



**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 C – Physics**

#### **ASC1/P**

**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**



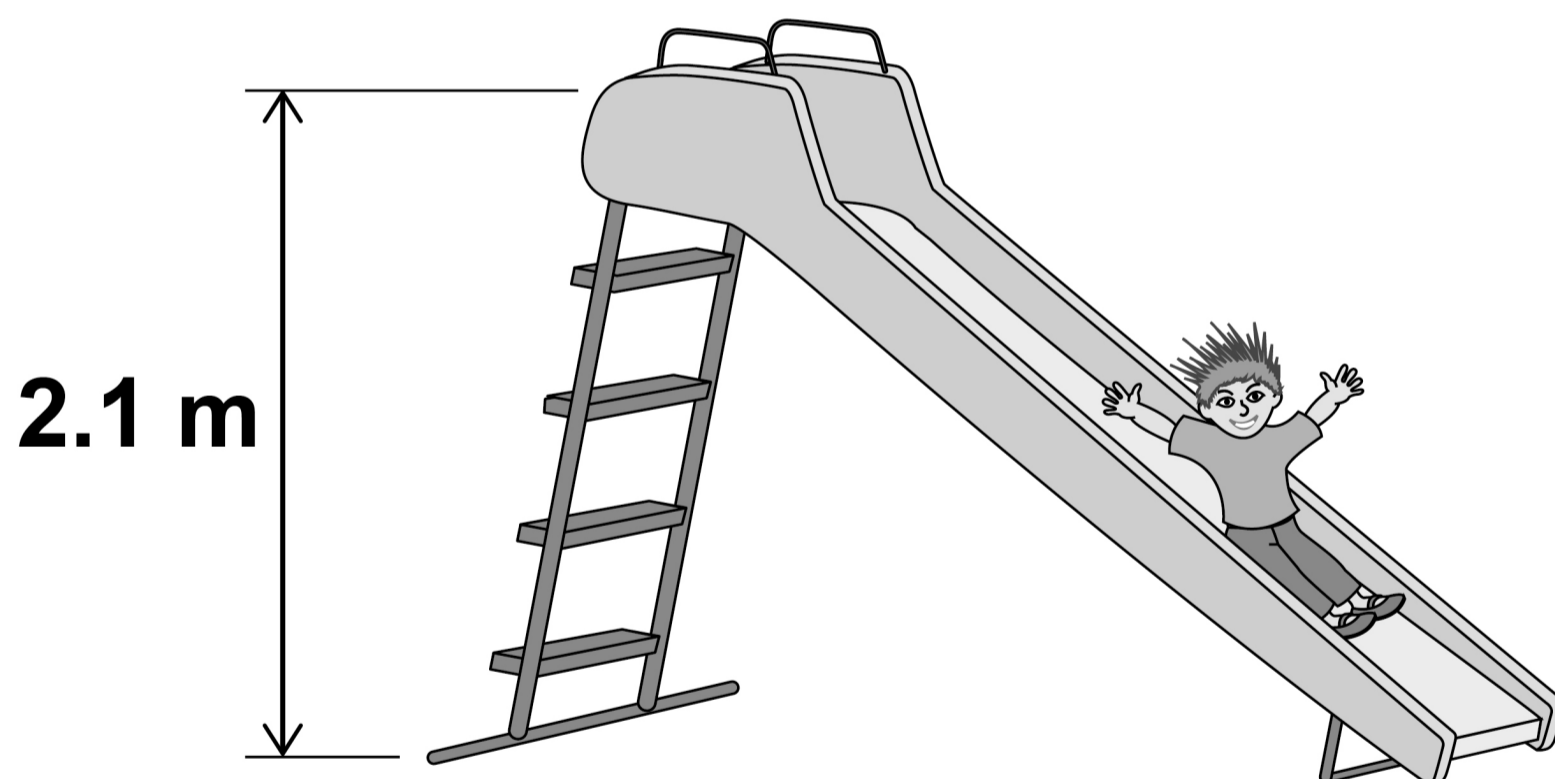
## SECTION C – PHYSICS

**Answer ALL the questions in this section.**

0	1
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**FIGURE 1** shows a child going down a slide.

