

GENERAL CERTIFICATE OF SECONDARY EDUCATION
DESIGN AND TECHNOLOGY

1959/02

Industrial Technology
Paper 2 (Higher Tier)

Candidates answer on the Question Paper

OCR Supplied Materials:
None

Other Materials Required:
None

Wednesday 26 May 2010
Afternoon

Duration: 1 hour 15 minutes



| | | | |
|-----------------------|--|----------------------|--|
| Candidate Forename | | Candidate Surname | |
|-----------------------|--|----------------------|--|

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|---------------|--|--|--|--|--|------------------|--|--|--|--|
| Centre Number | | | | | | Candidate Number | | | | |
|---------------|--|--|--|--|--|------------------|--|--|--|--|

INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use 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. Additional paper may be used if necessary but you must clearly show your Candidate Number, Centre Number and question number(s).

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.
- This document consists of **16** pages. Any blank pages are indicated.

1 Fig. 1 shows two measuring jugs.

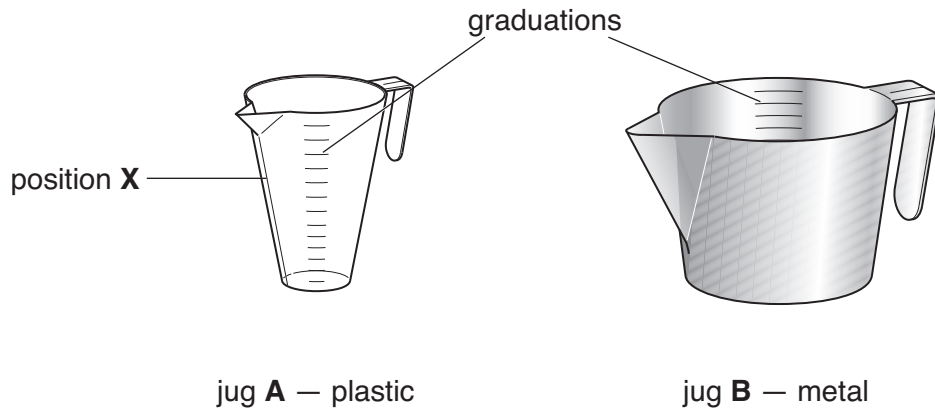


Fig. 1

(a) (i) State a suitable method of manufacture for jug **A**.

..... [1]

(ii) State a suitable method of manufacture for jug **B**.

..... [1]

(b) (i) Name a suitable plastic for jug **A**.

..... [1]

(ii) Name a suitable metal for jug **B**.

..... [1]

(c) (i) State how the graduations might be formed in jug **A**.

..... [1]

(ii) State how the graduations might be formed in jug **B**.

..... [1]

(d) Jug **A** has a 'flash line' at position **X**.

Give **one** reason for the 'flash line'.

.....
 [1]

3

(e) In use jug **A** is found to be unsatisfactory.

Use sketches and notes to show how the design could be modified.

[3]

[Total: 10]

Turn over

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2 Fig. 2 shows a table lamp.

