



ADVANCED GCE

DESIGN AND TECHNOLOGY

2524/01

Unit 7: Product Design 2

Papers 2524/01 and 2524/02 should be available to candidates for the full 2 hour 30 minutes examination session

Candidates answer on the Answer Booklet

OCR Supplied Materials:

- 8 page Answer Booklet

Other Materials Required:

None

**Wednesday 20 January 2010
Morning**

Duration: 1 hour



INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the spaces provided on the Answer Booklet.
- Use black ink. Pencil may be used for graphs and diagrams only.
- **This paper is to be taken with 2524/02 in the same examination session of 2 hours 30 minutes.**
- Approximately 1 hour should be spent on this paper (Paper 2524/01).
- This paper (2524/01) contains **seven** questions.
- You are required to answer **two** questions.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Please note that the instruction 'discuss' denotes that you should:
 - identify **three** relevant issues/points raised by the question;
 - explain why you consider these issues to be relevant;
 - use **two** specific examples/evidence to support your answer.
- Do **not** write in the bar codes.

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 (2524/01) is **48**.
- All dimensions are in mm.
- This document consists of **8** pages. Any blank pages are indicated.



You are required to answer **two** questions.

Answer the questions in the separate answer booklet.

- 1 Fig.1 shows a desk used in schools. The desk has a metal frame. The desk top is made from a manufactured board with a plastic laminate surface.

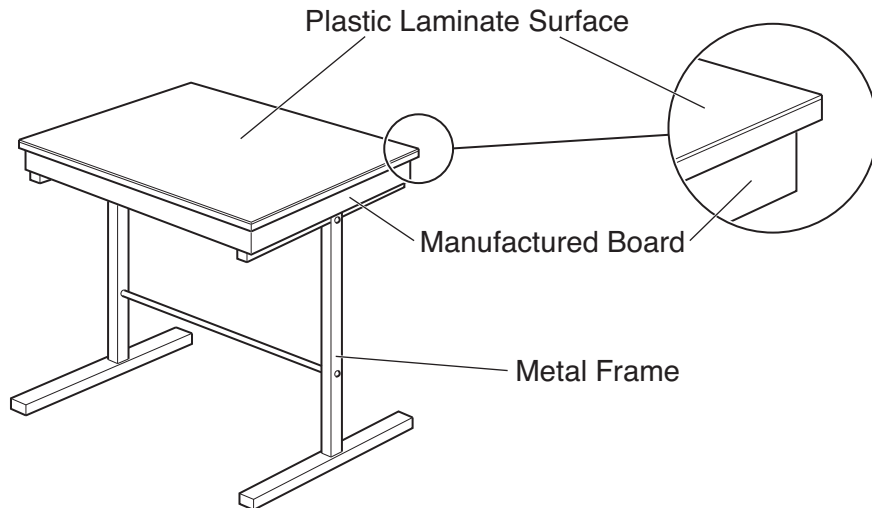


Fig. 1

- (a) (i) Give **two** reasons why a manufactured board is a suitable material for this desk top. [2]
 (ii) Name **two** manufactured boards that could be used to make the desk top. [2]
 (iii) Describe **two** ways in which the top of the desk could be attached to the frame. Use sketches where appropriate. [4]
- (b) (i) Describe how the plastic laminate is fixed to the board surface during manufacture. Use sketches where appropriate. [4]
 (ii) Describe how the edges of the desk top would be finished. Use sketches where appropriate. [4]
- (c) Discuss the implications to the manufacturer of using manufactured board in the production of furniture. [8]

[Total: 24]

2 Fig. 2 shows a tubular bicycle frame.

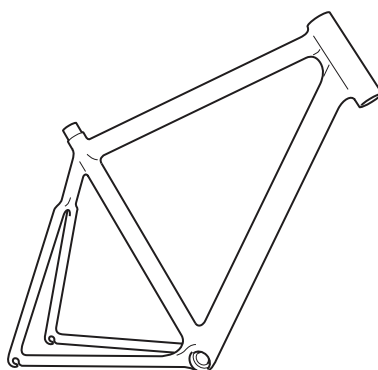


Fig. 2

- (a) (i) Name **two** specific metals that are used in the manufacture of tubular bicycle frames. [2]
- (ii) Name **two** finishes applied to tubular bicycle frames. [2]
- (iii) Describe **two** different forces that act within a bicycle frame when it is in use. Use sketches where appropriate. [4]
- (b) (i) Describe how the frame would be finished using an electro-static applied coating. Use sketches where appropriate. [4]
- (ii) Describe how the manufacturer would check that the frame is aligned correctly during the manufacturing process. [4]
- (c) Discuss the implications of using modern materials for high performance sports equipment. [8]

[Total: 24]

3 Fig. 3 shows a standard 13 Amp plug.

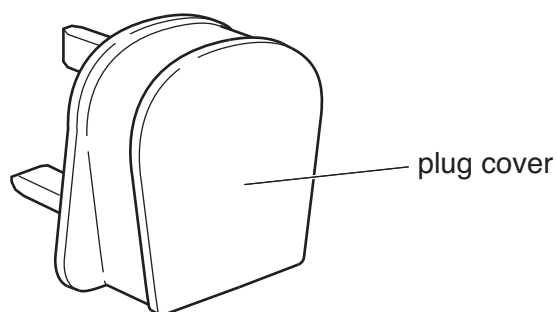


Fig. 3

(a) (i) Give **four** reasons why thermosetting plastics are suitable for making 13 Amp plugs. [4]

(ii) Additives can change the characteristics and properties of plastics.

