

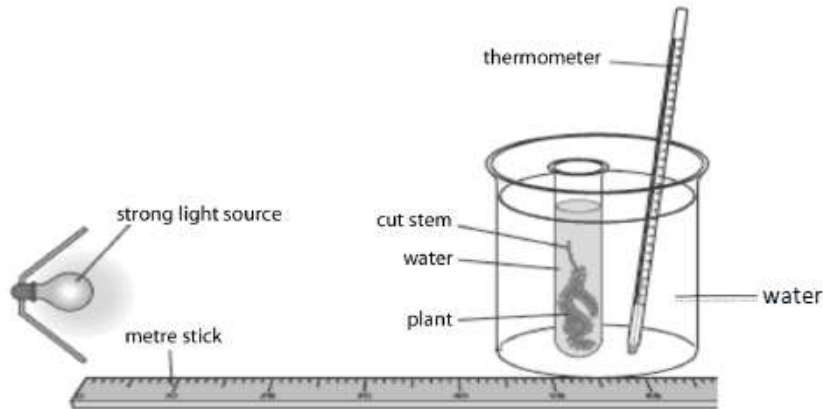


**Biology**  
**Leaving Certificate**  
**Ordinary Level**

**Past Exam Questions on**  
**Experiment Questions**

**Q7 Section B 2013**

7. (a) (i) Where in a plant cell does photosynthesis take place?.....
- (ii) Name the gas released during photosynthesis.....
- (b) Answer the following questions in relation to an investigation that you carried out to study the effect of light intensity or carbon dioxide concentration on the rate of photosynthesis.



Tick the factor you will refer to.

Light intensity	<input type="checkbox"/>
CO <sub>2</sub> concentration	<input type="checkbox"/>

- (i) Name the plant that you used.....
- (ii) How did you vary the light intensity or the carbon dioxide concentration?  
.....
- (iii) Name **one** factor that you kept constant during the investigation.  
.....
- (iv) How did you keep that factor constant?  
.....
- (v) How did you measure the rate of photosynthesis?  
.....  
.....
- (vi) What was the result of your investigation?  
.....  
.....  
.....

## Q7 Section B 2012

7. (a) (i) Name one disorder of the human breathing system. \_\_\_\_\_  
(ii) Give one possible treatment for the disorder referred to above. \_\_\_\_\_  
\_\_\_\_\_

- (b) Answer the following questions about an activity that you carried out to investigate the effect of exercise on your breathing rate or your pulse rate.

Tick the rate you will refer to.

Breathing Rate	
Pulse Rate	

- (i) The investigation starts by measuring the resting rate. How did you measure the resting rate?

\_\_\_\_\_  
\_\_\_\_\_

- (ii) After measuring your resting rate, what other steps did you carry out to complete the investigation?

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- (iii) What was the result of your investigation?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- (iv) Does this investigation give the same result for both fit and non-fit people? \_\_\_\_\_

- (v) Give a reason for your answer.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Q9 Section B 2012

9. (a) Give two reasons why water is important for all living organisms.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(b) Answer the following questions in relation to food tests that you carried out as part of your practical work.

(i) What chemical did you use to test the food for starch? \_\_\_\_\_

(ii) Was heat necessary for this test? \_\_\_\_\_

(iii) How did you know that starch was present?

\_\_\_\_\_

(iv) What control did you use in this test?

\_\_\_\_\_

\_\_\_\_\_

(v) Another food was tested for the presence of protein.  
What solution was used to test for protein?

\_\_\_\_\_

(vi) What was the initial colour of the protein-testing solution before you put it on the food?

\_\_\_\_\_

(vii) Was heat necessary for this test? \_\_\_\_\_

(viii) What colour indicated that protein was present in the food?

\_\_\_\_\_

**Q7 Section B 2011**

7. (a) Draw a labelled diagram of a single, reproducing, yeast cell.

(b) Answer the following questions in relation to your investigation into the growth of leaf yeast.

(i) From what plant did you obtain the yeast?

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(ii) Name the nutrient medium on which you grew the yeast.

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(iii) Outline the steps you followed to get the yeast cells onto the nutrient medium.

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(iv) How long did it take for the yeast to become visible on the nutrient medium?

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(v) How did you recognise the yeast?

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(vi) Describe **one** aseptic technique you carried out during this investigation.

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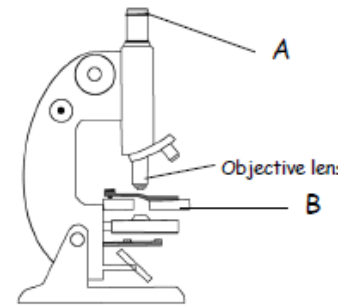
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**Q9 Section B 2011**

9. (a) Name the parts of the light microscope labelled A and B.