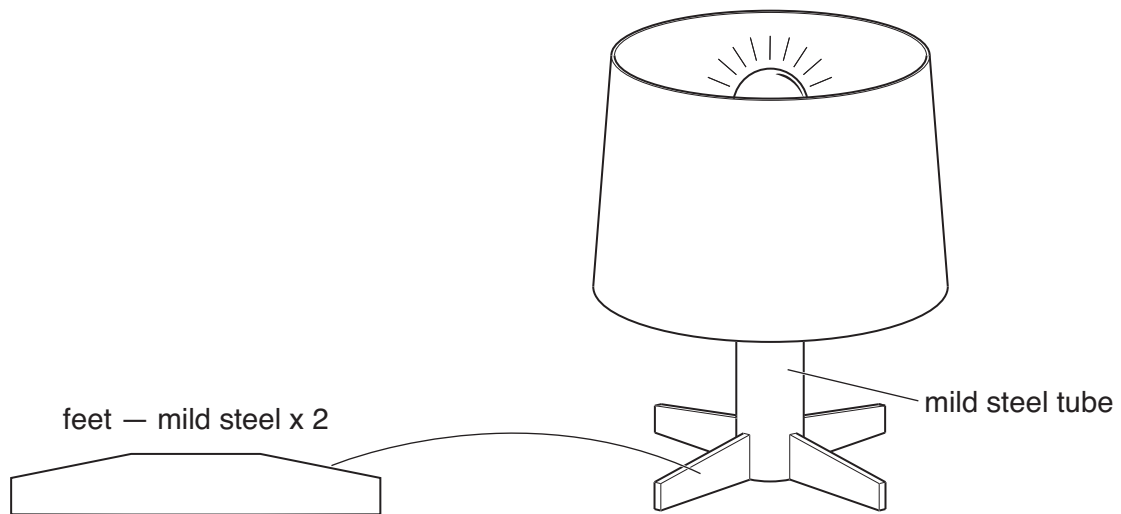


Fig. 2

(a) Use sketches and notes to show how the mild steel tube and feet fit together prior to brazing.

(b) (i) Name a flux used for brazing.

..... [1]

(ii) Give **two** reasons for using a flux.

Reason 1 [1]

Reason 2 [1]

(c) Fig. 3 shows an alternative design for the table lamp base.

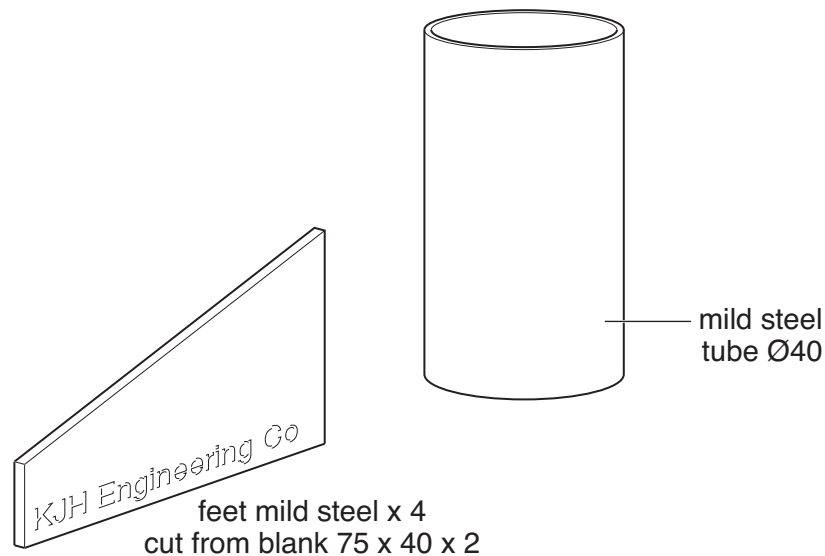


Fig. 3

Design a jig to hold all the components for brazing. The jig must:

- hold the four feet upright;
- hold the four feet equally spaced;
- be quick to set up;
- ensure the components do not get brazed to the jig.

Answer this part on the next page.

7

ANSWER PART (c) HERE

[4]

[Total: 10]

Turn over

3 Fig. 4 shows a bicycle.



Fig. 4

[2]

- (a) On the drawing in Fig. 4, use sketches and/or notes to show **two** ergonomic features of the bicycle.

(b) A manufacturer is aiming to launch a new range of commuter bicycles.

The bicycles will be:

- used for short journeys to and from a station;
- easily carried on the train;
- easily transported in the boot of a car.

Complete the table below to help develop a draft design specification.

| Bike part | Specification |
|------------------|---------------|
| Frame | |
| Wheels and tyres | |
| Handle bars | |

[6]

(c) The company is ISO 9000 registered.

Explain what this means.

.....

.....

..... [2]

[Total: 10]

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4 Fig. 5 gives details of a decorative garden railing made from mild steel.

