

EXAM PRACTICE

Edexcel Biology

{ 4BI1 }

*Characteristics of Living Organisms — Eukaryotes,
Prokaryotes & Pathogens*

3h

DURATION

17

QUESTIONS

153

TOTAL MARKS

STUDENT

STUDENT ID

BATCH

INSTRUCTOR

DATE

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STUDENT NAME

STUDENT ID

SUBJECT

Biology

SUBJECT CODE

4BI1

CURRICULUM

Edexcel – IGCSE

ACADEMIC SESSION

DECLARATION OF AUTHENTICITY

I hereby declare that this practice paper has been attempted as my own original work, prepared under the supervision of my instructor at Neuratech Academy. All responses contained herein represent my honest attempt without unauthorised assistance, and have been completed in accordance with the institution's code of conduct and scholarly standards.

STUDENT SIGNATURE

INSTRUCTOR SIGNATURE

DATE

PAPER BRIEF · EDEXCEL · IGCSE BIOLOGY · 4BI1

Characteristics of Living Organisms

A 17-question themed practice paper covering the seven life processes, eukaryotic & prokaryotic cell structure, fungal & protocist biology, and pathogens.

🕒 3 hours allowed

📄 17 questions

★ 153 marks total

🎯 Mixed difficulty

Mark Distribution by Difficulty

EASY

/ 58

6 questions · ~38% of paper

MEDIUM

/ 56

8 questions · ~37% of paper

HARD

/ 39

3 questions · ~25% of paper

Instructions to Candidates

I BEFORE YOU BEGIN

- Write your name, ID, and date on the cover page.
- Read every question carefully before answering.
- Plan time roughly by mark allocation — about **1 minute per mark**.

II ANSWERING CONVENTIONS

- Answer in the spaces provided beneath each question.
- For diagrams, use a sharp pencil and label all parts.
- Show working for any calculations.

III EQUIPMENT PERMITTED

- Pen (black or blue ink), pencil, eraser, ruler.
- Scientific calculator (non-programmable).
- Protractor — required for one question.

IV MARKING

- Marks for each part are shown in the right-hand margin.
- Spelling of biological terms is expected to be accurate.
- Quality of written communication is assessed in extended answers.

SUB-TOPICS COVERED IN THIS PAPER

The Seven Life Processes

Common Features of Eukaryotes

Common Features of Prokaryotes

Plant & Animal Cells

Fungi & Protocists

Pathogens & Disease

Viruses, Bacteria, Protists & Fungi



QUICK REFERENCE

Topic Overview & Key Concepts

Every living organism — from a bacterium to a blue whale — carries out the same fundamental processes. Use this page as a memory anchor before attempting the questions.

The Seven Life Processes — Mnemonic: MRS GREN

<p>M</p> <p>Movement</p> <p>An action that changes position or place</p>	<p>R</p> <p>Respiration</p> <p>Releasing chemical energy from glucose</p>	<p>S</p> <p>Sensitivity</p> <p>Detecting & responding to stimuli</p>	<p>G</p> <p>Growth</p> <p>A permanent increase in size & mass</p>
<p>R</p> <p>Reproduction</p> <p>Producing new individuals (offspring)</p>	<p>E</p> <p>Excretion</p> <p>Removing metabolic waste products</p>	<p>N</p> <p>Nutrition</p> <p>Taking in & using nutrients to live</p>	<p>+</p> <p>Control</p> <p>Homeostasis — keeping internal conditions stable</p>

Living vs Non-living — Why Viruses Are Borderline

<p>✓ Living organisms — perform all seven processes</p> <ul style="list-style-type: none"> Made of one or more cells (have a cell membrane) Carry out respiration to release energy Reproduce on their own (sexually or asexually) Grow, develop, and respond to their environment Excrete metabolic waste 	<p>✗ Viruses fail several criteria</p> <ul style="list-style-type: none"> No cellular structure — just protein coat + nucleic acid Cannot respire or feed independently Reproduce <i>only</i> inside a host cell Show no growth, no sensitivity, no excretion Classified as infectious particles, not organisms
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Pathogens — The Four Groups

<p>Bacteria</p> <p>Prokaryotic; e.g. cholera, tuberculosis</p>	<p>Viruses</p> <p>Non-living; e.g. influenza, HIV, Covid-19</p>	<p>Protoctists</p> <p>Eukaryotic; e.g. <i>Plasmodium</i> (malaria)</p>	<p>Fungi</p> <p>Eukaryotic; e.g. athlete's foot, ringworm</p>
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★ **Key term — Pathogen:** a microorganism that causes infectious disease. Pathogens can be bacteria, viruses, protoctists, or fungi.

A

SECTION ONE

Easy Questions

6 questions
 58 marks
 ~ 58 minutes

Question 1

9 MARKS · STRUCTURED

(a) Different groups of organisms have different features.

Complete the table by placing a tick [✓] in the boxes to show which features are present in each group of organisms. *Some have been completed for you.*

3 marks

Group	Cells have a cell wall	Cells are eukaryotic	Can carry out saprotrophic nutrition
Fungi			
Bacteria	✓		
Plant	✓		

(b) Plants are able to store carbohydrates in their cells as starch or sucrose.

(i) Explain how plants are able to synthesise starch.

2 marks

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(ii) Describe the test that could be carried out to determine whether or not a plant cell contains starch.

2 marks

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Question 1 – continued

2 MARKS

- (c) One of the features of plant cells is that they contain chloroplasts. Suggest why root hair cells in plants do not contain chloroplasts.