A. \_\_\_\_\_

B. \_\_\_\_\_



(b) Answer the following questions in relation to obtaining and staining a sample of plant cells and viewing them under the microscope.

(i) From what plant did you obtain the cells?

\_\_\_\_\_

(ii) How did you obtain a thin piece of a sample of the cells **and** prepare it for examination?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(iii) What stain did you use on the cells?

\_\_\_\_\_

(iv) Describe how you applied the stain.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(v) The objective lenses on a microscope are usually labelled 40X, 10X, and 4X. Which objective lens should you begin with when using the microscope?

\_\_\_\_\_

(vi) Give **one** cell structure that you observed that indicated that the cells were plant cells.

\_\_\_\_\_

## Q7 Section B 2010

7. In one of your laboratory activities you isolated DNA from a plant tissue.

(a) (i) Where in plant cells is DNA found? \_\_\_\_\_

(ii) What is meant by DNA profiling? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

(b) (i) Give **one** reason why you first chopped the plant material into very small pieces.

\_\_\_\_\_

(ii) Detergent and salt were added to the chopped plant material, which was then heated.

Explain why the detergent was used. \_\_\_\_\_

\_\_\_\_\_

(iii) **How** was this mixture heated?

\_\_\_\_\_

(iv) **Why** was this mixture heated?

\_\_\_\_\_

(v) Later in the activity the mixture was blended for a maximum of 3 seconds.

What would happen to the DNA if the mixture was blended for longer than 3 seconds?

\_\_\_\_\_

(vi) Protease was then added to the mixture.

Why was protease added?

\_\_\_\_\_

(vii) The mixture was then filtered.

After filtration, where was the DNA of your plant tissue to be found?

\_\_\_\_\_

(viii) What should you do next to make the DNA visible?

\_\_\_\_\_

## Q8 Section B 2010

8. (a) (i) What is an enzyme? \_\_\_\_\_

(ii) Explain what is meant by the term *pH*. \_\_\_\_\_

\_\_\_\_\_

(b) Answer the following questions in relation to your investigation into the effect of pH on the rate of enzyme activity.

(i) Name the enzyme you used in this investigation. \_\_\_\_\_

(ii) Name

1. The substrate of this enzyme. \_\_\_\_\_

2. The product of this enzyme. \_\_\_\_\_

(iii) Draw a labelled diagram of the apparatus you used in your investigation.

(iv) How did you vary the pH? \_\_\_\_\_

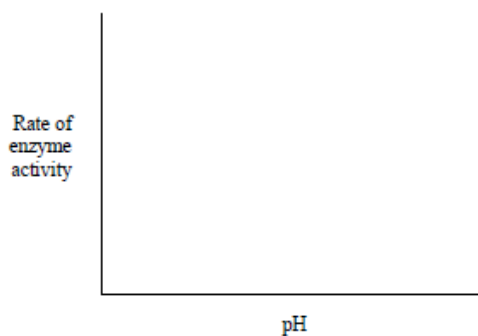
\_\_\_\_\_

(v) Name **one** factor you kept constant. \_\_\_\_\_

(vi) How did you keep the named factor constant? \_\_\_\_\_

\_\_\_\_\_

(vii) Draw a graph, on the axes given below, to show the results of this investigation.





### Q9 Section B 2010

9. (a) (i) In biology, what is meant by the term *organ*? \_\_\_\_\_

\_\_\_\_\_

(ii) In school, a light microscope is normally used to examine cells and tissues.  
Name a more powerful type of microscope that is used to show what cells are made of in much greater detail (cell ultrastructure).

\_\_\_\_\_

(b) Answer the following questions in relation to how you prepared and examined with a microscope a transverse section (T.S.) of a dicotyledonous stem.

(i) Name the plant that you used. \_\_\_\_\_

(ii) How did you make a section of the stem and prepare it for examination?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

(iii) Describe how you examined your section of stem once you had placed the slide on the stage of the microscope.

\_\_\_\_\_

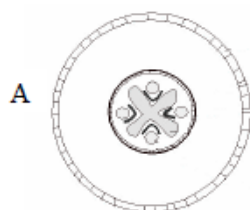
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(iv) Which of the following diagrams, A or B, best represents what was seen on your slide?

\_\_\_\_\_



## Q7 Section B 2009

7. (a) The main ingredient in a sports drink is water.

(i) Give **one** reason why the body needs water.

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(ii) Give **one** way in which water is lost from the body.

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(b) The composition of a **colourless** sports drink is to be investigated. Use your knowledge of food testing to answer the following:

1. (i) Name the test **or** name the chemical used to test the sports drink for the presence of glucose (reducing sugar).

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(ii) If glucose is present in the drink, what colour change would you expect to see? In your answer give the **initial and final** colour of the test solution.

---

(iii) Is heat necessary for this test?

