



**Surname** \_\_\_\_\_

**Other Names** \_\_\_\_\_

**Centre Number** \_\_\_\_\_

**Candidate Number** \_\_\_\_\_

**Candidate Signature** \_\_\_\_\_

**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**

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

**[Turn over]**



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

**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.**

**01**

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

**Hormones are chemicals that help control our internal environment.**

**01.1**

**On the opposite page, 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]**

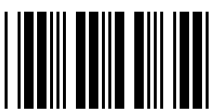
0	1	.	2
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**What effect does an increase in adrenaline have on blood glucose concentration? [1 mark]**

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**[Turn over]**



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

**FIGURE 1, on the opposite page, shows the blood glucose concentration of a person.**

**0 1 . 3**

**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]**

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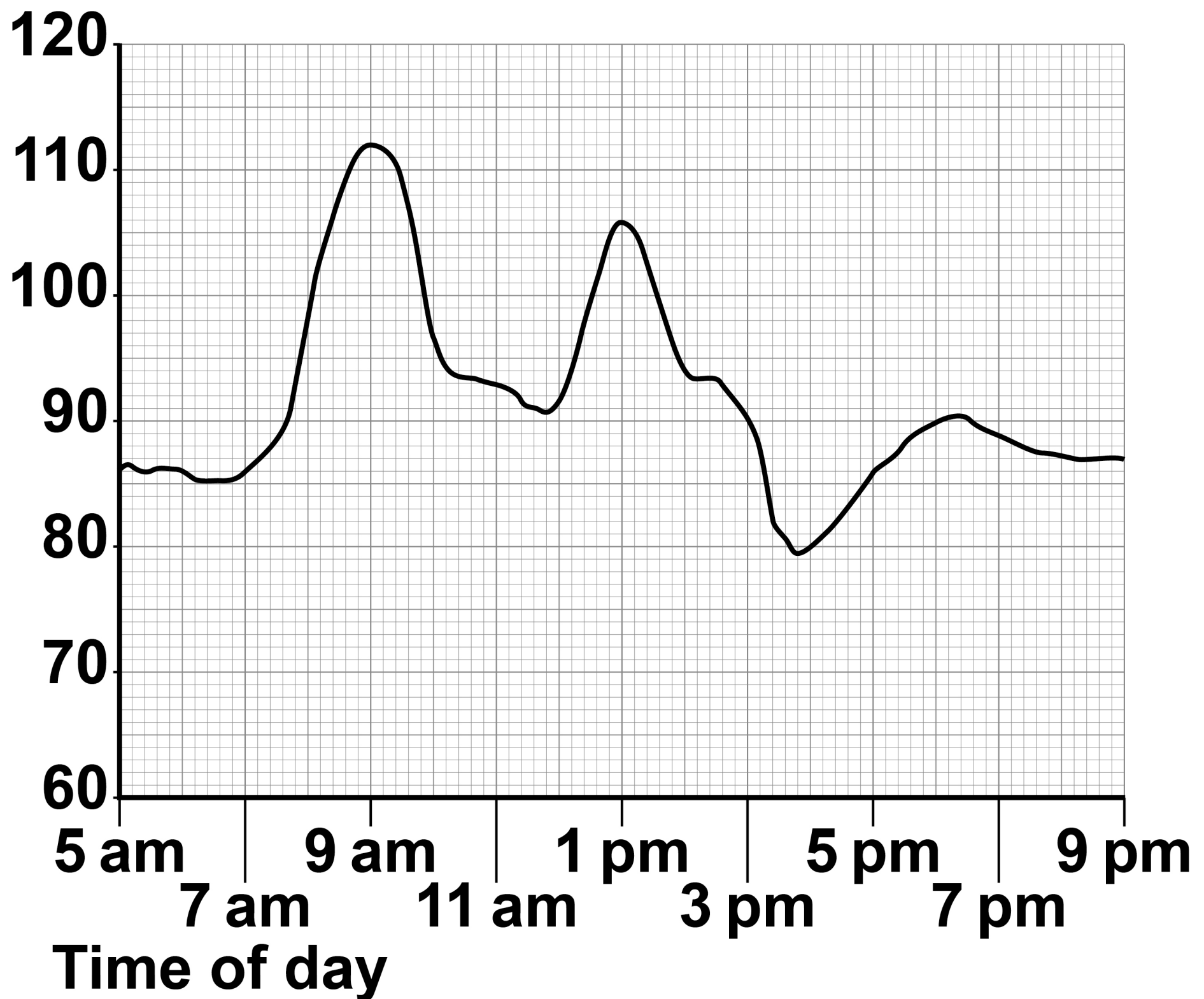
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**FIGURE 1**