2 marks

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Question 2

16 MARKS · STRUCTURED

- (a) Draw **five** lines to connect the characteristics of a living organism with the description of each characteristic.

5 marks

Sensitivity		The removal of metabolic waste
Control		Producing offspring
Reproduction		Detecting stimuli from the environment
Excretion	The release of chemical energy from glucose
Respiration		Ensuring that the internal environment of an organism stays within a set range

Question 2 – continued

11 MARKS REMAINING

(b) Explain why viruses are not classified as living organisms.

3 marks

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(c) Viruses can be classified as pathogens.

(i) What is the definition of a pathogen?

1 mark

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(ii) Name three other groups of organisms that contain pathogens.

3 marks

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(iii) In the space below, draw and label a diagram of the basic structure of a virus.

3 marks

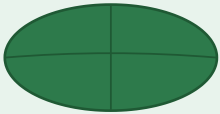
DRAW YOUR LABELLED VIRUS DIAGRAM IN THIS BOX

Question 2 – continued

2 MARKS


- (d) One example of a virus pathogen is **tobacco mosaic virus (TMV)**, which prevents the development of chloroplasts in the leaves of plants. Explain the effect of TMV on the plants it infects. 2 marks

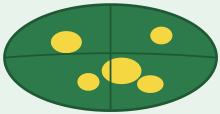
CONTEXT — HOW TMV AFFECTS A PLANT LEAF



Healthy leaf

TMV infection





Infected leaf (mosaic)

Consequence

- ▶ Fewer chloroplasts
- ▶ Less photosynthesis
- ▶ Reduced growth & yield

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Question 3

11 MARKS · STRUCTURED

- (a) A student made the following statement:

"Excretion is when the body gets rid of waste materials, like urine and faeces."

Explain whether the student's statement is correct. 2 marks

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Question 3 – continued

9 MARKS REMAINING

(b) All living organisms carry out excretion, including plants.

(i) Name two examples of excretory waste produced by plants.

2 marks

(ii) Name the processes that produce the excretory waste products named in part (i). You should make it clear which process produces each product.

2 marks

(c) The passage describes some features of plants. Complete the passage by writing a suitable word in each blank space.

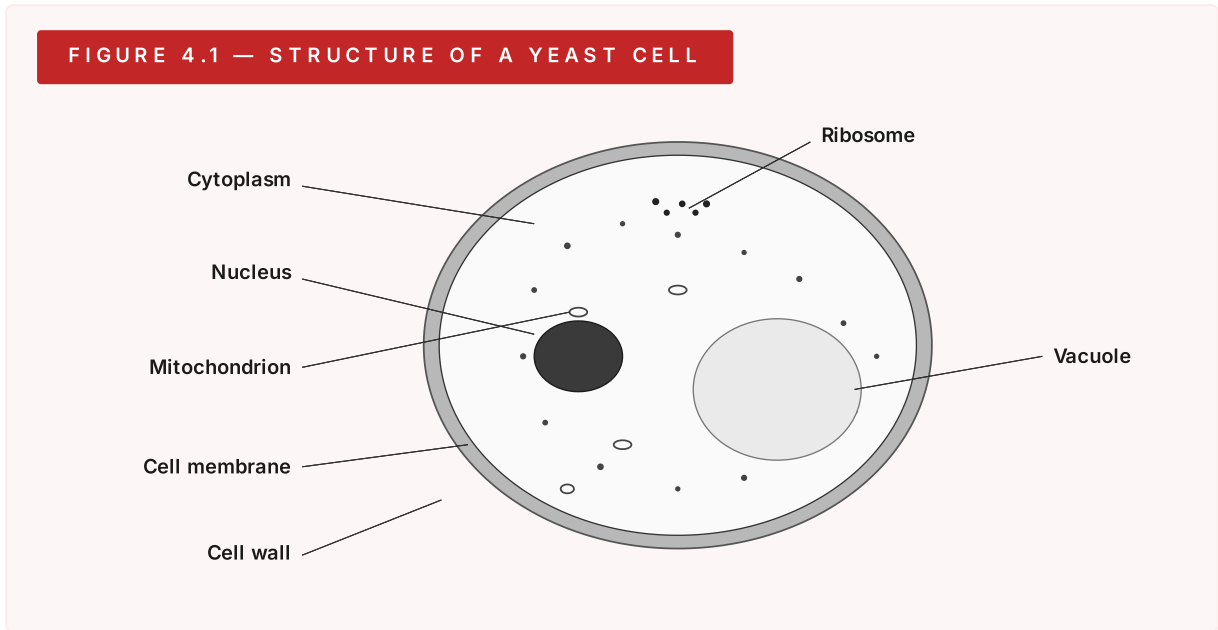
5 marks

Plant cells contain a nucleus and can therefore be classified as _____. The cells are supported by a cell wall made of _____. In order to carry out _____ to release energy, plants require glucose. They get this glucose by carrying out a process called _____. Any excess glucose can be stored in the plant cells in the form of _____.

Question 4

8 MARKS · STRUCTURED + MCQ

(a) The diagram shows a yeast cell.



(i) Which substance makes up the composition of the yeast cell wall?

1 mark

<input type="checkbox"/>	A	Cellulose
<input type="checkbox"/>	B	Chitin
<input type="checkbox"/>	C	Glycogen
<input type="checkbox"/>	D	Starch