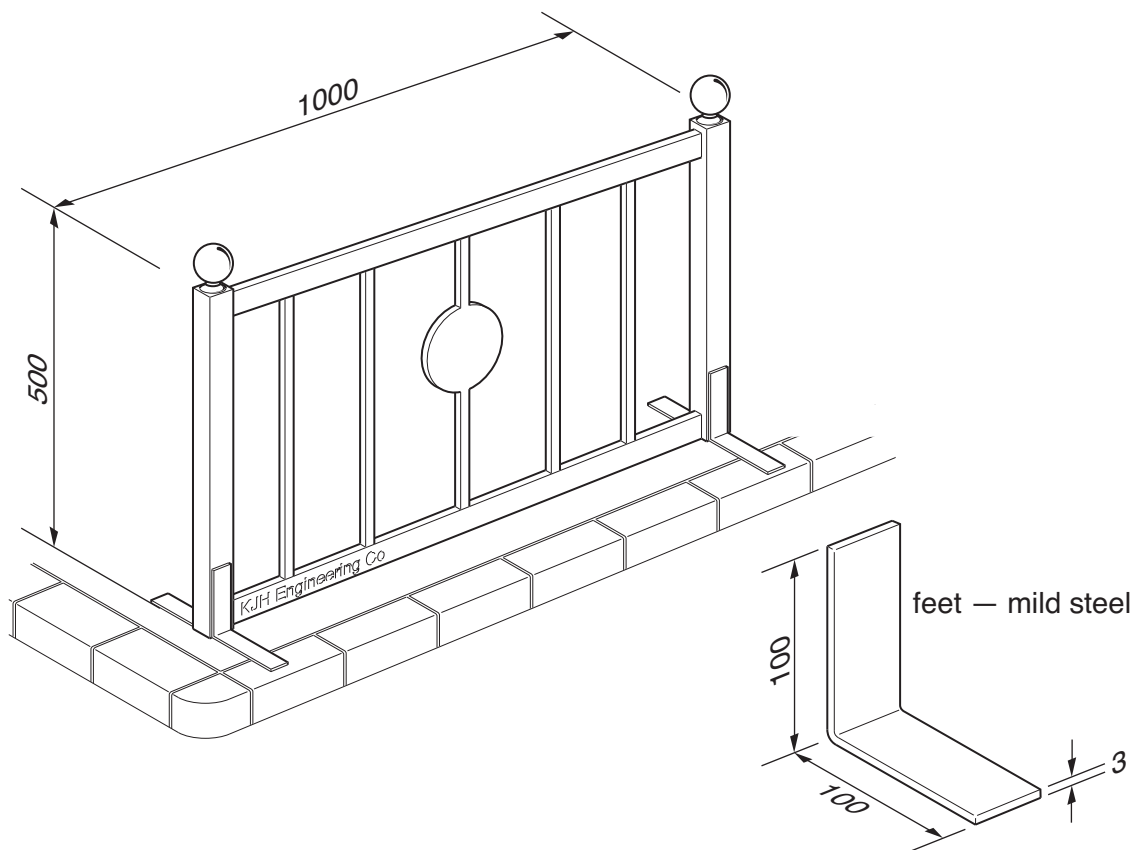


Fig. 5

(a) Use sketches and notes to design a bending jig to make a batch of 100 feet. Your design must:

- locate the metal blank securely;
- cold bend the blank;
- be held in an engineer's vice;
- include manufacturing details.

ANSWER PART (a) HERE

- (b) The jig has to account for 'springback'. Explain what is meant by the term 'springback'.

.....

.....

.....

..... [2]

- (c) Use detailed sketches and notes to show how the feet could be attached to the frame and allow height adjustment for the decorative garden railing.

[4]

[Total: 10]

- 5 (a) Manufacturers are legally required to carry out risk assessments to protect their workforce.

Give the **three** key stages when carrying out a risk assessment.

.....

.....

.....

.....

..... [3]

- (b) Manufacturers will have to implement COSHH regulations as part of the process of risk assessment.

(i) State what the letters COSHH stand for.

..... [1]

(ii) Give **one** example of where these regulations apply.

.....

..... [2]

- (c) Many household products have a built-in obsolescence.

Explain, using a household product as an example, what is meant by the term 'built-in obsolescence'.

.....

.....

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.....

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.....

.....

..... [4]

[Total: 10]

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