

A



Surname _____

Other Names _____

Centre Number _____

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I declare this is my own work.

Level 3 Certificate/Extended Certificate APPLIED SCIENCE

**Unit 1 Key Concepts in Science
Section A – Biology**

ASC1/B

Time allowed: 1 hour 30 minutes. You are advised to spend approximately 30 minutes on this section.

At the top of the page, write your surname and other names, your centre number, your candidate number and add your signature.

[Turn over]



J A N 2 2 A S C 1 B 0 1

For this paper you must have:

- **a calculator**
- **the Formulae Sheet (enclosed).**

INSTRUCTIONS

- **Use black ink or black ball-point pen.**
- **Answer ALL questions in each section.**
- **You must answer the questions in the spaces provided. Do not write on blank pages.**
- **If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).**
- **Do all rough work in this book. Cross through any work you do not want to be marked.**



INFORMATION

- You will be provided with a copy of the Formulae Sheet.
- There are three sections in this paper:
SECTION A – Biology SECTION B – Chemistry
SECTION C – Physics.
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60 and the maximum mark for this section is 20.

ADVICE

Read each question carefully.

DO NOT TURN OVER UNTIL TOLD TO DO SO



SECTION A – BIOLOGY

Answer ALL the questions in this section.

0	1
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The internal environment of the human body is maintained within restricted limits.

Hormones are chemicals that help control our internal environment.



01.1

Draw ONE line from each hormone to the function of that hormone. [3 marks]

HORMONE**FUNCTION****Aldosterone****Causes body temperature to increase****Causes increased production of urine****Glucagon****Causes conversion of glucose to glycogen****Insulin****Causes conversion of glycogen to glucose****Causes reabsorption of sodium ions in the kidney**

[Turn over]



0	1	.	2
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What effect does an increase in adrenaline have on blood glucose concentration? [1 mark]



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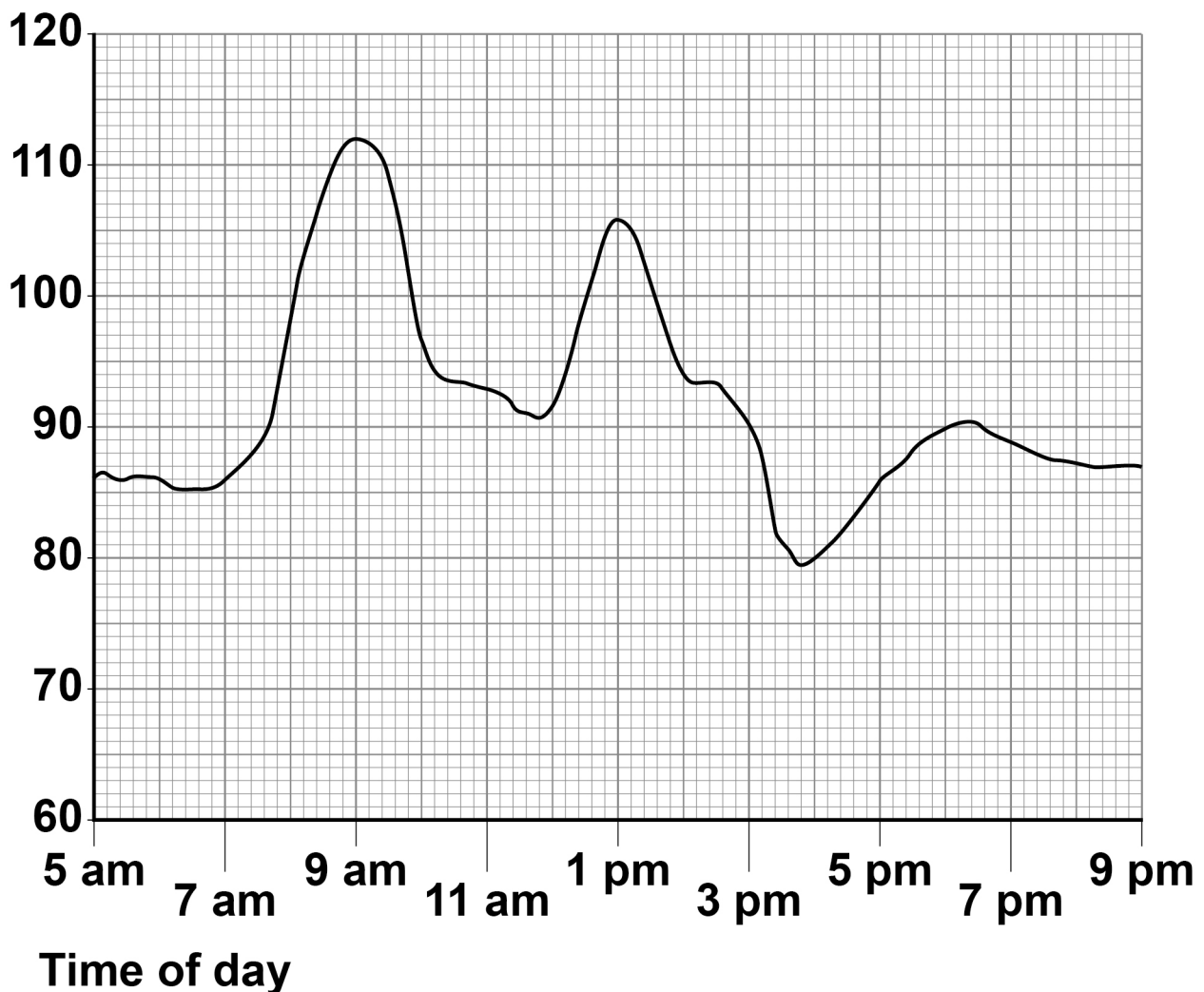


