OCR A Biology A-level

PAG 11 - Investigation into the Measurement of Plant or Animal Responses

Flashcards

Outline the procedure to investigating the effect of exercise on heart rate.

Outline the procedure to investigating the effect of exercise on heart rate.

1. Measure the resting heart rate.
2. Do some gentle exercise, such as stepping on and off a step for 5 minutes. Immediately afterwards, measure the heart rate again.
3. Return to the resting position. Measure the heart rate every minute until it returns to the resting state.
4. Record the time taken to return to normal.
5. Repeat the experiment for different people (e.g. 8 people).

How is heart rate measured?

How is heart rate measured?

Place your fingers on your forearm. Count the number of beats in 15 seconds and multiply that by 4 to get the number of beats per minute.

Which test can be used to test if the effect of exercise is significant, and why?

Which test can be used to test if the effect of exercise is significant, and why?

T-test, because it is comparing 2 means.

What is phototropism?

What is phototropism?

The orientation of a plant in response to light.

What should be the controlled variables when investigating phototropism?

What should be the controlled variables when investigating phototropism?

Temperature, nutrient concentration, humidity, light intensity

How should the shoots be prepared?

How should the shoots be prepared?

1: Cover tips with foil

2: Cover base with foil

3: Leave without foil

What is geotropism?

What is geotropism?

The growth of plants in response to gravity.

Outline the procedure to investigating geotropism.

Outline the procedure to investigating geotropism.

1. Line three petri dishes with moist cotton wool.
2. Space out 10 cress seeds on the surface of the wool. Press them down in the wool slightly.
3. Put a lid on each dish. Wrap the dishes in foil to prevent light reaching the seeds. Leave the dishes where the temperature is constant and warm.
4. Set up the dishes so they're placed at different angles: 90, 45, 0 degrees.
5. Leave the seeds for 4 days.
6. After 4 days, unwrap each dish and note the direction of the shoot and root growth of cress seedlings. Record in a table.

What are the controlled variables for investigating geotropism?

What are the controlled variables for investigating geotropism?

Volume of water provided

Mass of cotton wool

Number of seeds

Exposure to light

Species of seed

Temperature

Time allowed for growth

What is the function of auxin in plants?

What is the function of auxin in plants?

It stimulates cell elongation for growth, and has a role in apical dominance.

What is apical dominance?

What is apical dominance?

Where the main stem inhibits the growth of lateral buds.

Outline the procedure to investigate the effect of auxin.

Outline the procedure to investigate the effect of auxin.

1. Select 30 plants similar in height, mass and age. Count the number of side shoots growing from the main stem.
2. Apply a paste with auxin to 10 plants, apply a past without auxin to another 10 plants, and leave the remaining 10 as they are.
3. Allow 6 days for the plants to grow.
4. Count the number of side shoots that have grown from the main stem.

What are the controlled variables of this practical?

What are the controlled variables of this practical?

Age, height, mass of plant

Species of plant

Temperature

Light intensity

Water

What is the role of gibberellins in plants?

What is the role of gibberellins in plants?

They have a role in germination and stem elongation.

Outline the procedure to find the effect of gibberellin on plant stem elongation.

Outline the procedure to find the effect of gibberellin on plant stem elongation.

1. Select 40 plants of similar height, age and mass.
2. Leave 20 to grow, and water the other 20 with a dilute gibberellin solution.
3. Leave the plants to grow for 28 days.
4. Measure the length of the stem of the plants every 7 days. Calculate the mean stem length.

Describe how a respirometer works.

Describe how a respirometer works.

It is a chamber connected to a manometer tube with a drop of manometer fluid. As the organism in the chamber respires and uses oxygen, the pressure decreases and the liquid moves in the manometer tube.

How is the rate of respiration calculated using data from the respirometer?

How is the rate of respiration calculated using data from the respirometer?

Rate =

Volume of oxygen used / mass / time

What are the controlled variables of this practical?

What are the controlled variables of this practical?

Mass of organism

Time

Temperature

Mass of soda lime

Apparatus must be airtight, and replace air between each set-up

What does the change in volume in the manometer tube indicate?

What does the change in volume in the manometer tube indicate?

The volume of oxygen consumed by the organism.