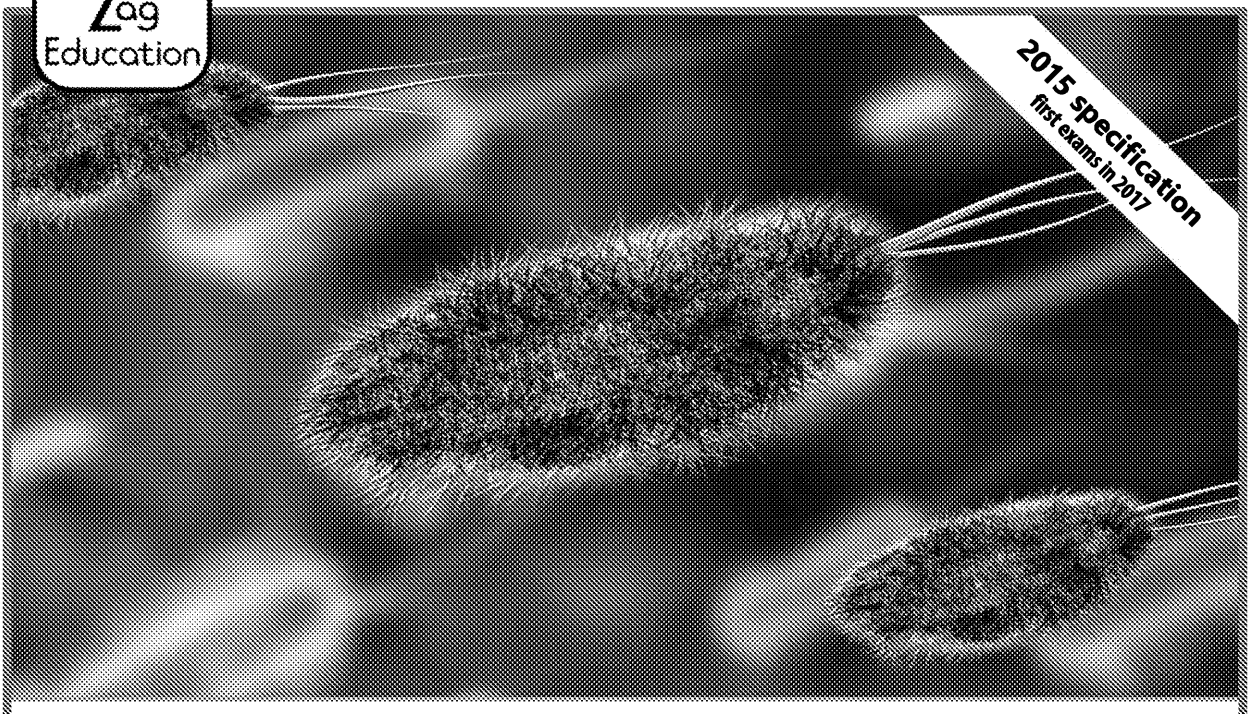
Zig Zag Education

Biology

A Level | Edexcel | 8BIO



Topic Tests

for A Level Year 2 Edexcel Biology B

zigzageducation.co.uk

POD 7082

Contents

Teacher's Introduction

These topic tests have been designed to help you and your students assess their knowledge of a topic after you have taught each section of the **A Level Year 2 AQA Edexcel Biology B specification**. Each topic test is closely tied to the Edexcel specification, ensuring all aspects of the course will be covered. The units covered in these tests include Units 5–10. A separate resource contains topic tests for the AS / A Level Year 1 content.

Topic Tests contain the following question types:

- **Quick-testing questions** – these test basic understanding, knowledge of terminology, and allow immediate identification of weaker topics.
- **Long-answer questions** – these are exam-style questions that require use of comprehensive knowledge and aid practice of writing skills and exam technique.
- **Missing-information questions** – these allow key knowledge to be tested without being time-consuming and provide context for further questions.
- **Diagram- and graph-dependent questions** – these require identification of features, interpretation of data and application of knowledge, as well as testing mathematical skills.
- **Practical questions** – test students on concepts and technique used in required practicals and allow practice of maths skills.
- **Context-dependent questions** – these push students to apply their knowledge to unfamiliar situations, spot key points within provided information and draw on multiple aspects of the course.