**Blood glucose concentration  
in mg/dL**

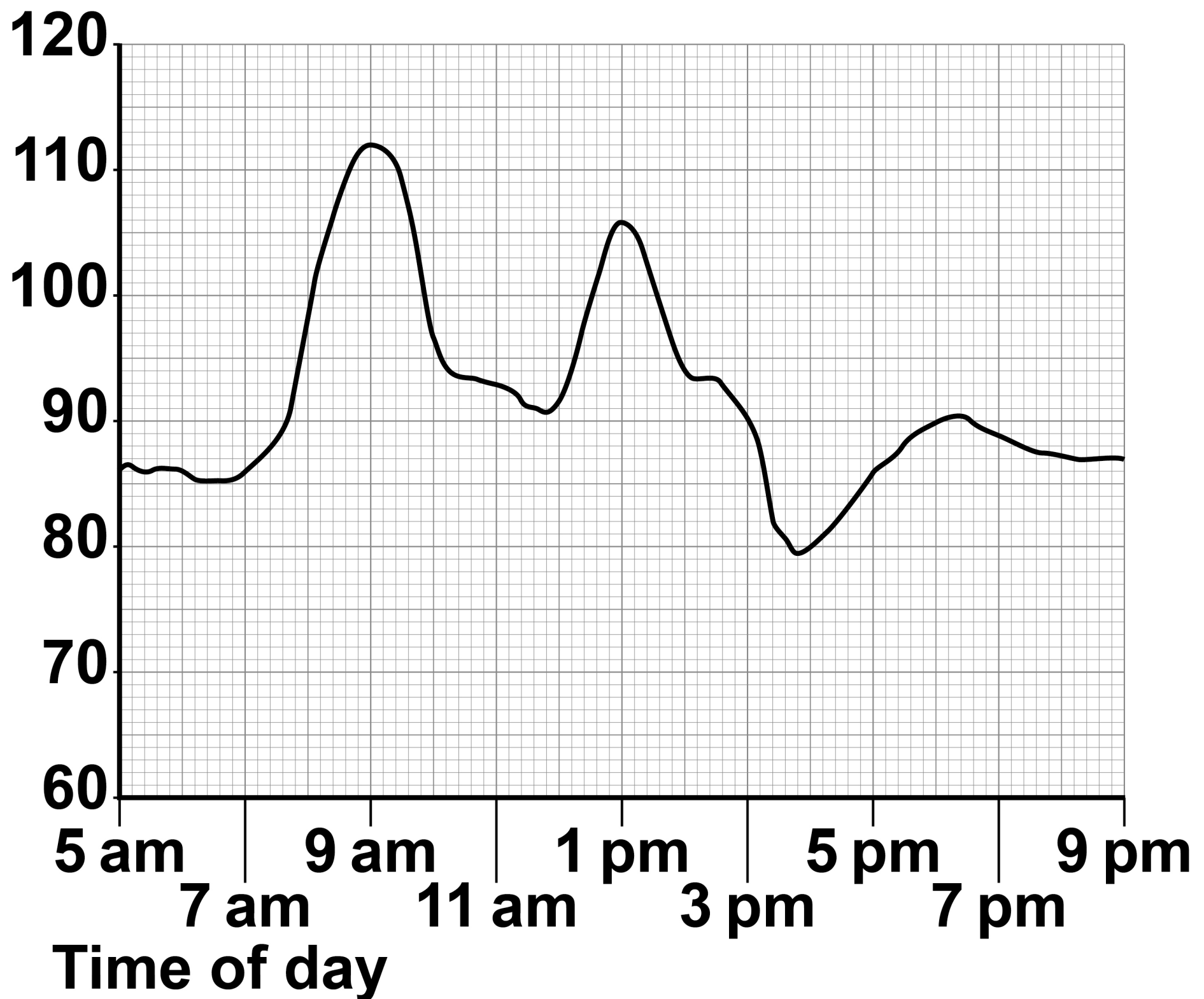


**[Turn over]**



**REPEAT OF FIGURE 1**

**Blood glucose concentration  
in mg/dL**



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]**

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**[Turn over]**



0	1	.	5
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**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]**

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0	1	.	6
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**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]**

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**[Turn over]**



0	1	.	7