Changes in the internal environment of the human body outside of the restricted limits can indicate poor health.

FIGURE 1 shows the blood glucose concentration of a person.

FIGURE 1

**Blood glucose concentration
in mg/dL**



0	1	.	3
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The lowest limit of the healthy range for blood glucose concentration is 82 mg/dL.

How long was the person's blood glucose concentration below the normal range?

Use FIGURE 1. [1 mark]

0	1	.	4
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How many times did the person's blood glucose concentration rise above the normal healthy range?

Use FIGURE 1. [1 mark]

[Turn over]



01.5

A doctor suspects that another person has Type II diabetes.

The doctor asks for a fasting blood glucose test to be done.

In order for the test to work correctly, the person must not eat anything for 8 hours before the blood test.

Why? [1 mark]

01.6

Doctors can test a person's urine to check for the presence of glucose.

Describe how the doctor can test the urine to show if there is glucose in the urine. [2 marks]



01.7

A doctor decides that another person is at risk of developing Type II diabetes.

Describe TWO ways the person can reduce the risk of developing Type II diabetes. [2 marks]

1 _____

2 _____

[Turn over]

11



0	2
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Cellular respiration is an important process needed for life.

0	2	.	1
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Which TWO parts of a cell are the sites of ATP production during cellular respiration? [2 marks]

Tick (✓) TWO boxes.

☐

Cytoplasm

☐

Golgi apparatus

☐

Mitochondria

☐

Nucleus

☐

Rough endoplasmic reticulum

☐

Smooth endoplasmic reticulum



0	2	.	2
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Which type of transport in cells uses ATP? [1 mark]

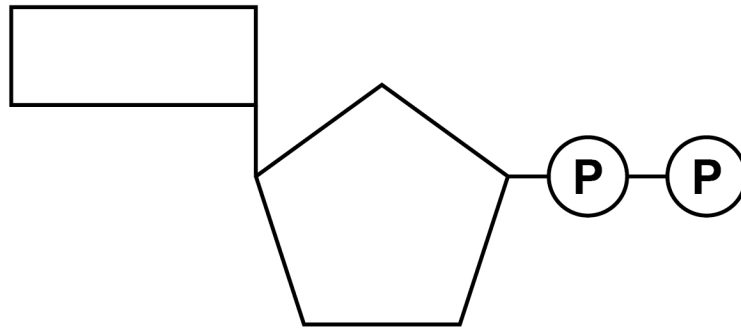
[Turn over]



During aerobic respiration ATP is produced using ADP.