---

2. (i) Name the test **or** give the chemicals used to test the sports drink for the presence of protein.

---

(ii) If protein is present in the drink, what colour change would you expect to see? In your answer give the **initial and final** colour of the test solution.

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(iii) Is heat necessary for this test?

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**Q8 section B 2009**

8. (a) (i) Define the term *osmosis*. \_\_\_\_\_

\_\_\_\_\_

(ii) Give an example of osmosis in plants. \_\_\_\_\_

\_\_\_\_\_

(b) Answer the following questions in relation to practical work you carried out to investigate osmosis.

(i) In the space below draw a labelled diagram of the apparatus you used in the investigation.

(ii) Describe how you used this apparatus to carry out the investigation.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(iii) State the result(s) of your investigation.

\_\_\_\_\_

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(iv) Briefly explain the result(s) you have given in part (iii).

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\_\_\_\_\_

**Q7 Section B 2007**

7. It is important to use sterile apparatus when working with micro-organisms.

(a) (i) What is meant by sterile? \_\_\_\_\_

(ii) How may apparatus be sterilised? \_\_\_\_\_  
\_\_\_\_\_

(b) Answer the following questions about an investigation that you carried out to show the growth of leaf yeast.

(i) Name the container in which you grew the leaf yeast. \_\_\_\_\_  
\_\_\_\_\_

(ii) What was present in this container to provide food for the yeast?  
\_\_\_\_\_  
\_\_\_\_\_

(iii) Describe how you put leaf yeast into the container. \_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_  
\_\_\_\_\_

(iv) How long did it take for the leaf yeast to appear? \_\_\_\_\_  
\_\_\_\_\_

(v) Describe the appearance of the leaf yeast in the container.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Q8 Section B 2008**

8. (a) State the location in the human body of the following muscles which are used for breathing:

(i) diaphragm \_\_\_\_\_

(ii) intercostals \_\_\_\_\_

(b) Answer the following questions about an activity that you carried out to investigate the effect of exercise on the breathing rate or pulse of a human.

(i) At the start of the investigation you asked the person who was about to do the exercise to sit down for a few minutes. Explain the purpose of this. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

(ii) How did you measure the breathing rate or the pulse?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(iii) Describe how you conducted the investigation after the period of rest.

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(iv) State the results of your investigation. \_\_\_\_\_

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**Q9 Section B 2008**

9. (a) (i) What is meant by the germination of seeds? \_\_\_\_\_  
\_\_\_\_\_

(ii) Seeds may remain inactive for a period before germination. What term is used to describe this period of inactivity? \_\_\_\_\_

(b) Answer the following questions about an investigation that you carried out on the effect of water, oxygen and temperature on germination.

(i) What seeds did you use? \_\_\_\_\_

(ii) Explain how you set up a control for the investigation.  
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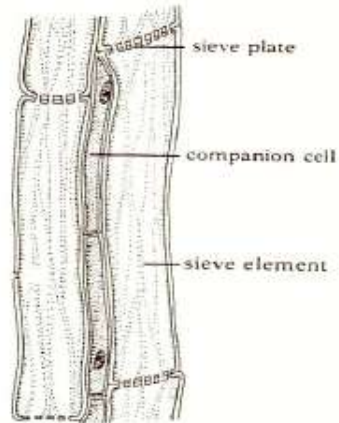
(iii) How did you deprive some of the seeds of oxygen?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(iv) How did you ensure that some of the seeds were deprived of a suitable temperature for germination? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(v) State the results of the investigation, including those of the control.  
\_\_\_\_\_  
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\_\_\_\_\_

### Q15 Part (a) Section C 2008

- (a) (i) Water enters the roots of plants by osmosis. Explain what is meant by osmosis.  
(ii) Describe how you demonstrated osmosis as part of your practical activities.  
(iii) Name the tissue that transports water from the root to the leaves.  
(iv) Mention **one** way in which the tissue you have named in (iii) is adapted for the transport of water.  
(v) The diagram below shows another tissue that is involved in transport in plants. Name this tissue and name a substance that is transported in it.



**Q7 Section B 2007**

7. (a) (i) Is an enzyme a lipid, a protein or a carbohydrate? .....

(ii) Where in a cell are enzymes produced? .....

(b) As part of your practical activities you investigated the effect of temperature on the rate of activity of an enzyme.

(i) Name the enzyme that you used .....

(ii) Name the substrate with which the enzyme reacts .....

(iii) How did you vary the temperature? .....

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(iv) How did you keep a constant pH during the investigation?

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(v) How did you measure the rate of activity of the enzyme?

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(vi) What was the result of your investigation?

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**Q8 Section B 2007**

8. (a) (i) State **one** reason that your body needs protein.....

.....

(ii) Name the element, other than carbon, hydrogen and oxygen, which is always found in protein.

.....