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**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** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

<b>11</b>



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**[Turn over]**



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**

**[Turn over]**



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

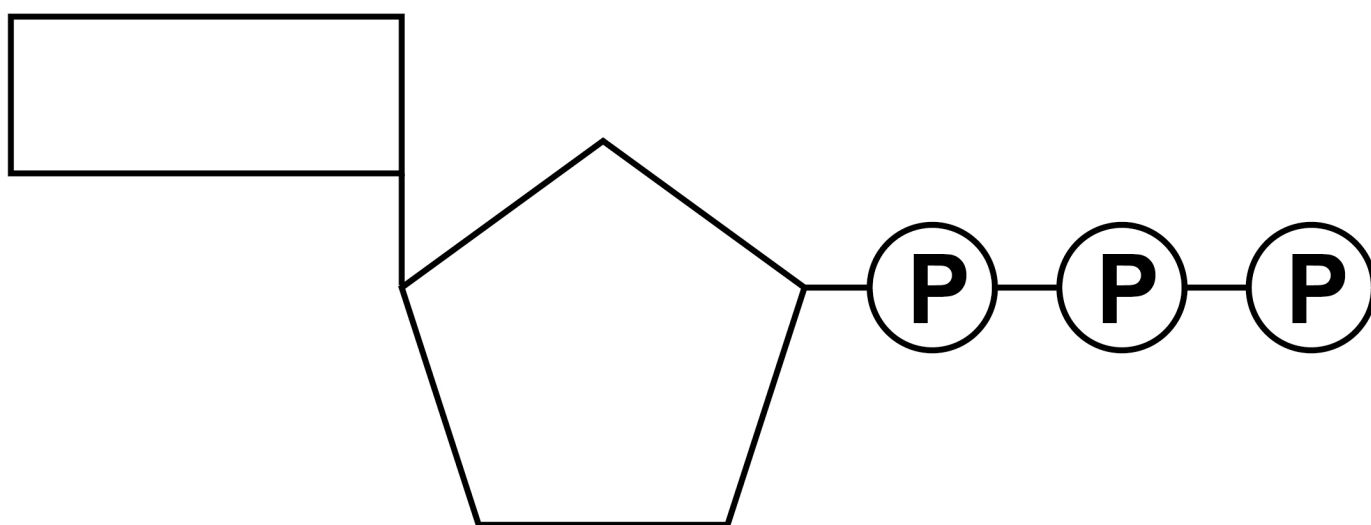
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**During aerobic respiration ATP is produced using ADP.**

**FIGURE 2 shows one molecule of ADP.**

**FIGURE 2**



0	2	.	3
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**Complete FIGURE 2, on the opposite page, to show one molecule of ATP.  
[1 mark]**