Tests have been designed to take approximately 45 minutes and contain on average around 40–50 marks, though please note that this has not been possible where topics are brief and introductory or require more detailed knowledge and assessment. Please note that some tests are shorter and others have been combined where appropriate.

All information for a question is provided within the test; however, some questions will require the use of a calculator and ruler.

Students are able to see the number of marks allocated for each question, allowing them to judge the detail required in their answers, as in exam conditions. Full answers are at the end of the resource and are accompanied with marker instructions, providing quick guidelines on what answers would and would not be accepted in an exam situation.

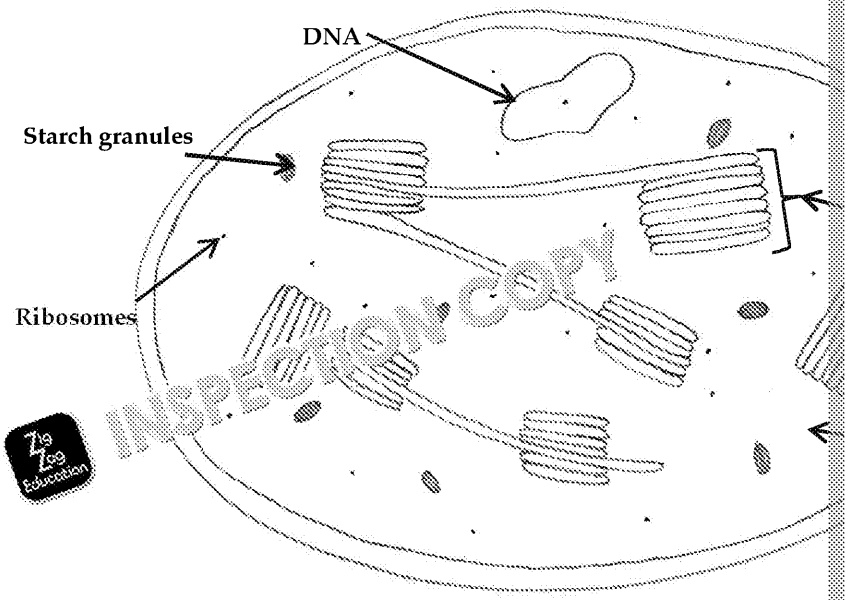
All diagrams and graphs have been designed with black-and-white photocopying in mind, so key features will not be lost.

	Topic Numbers	Number of Marks
Test 1	5.1/5.2/5.3/5.4/5.5	49
Test 2	5.6/5.7	44
Test 3	6.1/6.2/6.3/6.4/6.5	42
Test 4	6.6/6.7	40
Test 5	7.1/7.2	49
Test 6	7.3/7.4	50
Test 7	8.1/8.2/8.3	49
Test 8	9.1/9.2/9.3	49
Test 9	9.4/9.5/9.6	53
Test 10	9.7/9.8/9.9	32
Test 11	9.9	45
Test 12	10.1/10.2	48
Test 13	10.3/10.4	37

We hope you find these tests useful during your teaching.

Photosynthesis (5.6, 5.7)

1. Label the features of a chloroplast on the diagram below:



2. Where do the light-dependent and light-independent reactions of pho

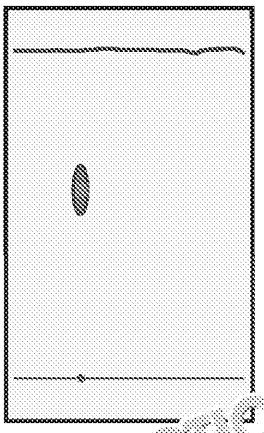
3. The environmental factor that limits the slowest process in photosynt overall rate.
   a) How does an increase in carbon dioxide affect photosynthesis?
   b) Explain how variations in temperature affect photosynthesis.
   c) Explain why increasing light intensity increases photosynthesis, b point.