(b) Answer the following questions in relation to tests that you carried out for protein.

(i) Name **two** foods in which you found protein.

1. ....

2. ....

(ii) What reagent or chemicals did you use to test for protein?

.....

.....

(iii) Was heat necessary in the test that you carried out?.....

(iv) What was the initial colour of the reagent or chemicals? .....

(v) What colour change occurred if protein was present?.....

.....

.....

(vi) Was there a colour change in the control? .....

**Q9 Section B 2007**

9. (a) (i) What is meant in ecology by a quantitative survey? .....

.....  
.....

(ii) What is a quadrat frame? .....

.....  
.....

(b) Answer the following questions in relation to a quantitative survey of plants that you carried out.

(i) How did you use the quadrat frame to carry out the survey?.....

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(ii) Why did you use a number of quadrats or use the quadrat frame a number of times?

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.....

(iii) How did you identify the plants? .....

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.....

(iv) How did you present your results? .....

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.....  
.....

(v) Is the quadrat method suitable for animal populations? .....

Explain your answer .....

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.....  
.....

**Q7 Section B 2006**

7. (a) (i) Name the chamber of the heart that receives blood back from the lungs.  
.....
- (ii) Name the blood vessels that bring this blood back from the lungs.  
.....
- (b) Answer the following in relation to the dissection of a heart.
- (i) What instrument did you use for the dissection? .....
- (ii) Describe how you carried out the dissection. ....  
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- (iii) Draw a diagram of the dissected heart and on it label the following:  
bicuspid valve, left ventricle, right atrium, tricuspid valve.

## Q8 Section B 2006

8. (a) (i) What is meant in ecology by a **quantitative** survey? .....
- .....
- .....
- (ii) What is a **quadrat frame**? .....
- .....
- (b) (i) In the case of a **named** plant describe how you would carry out a **quantitative** survey in the ecosystem that you have studied. ....
- .....
- .....
- .....
- .....
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- .....
- (ii) Describe how you recorded the results of your survey. ....
- .....
- .....
- .....
- .....
- .....
- .....
- .....
- .....
- .....
- .....
- (iii) Suggest a possible source of error in your study. ....
- .....
- .....
- .....
- .....

**Q7 Section B 2005**

7. (a) (i) What is osmosis? .....
- .....
- (ii) What is a selectively permeable (semi-permeable) membrane? .....
- .....

(b) (i) Draw a labelled diagram of the apparatus that you used to demonstrate osmosis.

(ii) Describe how you carried out the experiment to demonstrate osmosis.

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(iii) How were you able to tell that osmosis had taken place?

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**Q8 Section B 2005**

8. (a) (i) What is an enzyme? .....
- .....
- (ii) Comment on the shape of enzyme molecules. ....
- .....

(b) Answer the following questions in relation to an experiment that you carried out to investigate the effect of temperature on enzyme activity.

- (i) What enzyme did you use? .....
- (ii) What substrate did you use? .....
- (iii) Draw a labelled diagram of the apparatus that you used.

(iv) How did you know that the enzyme had completed its activity?

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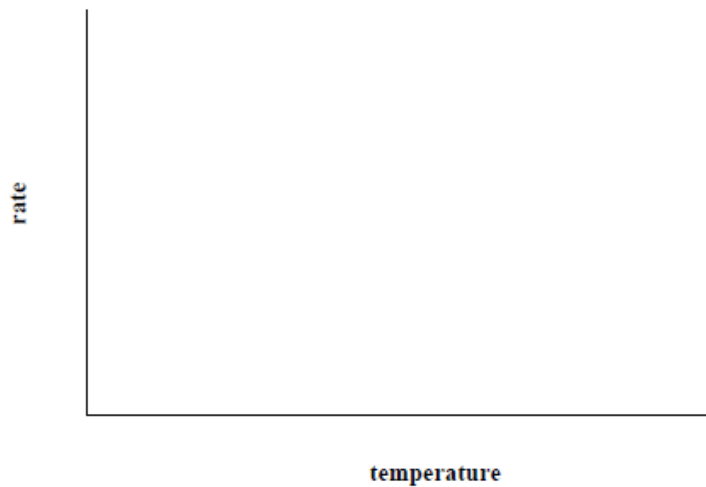
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(v) How did you vary the temperature in your experiment?

.....

.....

(vi) Draw an outline graph of the results that you obtained.



**Q9 section B 2005**

9. (a) (i) What is meant by the germination of a seed? .....
- .....
- (ii) State one reason why water is needed for germination. ....
- .....
- (b) Answer the following questions in relation to an experiment that you carried out to investigate the effects of water, oxygen and temperature on germination.
- (i) Draw a labelled diagram of the apparatus that you used.

(ii) Describe how you carried out the experiment. ....

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(iii) Describe the results of this experiment, including the result of the control. ....

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