cannot be changed by pressing it with hands).

(ii) It has a fixed volume (which depends on the dimensions according to which it is made).

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