4. Explain why farmers cannot simply increase the availability of all fact limit photosynthesis.

5. There are several different types of chlorophyll pigments.
   a) What use would a plant have for different types of pigments?
   b) Describe the difference between the absorption spectrum and the

6. a) What technique could be used to separate pigments from leaves?
   b) This technique requires use of a solvent. Solvents are labelled wit hazard symbols. Identify two hazards associated with solvent use would create a safe environment.

d) Calculate the Rf value of the pigment below and identify the pigm
Rf values.



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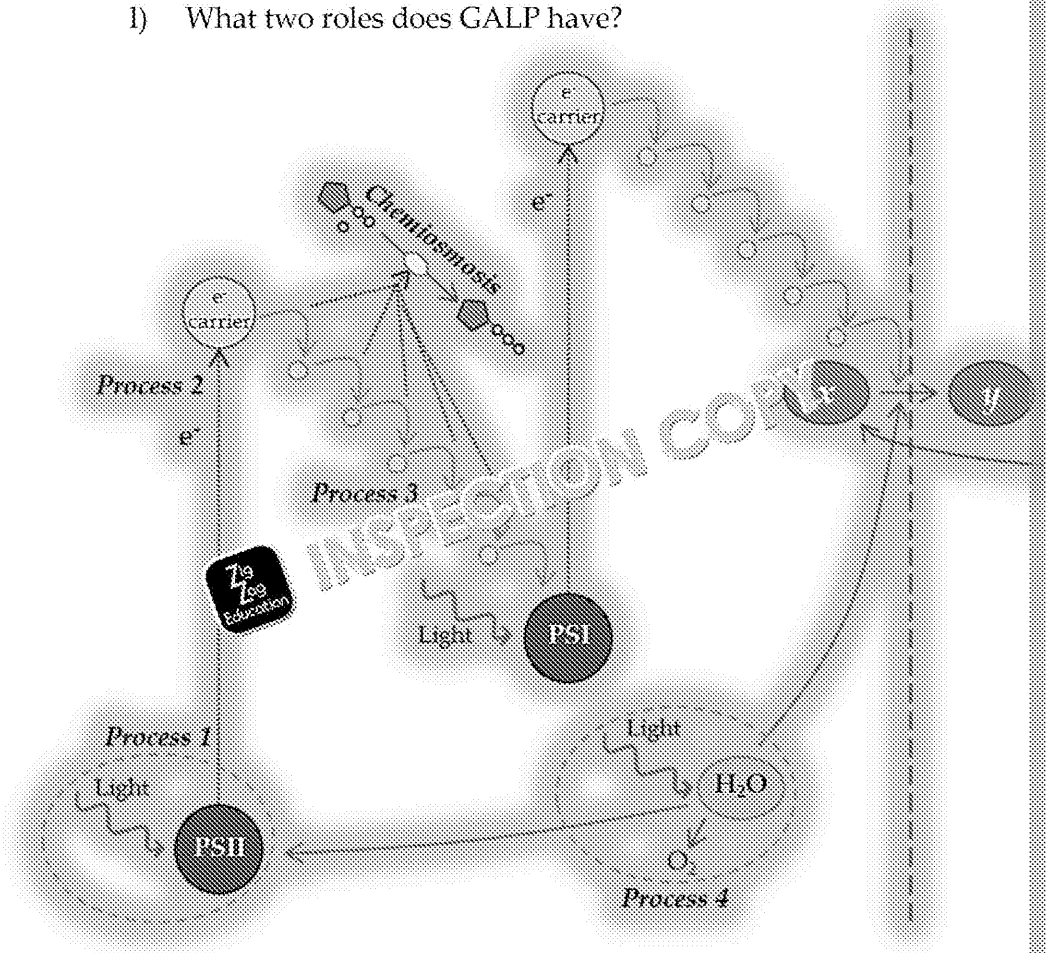
7. Answer the following questions using the diagram of photosynthesis
a) Which side of the diagram is the light-dependent reaction and
light-independent reaction?
b) What is the name of ***Process 1***, where chlorophyll is oxidised by l
c) What is happening in ***Process 2***?
d) Describe what happens to the electron during ***Process 3***.
e) Describe how chemiosmosis uses electron transfer to make ATP.
f) What are molecules ***x*** and ***y***?
g) What is the name of ***Process 4***?
h) How does ***Process 4*** help convert molecule ***x*** into molecule ***y***?
i) How are the electrons of Photosystem I (PSI) and Photosystem II
j) What is the name of ***Process 5***?
k) Explain how ***Process 5*** creates (glyceraldehyde 3-phosphate GAL
l) What two roles does GALP have?