**[Turn over]**

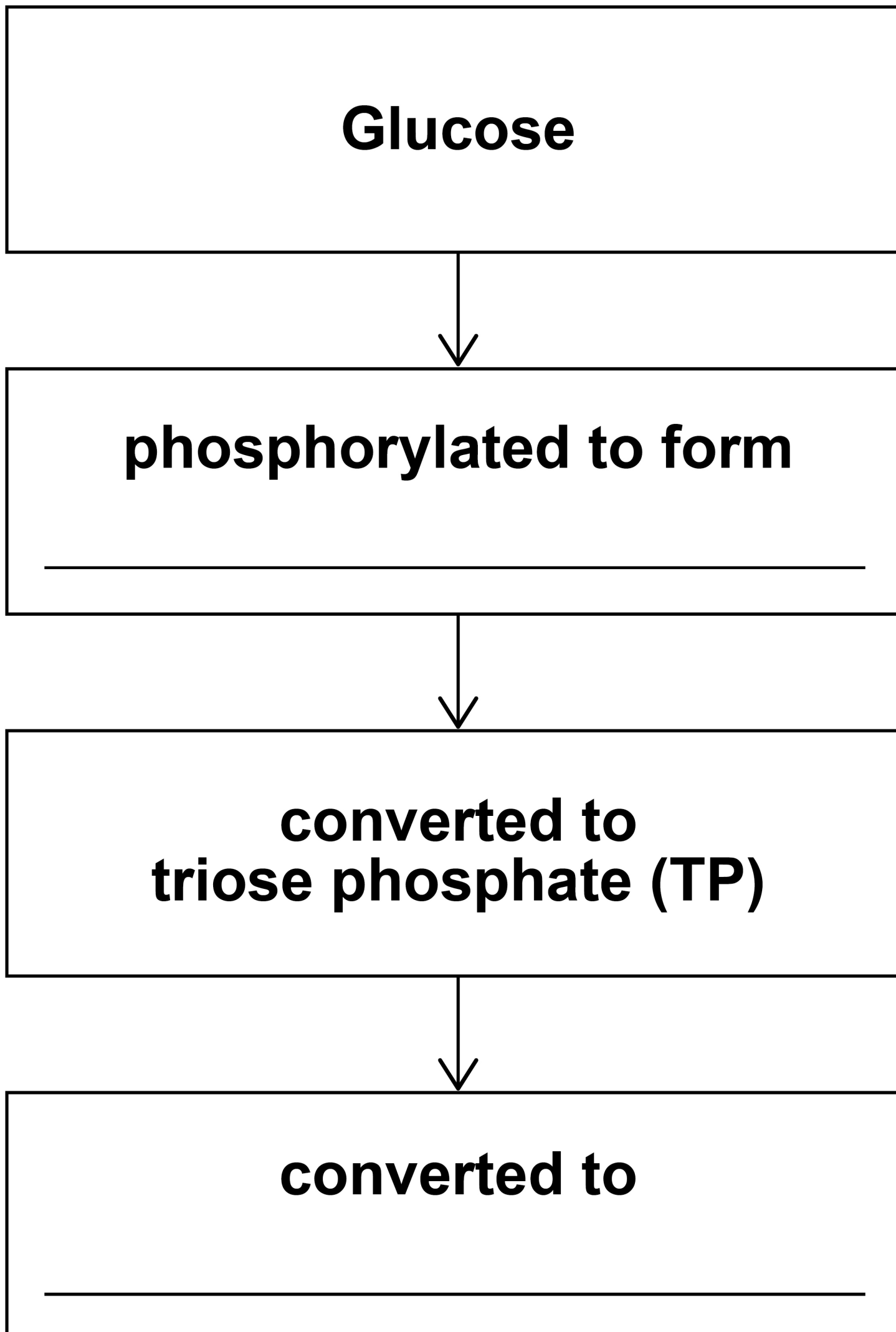


0	2	.	4
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**Glycolysis is the first stage of aerobic respiration.**

**Complete FIGURE 3, on the opposite page, to show the process of glycolysis.  
[2 marks]**



**FIGURE 3****[Turn over]**

**02.5**

**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 (FADH<sub>2</sub>) are used to produce ATP in the electron transfer chain. [3 marks]**

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END OF QUESTIONS

9



**Additional page, if required.  
Write the question numbers in the  
left-hand margin.**

[illegible]



**Additional page, if required.**  
**Write the question numbers in the left-hand margin.**


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For Examiner's Use	
Question	Mark
1	
2	
TOTAL	

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2 6



2 2 1 A A S C 1 / B