Delegate Booklet

Course Title: Understanding assessment and improving delivery in International GCSE Biology 4BI1-20IF1

Online

Part 2

Prepared by Pack Production 2016

About this event

Course Title: Understanding assessment and improving delivery in International GCSE Biology

Course Code: 4BI1-20IF1

Aims and Objectives of the event

1. Be introduced to the idea of assessment objectives: what are they and why they are used when writing examination papers,
2. Analyse recent question papers and learn which types of question match the different assessment objectives,
3. Investigate different assessment objectives, considering how questions in these areas have been answered by looking at feedback from previous exam series,
4. Discuss strategies for teaching to try and make sure students can access questions targeting different assessment objectives,
5. Review the support Pearson offers for the qualification,
6. Network, discuss best practice and share ideas with other teachers.

Agenda

Time	Item
4 pm	Welcome
	Agenda & Introductions
4.10 pm	International GCSE features / Introduction to the new Edexcel International GCSE in Biology
	Assessment Objectives What are they?
4.30 pm	Looking at student responses AO2 How to improve AO2 skills
5.15 pm	Looking at student responses AO3 How to improve AO3 skills
5.45 pm	Lessons from the examinations
6 pm	Final questions

Activity 1 – How were 2019 papers different from previous ones?

Purpose:

- Review the impact of assessment and specification changes on centres and candidates

Task 1

1. Consider how the reformed papers were different from those from the previous specification.
2. Write down four observations from your centre or from your students.
3. Compare your observations with other delegates on your table.

Activity 1 – Assessment Objective 2 Looking at student responses

Purpose:

- Look at student responses to AO2 items from June 2019 paper 1B
- See how assessment objective is examined
- Appreciate how differences in candidate responses result in different marks
- Understand how mark scheme is applied

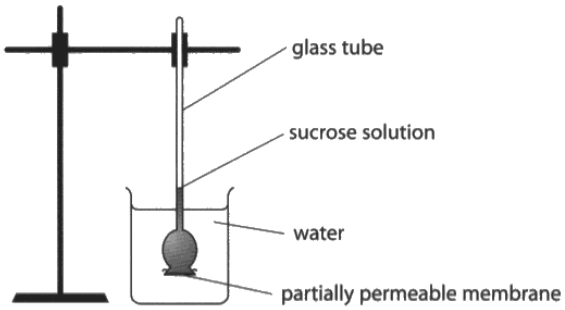
Task 1

1. Look at Question 4a.
2. Without reference to published mark scheme rank order samples A–D.
3. Compare your order with other delegates.
4. Now use published mark scheme to mark samples A–D.
5. Compare your marks with those of other delegates.

Pearson

Sample A

4 This apparatus can be used to show osmosis.



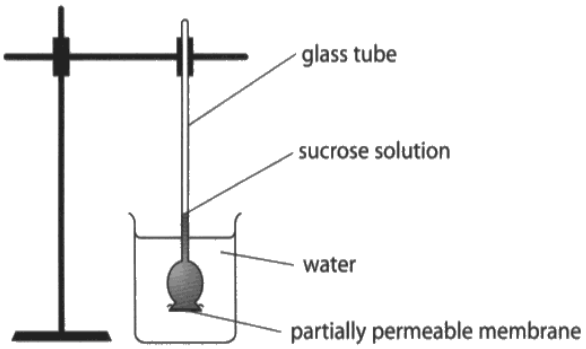
(a) Explain what happens to the level of the sucrose solution in the glass tube.

(3)

The sucrose solution will pass through the partially permeable membrane and disperse into the water of lower concentration through osmosis.

Sample B

4 This apparatus can be used to show osmosis.



(a) Explain what happens to the level of the sucrose solution in the glass tube.

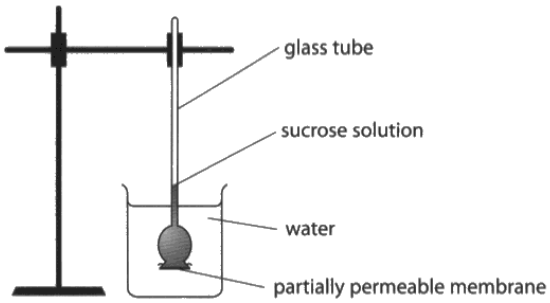
(3)

As the water has a higher water potential than the sucrose solution the water would move through the partially permeable membrane) down the water potential gradient by osmosis into the ~~so~~ sucrose solution. The level of the solution would actually increase as although the amount of sucrose is the same there would be more water and so a larger volume inside the glass tube

Pearson

Sample C

4 This apparatus can be used to show osmosis.



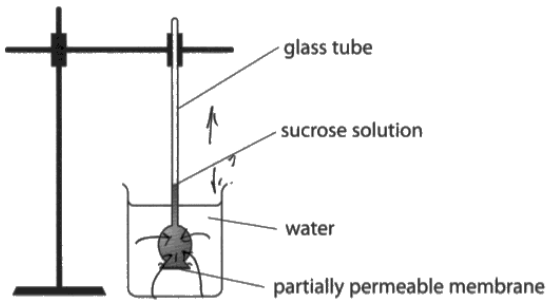
(a) Explain what happens to the level of the sucrose solution in the glass tube.