Preview of Questions Ends Here

Mark Scheme

Aerobic and Anaerobic Respiration (5.1, 5.2, 5.3, 5.4, 5.5)

1. a) Glycolysis (1)
   b) Cytoplasm (1)
   c) Both (1)
   d) Glucose undergoes phosphorylation using ATP (1) to form a phosphory
   e) 'The molecule produced by phosphorylation *splits* (1) to form *glycerate 3*
   This is then *oxidised* (1) to produce *pyruvate* (1), hydrogen protons, two A
   [1 mark for each]

2. Pyruvate travels to the mitochondrial matrix (1) by a[illegible] transport (1)

3. Pyruvate is oxidised to acetate (1) w[illegible] coenzyme A (1) and forms
   the process NAD is reduced [illegible] is produced (1)

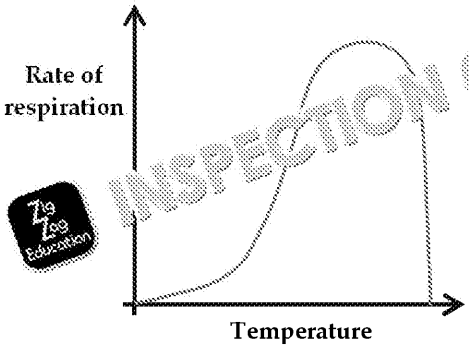
4. a) Kreb's cycl[illegible]
   b) *a* [illegible] coenzyme A (1)
   b = [illegible]ed NAD (1)
   c = reduced FAD (1)
   c) At point *x* the molecule contains 6 C molecules (1)
   At point *y* the molecule contains 4 C molecules (1)
   d) Substrate-level phosphorylation (1) [Do not accept only phosphorylatio

5. a) Electron transfer / electron transport chain (1)
   b) Reduced NAD (1) and reduced FAD (1)
   c) Oxygen acts as the terminal electron acceptor (1)

6. a) Process is called chemiosmosis (1), where hydrogen ions enter the mitoc
   proteins transfer electrons (1) and leave through channel proteins that a
   (1), therefore stimulating ATP synthase to form ATP / convert ADP to A
   b) Oxidative phosphorylation (1) [Do not accept only phosphorylation]

7. a) Aerobic produces a lot more ATP due to the electron transfer / electron
   anaerobic respiration produces little ATP because it only has glycolysis
   efficient ATP production and can produce a lot of energy in optimal con
   provides a survival advantage to produce ATP when oxygen is limited,
   away from a predator / dive underwater to find prey (1) [Accept any co
   b) Plants: Pyruvate + rNAD (1) → ethanol (1) + carbon dioxide (1) + NAD
   Animals: Pyruvate + rNAD (1) → lactate (1) NAD
   c) 31 ATP are produced in aerobic respiration (1) while only 2 ATP are pro

8. [1 mark for axes, 1 mark for line:]



As temperature increases, the enzymes involved in respiration get close
therefore, respiration rate increases (1), so movement of fluid in the mar
optimum temperature is reached, enzymes denature so respiration rate
fluid stops moving (1).

Preview of Answers Ends Here