

Diffusion

Describe diffusion.

Diffusion

Where does the energy for diffusion come from?

Diffusion

Do substances cross the cell membrane by diffusion?

Diffusion

Give two examples of why diffusion is important in living organisms.

Diffusion

What four factors affect the rate of diffusion?

Diffusion

Why does a smaller agar cube change colour faster?

Diffusion

Surface area to volume ratio of a 2 cm cube?

Osmosis

Role of water as a solvent in organisms?

The kinetic energy of the random movement of molecules and ions.

The net movement of particles from a region of their higher concentration to a region of their lower concentration (i.e. down a concentration gradient), as a result of their random movement.

Oxygen enters cells for respiration; carbon dioxide enters leaf cells for photosynthesis; digested food diffuses into the blood; urea leaves cells.

Yes. Some substances move into and out of cells by diffusion through the cell membrane.

It has a larger surface area to volume ratio and a shorter distance for the acid to travel.

Surface area, temperature, concentration gradient and distance.

Substances dissolve in it for digestion, excretion (e.g. urea in urine) and transport (plasma, sap).

Surface area $24 \text{ cm}^2 \div$ volume $8 \text{ cm}^3 = 3 : 1$.

Osmosis

What moves by osmosis?

Osmosis

How does water move into and out of cells?

Osmosis

Why does a dialysis tubing bag of sugar solution gain mass in water?

Osmosis

Percentage change in mass formula?

Osmosis

What does a potato cylinder in a concentrated solution do?

Osmosis

How are plants supported by water?

Osmosis **Supplement**

Define osmosis using water potential.

Osmosis **Supplement**

Which has the higher water potential: a dilute or concentrated solution?

By osmosis through the cell membrane.

Water, through a partially permeable membrane.

$$\frac{(\text{final mass} - \text{initial mass})}{\text{initial mass}} \times 100.$$

Water enters by osmosis through the partially permeable tubing. The sucrose molecules are too large to leave.

The pressure of water inside the cells pressing outwards on the cell wall.

Loses mass, because water leaves its cells by osmosis.

A dilute solution. Pure water has the highest water potential.

The net movement of water molecules from a region of higher water potential (dilute solution) to a region of lower water potential (concentrated solution), through a partially permeable membrane.

Osmosis **Supplement**

Why does water enter root hair cells?

Osmosis **Supplement**

What is a turgid cell?

Osmosis **Supplement**

What is a flaccid cell?

Osmosis **Supplement**

What is plasmolysis?

Osmosis **Supplement**

Why do plant cells not burst in pure water?

Active transport

Define active transport.

Active transport

What is the energy source for active transport?

Active transport **Supplement**

Give an example of active transport in plants.

A plant cell full of water, with the cell contents pressing on the cell wall (turgor pressure).

The cells have a lower water potential than the soil water, so water enters by osmosis.

The cell membrane and cytoplasm pulling away from the cell wall after water leaves the cell by osmosis.

A plant cell that has lost water and turgor pressure, so it is soft.

The movement of particles through a cell membrane from a region of lower concentration to a region of higher concentration (i.e. against a concentration gradient), using energy from respiration.

The cell wall resists the expansion, so the cell becomes turgid.

Ion uptake by root hairs from very dilute soil solutions.

Respiration.

Active transport **Supplement**

Why do root hair cells have many mitochondria?

Active transport **Supplement**

What moves molecules or ions during active transport?

Protein carriers in the cell membrane.

To release the energy from respiration
needed for active transport of ions.