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RECOGNISING ACHIEVEMENT

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1959/04

GENERAL CERTIFICATE OF SECONDARY EDUCATION

DESIGN & TECHNOLOGY

Industrial Technology

Paper 4 (Higher Tier)

MONDAY 9 JUNE 2008

Afternoon

Time: 1 hour 15 minutes

Candidates answer on the question paper

Additional materials: No additional materials are required

CUP/T41237

Candidate Forename		Candidate Surname	
Centre Number		Candidate Number	

INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **50**.
- All dimensions are in millimetres.
- Assume any mechanical system to be 100% efficient.

FOR EXAMINER'S USE	
1	
2	
3	
4	
5	
TOTAL	

This document consists of **11** printed pages and **1** blank page.

[Turn over

1 The car shown in Fig. 1 has been designed using CAD.

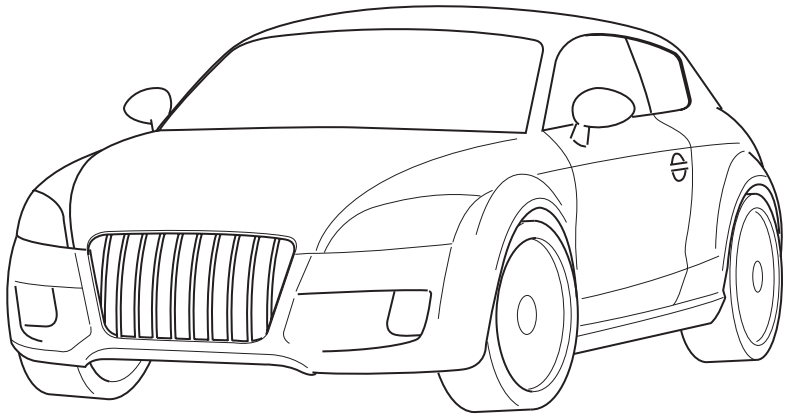

Fig. 1

(a) Give **three** benefits to the designer of using CAD.

Benefit 1.....

.....[1]

Benefit 2.....

.....[1]

Benefit 3.....

.....[1]

(b) State **three** ways in which computer generated designs may be stored electronically.

1 .....[1]

2 .....[1]

3 .....[1]

(c) Give **two** benefits to manufacturers of using CAM systems in production.

Benefit 1.....

.....[1]

Benefit 2.....

.....[1]

(d) State **two** ways a manufacturer could use computer technology to **control** production.

1 .....

.....[1]

2 .....

.....[1]

[Total: 10]

2 Fig. 2 shows two electric drills.

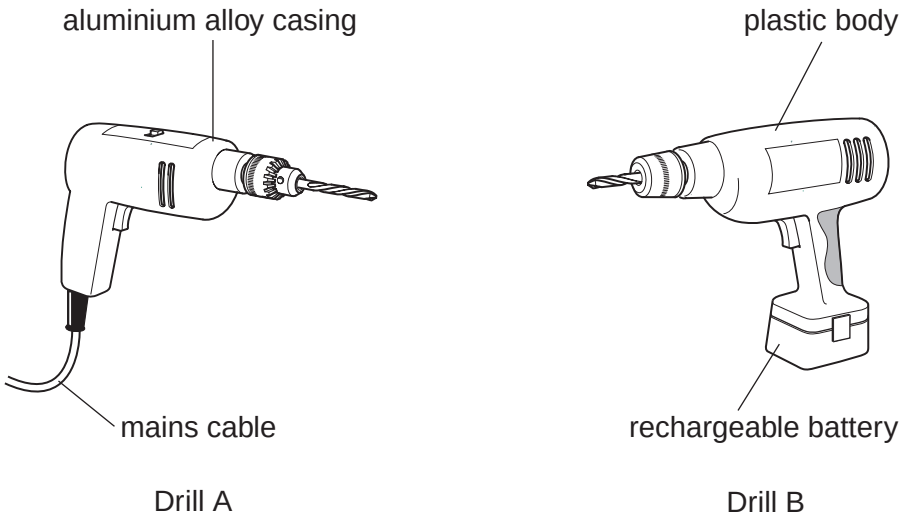

Fig. 2

(a) Name the industrial process used to produce the aluminium alloy casing for drill A.

.....[1]

(b) Give **three** advantages of using drill B compared to using drill A.

Advantage 1 .....[1]

Advantage 2 .....[1]

Advantage 3 .....[1]

(c) Describe how ergonomics has been considered in the design of drill B.

.....

.....

.....[2]

(d) Many products are made from plastics.

Explain **two** effects this could have on the environment.

1 .....

.....

.....[2]

2 .....

.....

.....[2]

[Total: 10]

3 Fig. 3 shows a prototype tray used for mail order delivery of DVDs in their cases.

The tray has been vacuum formed from 1 mm thick plastic sheet.