(3)

The level of the sucrose solution in the glass tube will decrease because the sucrose solution has a higher water potential than the water. Osmosis is the movement of water molecules from an area of higher water potential to an area of lower water potential across a partially permeable membrane. The ~~sucrose~~ solutions will have the same water potential after the water and sucrose solution have mixed. The sucrose molecules will move across the partially permeable membrane into the water.

Sample D

4 This apparatus can be used to show osmosis.



(a) Explain what happens to the level of the sucrose solution in the glass tube.

(3)

It will rise. This is because the sucrose solution has a lower water potential (wp) than the surrounding water in the beaker. The water goes into the solution via osmosis and so increases the volume of the solution, making the level rise.

Activity 2 – Assessment Objective 2 Looking at student responses

Purpose:

- Look at student responses to AO2 items from June 2019 paper 1B
- See how assessment objective is examined
- Appreciate how differences in candidate responses result in different marks
- Understand how mark scheme is applied

Task 1

1. Look at Question 5b(iii).
2. Without reference to published mark scheme rank order samples A–D.
3. Compare your order with other delegates.
4. Now use published mark scheme to mark samples A–D.
5. Compare your marks with those of other delegates.

Pearson

Sample A

(iii) The student measures the distance moved by the coloured liquid and converts this to volume of oxygen absorbed.

The volume of oxygen absorbed can be calculated using the formula

volume = $\pi \times \text{radius}^2 \times \text{distance}$

Calculate the volume of oxygen absorbed when the coloured liquid moves a distance of 6.0 mm.

0.6 cm

[diameter of tube = 1.0 mm]

0.1 cm

(3)

$\pi \times 0.5^2 \times$

$\pi \times 0.05^2 \times 0.6 =$

volume = 4.71×10^{-3} cm³

Sample B

(iii) The student measures the distance moved by the coloured liquid and converts this to volume of oxygen absorbed.

The volume of oxygen absorbed can be calculated using the formula

volume = $\pi \times \text{radius}^2 \times \text{distance}$

Calculate the volume of oxygen absorbed when the coloured liquid moves a distance of 6.0 mm.

[diameter of tube = 1.0 mm]

(3)

$\pi \times 0.5^2 \times 6.0$

$= \frac{3}{2}\pi$

$= 4.71$ (7.5.8:)

$= 0.471$

(cm)

0.00471

volume = cm³

$\pi \times 0.05^2 \times 0.6$

$= 4.71 \times 10^{-3}$

$= 0.00471$

Sample C

(iii) The student measures the distance moved by the coloured liquid and converts this to volume of oxygen absorbed.

The volume of oxygen absorbed can be calculated using the formula

volume = $\pi \times \text{radius}^2 \times \text{distance}$

Calculate the volume of oxygen absorbed when the coloured liquid moves a distance of 6.0 mm.

[diameter of tube = 1.0 mm]

(3)

$\pi \times 0.5\text{mm} \times 6\text{mm}$

or

$0.05\text{cm} \times 0.6\text{cm}$

$\pi \times 0.05^2 \times 0.6$

(3y)

volume = 4.71×10^{-3} cm^3

Sample D

(iii) The student measures the distance moved by the coloured liquid and converts this to volume of oxygen absorbed.

The volume of oxygen absorbed can be calculated using the formula

volume = $\pi \times \text{radius}^2 \times \text{distance}$

Calculate the volume of oxygen absorbed when the coloured liquid moves a distance of 6.0 mm.

[diameter of tube = 1.0 mm]

(3)

$\pi \times 0.5^2 \times 6$

(3.g)

volume = 4.71 cm^3

Pearson

Activity 3 – Assessment Objective 3 Looking at student responses

Purpose:

- Look at student responses to AO3 items from June 2019 paper 1B
- See how assessment objective is examined
- Appreciate how differences in candidate responses result in different marks
- Understand how mark scheme is applied

Task 1

1. Look at Question 4b.
2. Without reference to published mark scheme rank order samples A–D.
3. Compare your order with other delegates.
4. Now use published mark scheme to mark samples A–D.
5. Compare your marks with those of other delegates.

Sample A

(b) Describe how this apparatus could be modified to measure the rate of osmosis at different temperatures.