**FIGURE 1**



**The child has a mass of 21 kg.**

**The child's speed is  $3.4 \text{ m s}^{-1}$  at the bottom of the slide.**



0	1	.	1
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**Calculate the gravitational potential energy of the child at the top of the slide.**

**Assume  $g = 9.8 \text{ m s}^{-2}$**

**Use information from FIGURE 1.**

**Use the Formulae Sheet. [1 mark]**

**Gravitational potential energy =**

**\_\_\_\_\_ J**

**[Turn over]**



0	1	.	2
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The child's speed is  $3.4 \text{ m s}^{-1}$  at the bottom of the slide.

Calculate the child's kinetic energy at the bottom of the slide.

Use the Formulae Sheet. [1 mark]

Kinetic energy = \_\_\_\_\_ J



**The child is at rest at the top of the slide.**

**The child's speed is  $3.4 \text{ m s}^{-1}$  at the bottom of the slide.**

**0 1 . 3**

**The child accelerates with a constant acceleration of  $1.1 \text{ m s}^{-2}$  down the slide.**

**Calculate the length of the slide.**

**Use the Formulae Sheet. [2 marks]**

**Length of slide = \_\_\_\_\_ m**

**[Turn over]**



0	1	.	4
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**Describe how the momentum of the child changes from the top of the slide to the bottom of the slide. [2 marks]**

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0	1	.	5
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**Explain why Newton's First Law of Motion does NOT apply when the child goes down the slide. [2 marks]**

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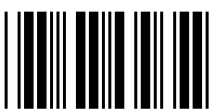
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**[Turn over]**



0	1	.	6
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**The child sits on a coat and goes down the slide again.**

**The speed of the child is faster than  $3.4 \text{ m s}^{-1}$  at the bottom of the slide.**

**Explain what effect sitting on the coat has on the efficiency of the slide.  
[3 marks]**

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**[Turn over]**



0	2
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**A set of garden lights uses solar power.**

**The garden lights have a battery that is charged by light from the Sun.**

0	2	.	1
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**Solar power is a renewable energy source.**

**TABLE 1 shows a list of other energy sources.**

**Tick (✓) all the RENEWABLE energy sources in TABLE 1, on the opposite page. [1 mark]**



TABLE 1

Energy source	Tick (✓)
Fossil fuels	
Hydroelectric power	
Nuclear fuels	
Tidal power	
Wave power	
Wind power	

[Turn over]

0	2	.	2
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**One advantage of solar power is that it is a renewable energy source.**

**Give ONE other advantage and ONE disadvantage of using solar power for the garden lights. [2 marks]**

**Advantage** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Disadvantage** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



0	2	.	3
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The battery is charged by an average current of 0.075 A for 8 hours.

Calculate the total charge flow while the battery is charged.

Give the unit.

Use the Formulae Sheet. [3 marks]

Charge = \_\_\_\_\_ Unit \_\_\_\_\_

[Turn over]