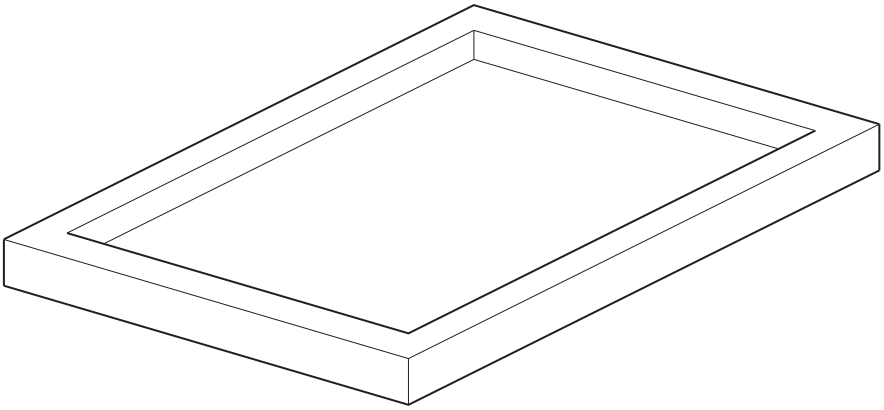

Fig. 3

(a) (i) Name a specific plastic that could be used to vacuum form the tray shown in Fig. 3.

.....[1]

(ii) Give **two** reasons why vacuum forming is a suitable process for making the tray.

Reason 1.....

.....[1]

Reason 2.....

.....[1]

(iii) Name **two** other processes for forming plastics.

1 .....[1]

2 .....[1]

(b) The prototype tray is difficult to remove from the mould after vacuum forming.

Use sketches and notes to show how the design of the tray could be improved to make it easier to remove from the mould.

[3]

(c) The DVD case needs to be a tight fit in the tray.

Use sketches and notes to show a simple design change to the tray that would make it easier to remove the DVD case but still hold it securely.

[2]

[Total: 10]

4 Fig. 4 shows incomplete details of a television wall bracket.

All the parts of the bracket are made from mild steel.

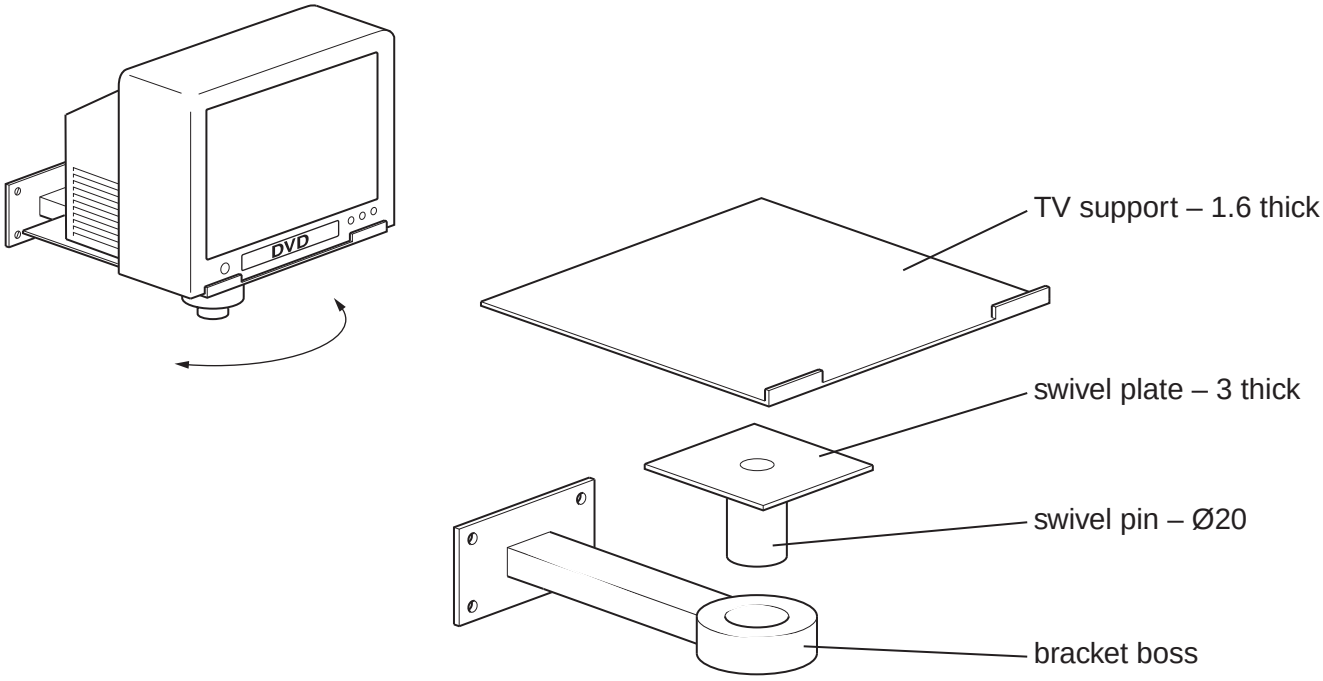

Fig. 4

(a) Use sketches and notes to show **two** methods of fixing the swivel plate to the bottom of the TV support shown in Fig. 4.

Method 1

[2]

Method 2

[2]

(b) Describe how the hole in the bracket boss can be produced so that it is smooth and accurately sized.

.....

.....

.....[2]

(c) The swivel pin will be fitted into the bracket boss so that it can turn.

Use sketches and notes to show a design that will allow the swivel pin to:

- turn easily; and
- be locked in any position.

[4]

[Total: 10]

5 Many different production systems are used in the manufacturing industry.

(a) Explain why **batch production** techniques are used when manufacturing component parts.

.....

.....

.....

.....[3]

(b) Describe the following production systems:

(i) Cell Production – .....

.....

.....[2]

(ii) In-line Assembly – .....

.....

.....[2]

(c) Explain the meaning of the term **logistics** in relation to the manufacturing industry.

.....

.....

.....

.....[3]

[Total: 10]

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