FIGURE 2 shows one molecule of ADP.

FIGURE 2



0 2 . 3

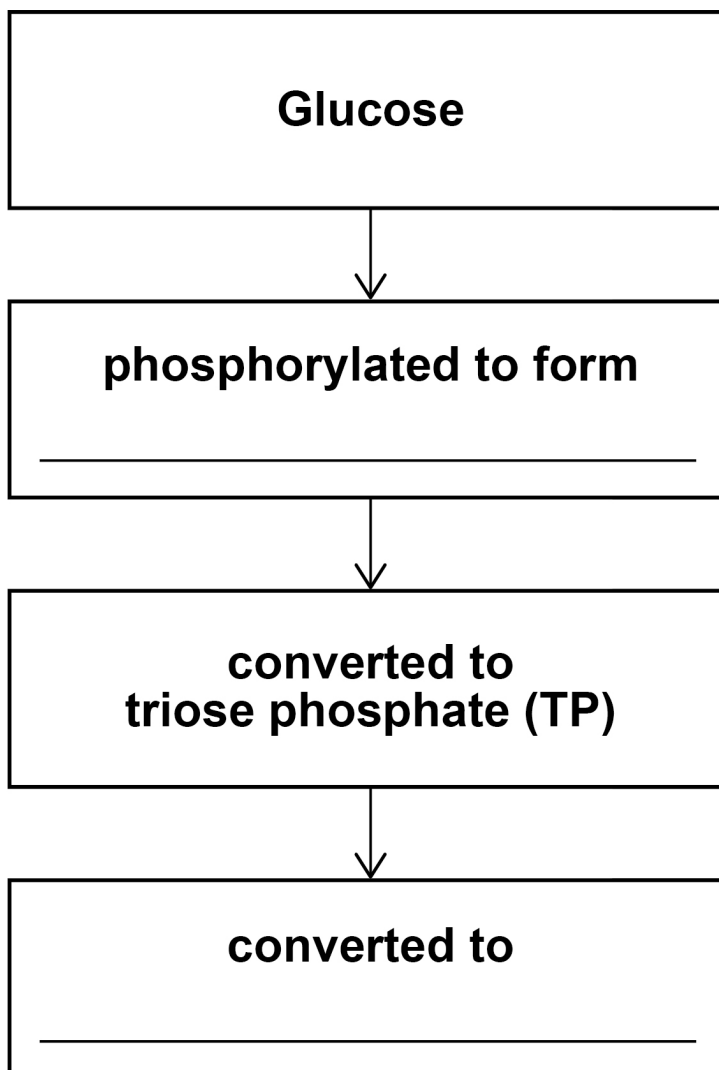
Complete FIGURE 2 to show one molecule of ATP.
[1 mark]

02.4

Glycolysis is the first stage of aerobic respiration.

**Complete FIGURE 3 to show the process of glycolysis.
[2 marks]**

FIGURE 3



[Turn over]

0	2	.	5
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The electron transfer chain produces most of the ATP that is made during respiration.

NAD and FAD are reduced in the Krebs cycle.

Explain how reduced NAD (NADH) and reduced FAD (FADH₂) are used to produce ATP in the electron transfer chain. [3 marks]

END OF QUESTIONS

9



Additional page, if required.

Write the question numbers in the left-hand margin.

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Additional page, if required.

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For Examiner's Use	
Question	Mark
1	
2	
TOTAL	

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