**02.4**

**The garden lights consist of three IDENTICAL light-emitting diodes (LEDs) connected to a battery.**

**FIGURE 2, on the opposite page, shows the circuit diagram for the garden lights.**

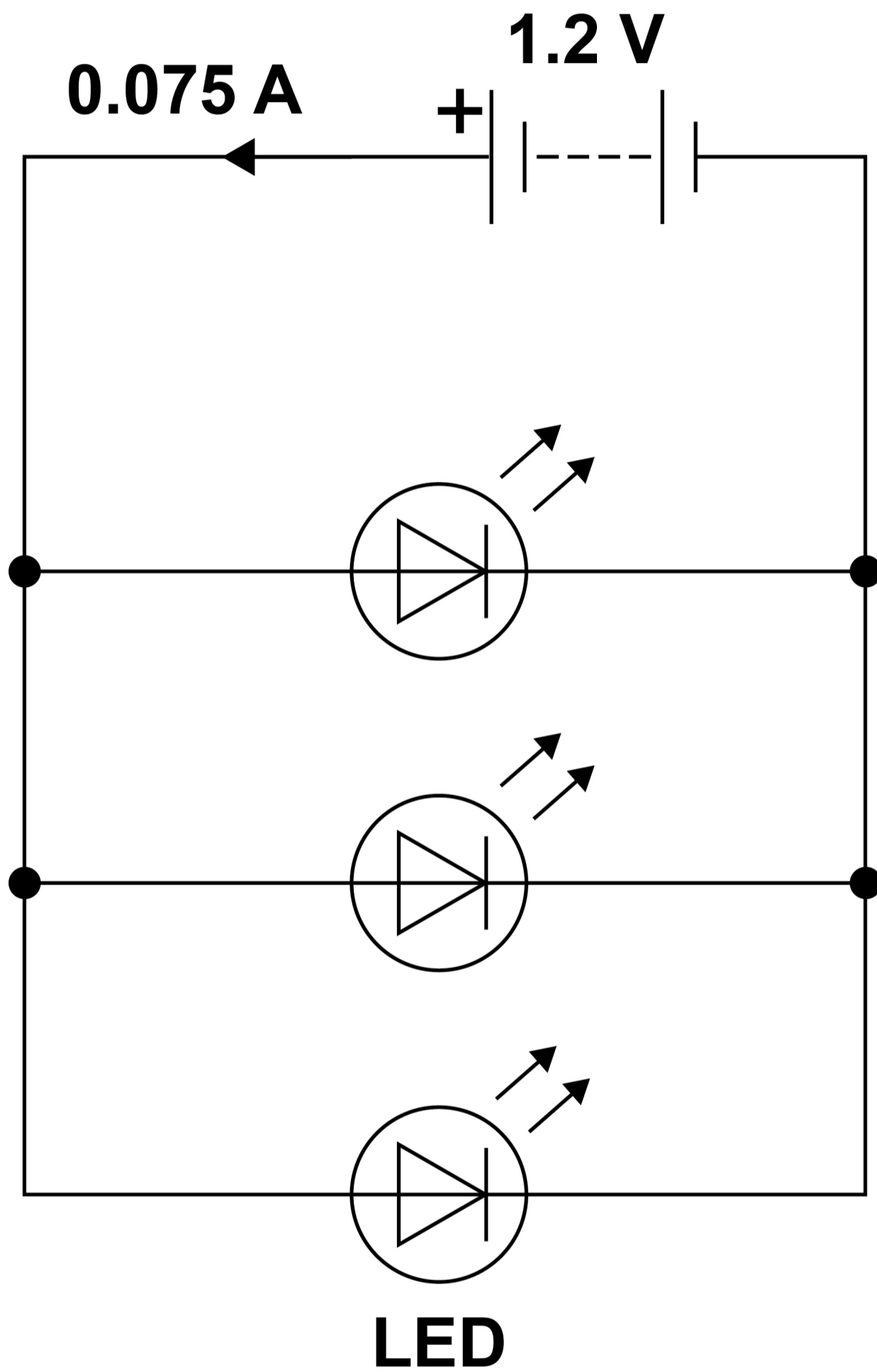
**Give the voltage and the current for each LED. [2 marks]**

**Voltage = \_\_\_\_\_ V**

**Current = \_\_\_\_\_ A**



FIGURE 2



[Turn over]



0	2	.	5
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**A SERIES circuit is NOT used for the garden lights.**

**Give ONE reason why a SERIES circuit is NOT used for the garden lights. [1 mark]**

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**END OF QUESTIONS**

9



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

This image shows a blank sheet of white paper with horizontal ruling lines. A single vertical line runs down the left side, creating a narrow margin. There are 20 horizontal lines in total, evenly spaced across the page. The lines are thin and black.

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


**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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