(3)

Use multiple water beakers and place each one in a different water bath, at different temperatures (5°c apart). Place the glass tube into the water beaker as before and record the time it takes for the concentration gradient to balance, using a stop watch.

Pearson

Sample B

(b) Describe how this apparatus could be modified to measure the rate of osmosis at different temperatures.

(3)

The apparatus could be modified be putting the visking tube into a water bath at different temperatures, increasing it by 10°C each time. The ~~longest~~ time should be measured for how long it takes for the level of solution to rise to a certain point, the higher the temperature the faster the level rises

Sample C

(b) Describe how this apparatus could be modified to measure the rate of osmosis at different temperatures.

(3)

The heater could be replaced by a water bath, with a thermometer to control the temperature. The time taken for the sucrose level to rise under a range of temperatures could be recorded. We could measure how long it takes for the solution to reach a certain height, which can be measured using a ruler. We would also need a stop watch to record the time.

Pearson

Sample D

(b) Describe how this apparatus could be modified to measure the rate of osmosis at different temperatures.

(3)

Use a water bath to heat the water at different temperatures (Water temperature is independent variable), then at different water temperatures measure how long it takes (using a stopwatch) for the sucrose solution to rise to a desired point (use a ruler to measure the change in height), then repeat at different temperatures and make sure to keep same concentration and volume of sucrose solution in the tube.

Activity 4 – Assessment Objective 3 Looking at student responses

Purpose:

- Look at student responses to AO3 items from June 2019 paper 1B
- See how assessment objective is examined
- Appreciate how differences in candidate responses result in different marks
- Understand how mark scheme is applied

Task 1

1. Look at Question 10c.
2. Without reference to published mark scheme rank order samples A–D.
3. Compare your order with other delegates.
4. Now use published mark scheme to mark samples A–D.
5. Compare your marks with those of other delegates.

Sample A

(c) Plant growth substances stimulate root growth from a cut stem.

Describe an investigation to find the best concentration of plant growth substance to stimulate root growth.

You should include experimental details in your answer and write in full sentences.

(6)

CORMMSS

Change the concentration of the the plants growth substance used during the experiment in different tests. Use a plant e.g daisy or some type of tree. Use the same species of plant everytime during the test to make it fair. Measure the amount grown by the plant in the same time period each in each test. Compare the results and measure the difference. Repeat and take average of experiment. The concentration that has the most root growth is the best one.

Pearson

Sample B

(c) Plant growth substances stimulate root growth from a cut stem.

Describe an investigation to find the best concentration of plant growth substance to stimulate root growth.

You should include experimental details in your answer and write in full sentences.

(6)

~~Place~~ Cut 4 stems from the same plant and place them in 4 seperate pots in soil. The plant species should be the control variable as well as the length of the cut stem. Then get 4 seperate plant growth substances with different concentrations (for example 1%, 5%, 10% and 20%.) This will be the dependent variable. Then use one plant growth substance on one of the ~~plant cut~~ stems. Label which one was used for which stem. ~~each for a different one~~. Then the others ~~on~~ plant growth substances on the other stems. Place all 4 stems in the same place with the same temperature, access to sunlight and amount of water given. These are all control variables. Then wait 30 days and see which stem has caused the longest root growth. Record your results and repeat to get accurate results and see which concentration ~~has the best~~ stimulates root growth the best.

(Total for Question 10 = 11 marks)

TOTAL FOR PAPER = 110 MARKS

Pearson

Sample C

(c) Plant growth substances stimulate root growth from a cut stem.

Describe an investigation to find the best concentration of plant growth substance to stimulate root growth.

You should include experimental details in your answer and write in full sentences.

(6)

Take 5 disjerent stem cuttings all grom the same plant* & be 5 disjerent concentrations g plant growth substances with the same dissference in concentration between them. Then leave them to grow gor a set period g time e.g 5 days. You should keep all g the other variables the same like the same light, same volume g water, same temperature. Then agter the period g time remove the stems grom the plant growth substance and reweigh them. the heaviest plant has had the highest root growth. You should then repeat your experiment and plot your results on a graph.

* They should all be the same weight aswell.

Pearson

Sample D

(c) Plant growth substances stimulate root growth from a cut stem. CORMS

Describe an investigation to find the best concentration of plant growth substance to stimulate root growth.

You should include experimental details in your answer and write in full sentences.

(6)

~~change the concentration of plant growth~~ substance ~~each time~~

Change the concentration of plant growth substance each time as the independent variable. Measure the root growth at each different concentration. Use the same species of plant, the same soil, the same temperature, the same water availability and the same age of plant. Repeat the experiment for more accurate results.

PERSONAL LEARNING

Things to do:

-
-
-
-
-

Things to avoid

-
-
-
-
-

Your ideas: