

Surname _____

Other Names _____

Centre Number _____

Candidate Number _____

Candidate Signature _____

I declare this is my own work.

GCSE

DESIGN AND TECHNOLOGY

Unit 1 Written Paper

8552/W

Friday 22 May 2020

Afternoon

Time allowed: 2 hours

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

[Turn over]



For this paper you must have:

- **normal writing and drawing instruments**
- **a calculator**
- **a protractor.**

INSTRUCTIONS

- **Use black ink or black ball-point pen. Use pencils only for drawing.**
- **Answer ALL questions.**
- **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

- **All dimensions are in millimetres.**
- **The marks for questions are shown in brackets.**
- **The maximum mark for this paper is 100.**
- **There are 20 marks for Section A, 30 marks for Section B and 50 marks for Section C.**

DO NOT TURN OVER UNTIL TOLD TO DO SO



SECTION A – Core technical principles

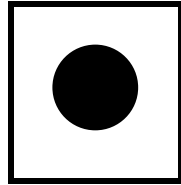
Answer ALL questions in this section.

Each of Questions 01 to 10 is followed by four responses, A, B, C and D.

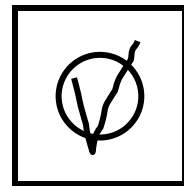
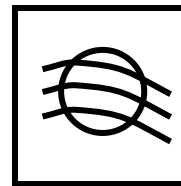
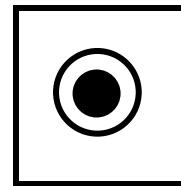
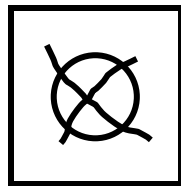
For each question completely fill in the circle alongside the appropriate answer.



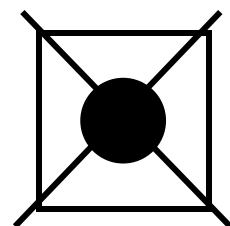
CORRECT METHOD



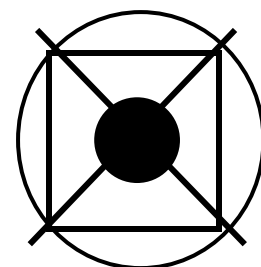
WRONG METHODS



If you want to change your answer you must cross out your original answer as shown.



If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown.



[Turn over]



0	1
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Which type of renewable energy is sourced from plants? [1 mark]

☐

A Biomass

☐

B Solar

☐

C Tidal

☐

D Wind



0	2
---	---

Planned obsolescence is when a product is designed [1 mark]

☐

A to be repairable.

☐

B to have a short lifespan.

☐

C to have replaceable sections.

☐

D to take upgrades.

[Turn over]



☐

A To detect pressure levels

☐

B To detect temperature levels

☐

C To switch equipment on or off

☐

D To switch the direction of a motor

[Turn over]



0	4
---	---

Identify the smart material used to darken windows in bright sunlight. [1 mark]

☐

A Aluminium foam

☐

B Photochromic pigment

☐

C Shape memory alloy

☐

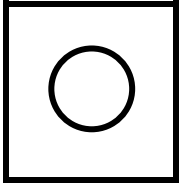
D Thermochromic pigment



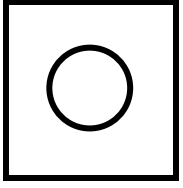
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[Turn over]

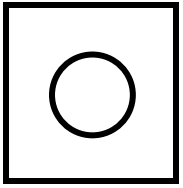




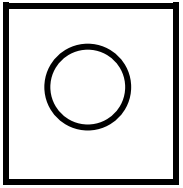
A Bonded fabric



B Felted fabric



C Knitted fabric



D Woven fabric

[Turn over]



0	6
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‘Technology push’ describes when products are developed [1 mark]

☐

A due to improvements in new materials.

☐

B due to increased consumer demand.

☐

C in response to consumer feedback.

☐

D with the user in mind.



0	7
---	---

Which ONE of the following statements about industry is true? [1 mark]

☐

A An increased use of robotics has led to a reduction in manual jobs.

☐

B An increased use of robotics means more people need to be employed.

☐

C The latest production lines require more people who can use hand tools skilfully.

☐

D The use of CAD and CAM in industry has led to less efficiency.

[Turn over]



0	8
---	---

Which of the following is part of a kinetic pumped storage system? [1 mark]

☐

A Alkaline battery

☐

B Oil field

☐

C Photovoltaic cell

☐

D Turbine



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[Turn over]



1	0
---	---

A ductile material is commonly described as one that [1 mark]

☐

A can be drawn into a long length.

☐

B does not scratch easily.

☐

C resists corrosion and oxidation.

☐

D shatters under a sudden impact.

[Turn over]



11.1

Name ONE alloy. [1 mark]

11.2

Explain why metals are alloyed. [2 marks]



[Turn over]



12.1

Composite materials such as foil and polymer lined boards are used in food and drink packaging.



Give ONE advantage and ONE disadvantage of using composite materials for packaging. [2 marks]

Advantage

Disadvantage

[Turn over]



**What is the percentage increase in recycling of composite food and drink containers between 2010 and 2017?
[2 marks]**

Answer _____

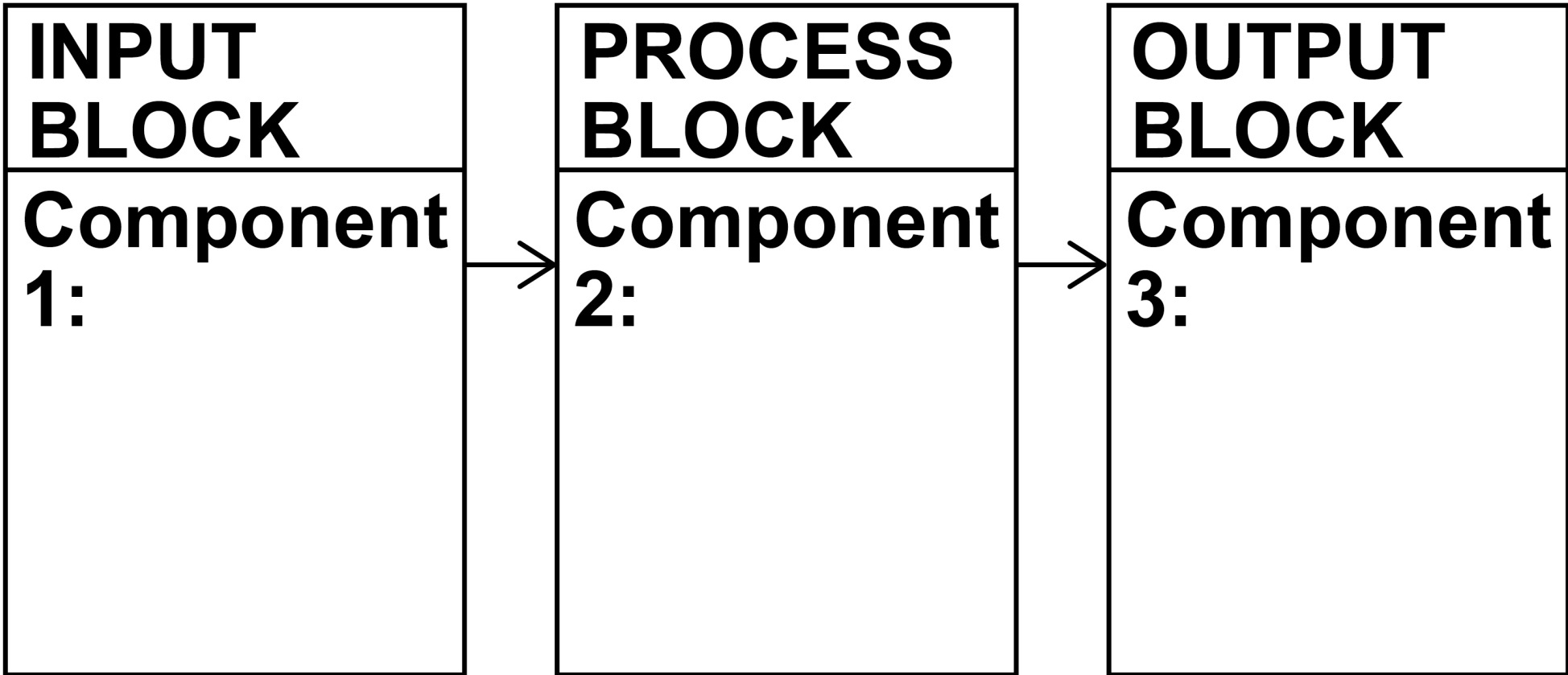
[Turn over]

1	3
---	---

FIGURE 4 shows a system diagram for an alarm.

Complete the diagram by naming ONE component that could be used in EACH block. [3 marks]

FIGURE 4



20



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[Turn over]



[Turn over]



1	5
---	---

Explain why EACH factor below would need to be considered by a manufacturer when sourcing materials/components.

[2 x 2 marks]

Bulk buying

Ethical factors



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[Turn over]



Answer

35

[Turn over]



BLANK PAGE





Batch _____





5

[Turn over]



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