Give **four** changes that can be achieved by using additives with plastics. [4]

(b) The cover of the 13 Amp plug shown in Fig. 3 is made by compression moulding.

Describe the process of compression moulding the plug cover, including the most important features of the mould. Use sketches where appropriate. [8]

(c) Discuss the implications of ensuring the safety of consumers using mains voltage domestic appliances. [8]

[Total: 24]

4 Fig. 4 shows a carton designed to hold fruit juice.

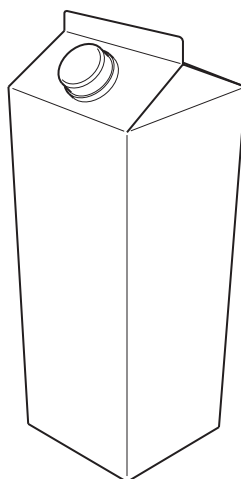


Fig. 4

- (a) (i) Give **two** reasons why laminated paperboard is a suitable material for fruit juice cartons. [2]
- (ii) State **two** methods used to show if cartons have been tampered with prior to opening. [2]
- (iii) Laminated paperboard consists of several layers. Identify and explain the function of **two** of them. Use sketches where appropriate. [4]
- (b) (i) Draw a net of the carton shown in Fig.4. [4]
- (ii) Describe the press forme that would be used to manufacture the cartons. Use sketches where appropriate. [4]
- (c) Discuss the implications of replacing glass bottles with laminated paperboard cartons for packaging liquids. [8]

[Total: 24]

- 5 Fig. 5 shows an event ticket with a printed hologram.

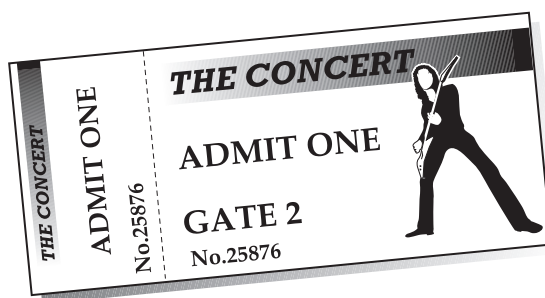


Fig. 5

- (a) (i) Name **two** other products that have holographic images printed on them. [2]
- (ii) Give **two** reasons, other than security, why holographic images are used. [2]
- (iii) Give **four** examples of security measures, other than holographic images, that could be used on a ticket. [4]
- (b) (i) Due to the relative strength of the paper used in the event tickets, the counterfoil is perforated. Describe the perforation process. [4]
- (ii) Describe how colouring is applied to the ticket using the offset-lithographic printing process. Use sketches where appropriate. [4]
- (c) Discuss the implications for manufacturers involved in the printing industry with the widespread development of ICT. [8]

[Total: 24]

- 6 Fig. 6 shows a bag made using a decorative weave fabric (e.g. jacquard).

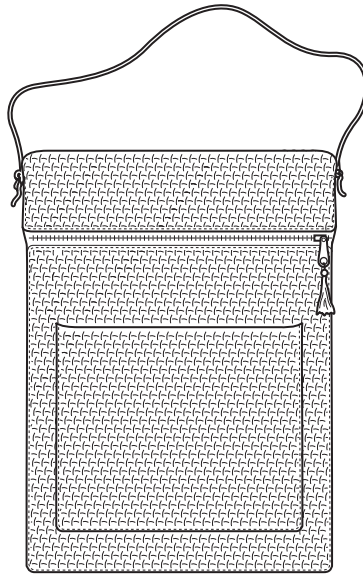


Fig. 6.

- (a) (i) Name **two** pre-manufactured standard components used to make the bag shown in Fig. 6. [2]
- (ii) Name **one** fibre that could be used to make the decorative weave fabric used for the bag, giving **one** reason for your choice [2]
- (iii) Describe how the pattern is created in a decorative weave fabric. [4]
Use sketches where appropriate.
- (b) Describe the order of manufacture of the bag shown in Fig. 6. Use sketches where appropriate. [8]
- (c) Discuss the implications of using CAD/CAM when designing and manufacturing decorative fabrics. [8]

[Total: 24]

7 Fig. 7 shows a gilet made from a quilted fabric.



Fig. 7

- (a) (i) Name **four** performance characteristics needed by the fabric used for the outer layer of the gilet. [4]
- (ii) The fabric used for the outer layer of the gilet has been coloured using a batch dyeing process. Describe how this would be done in industry. Use sketches where appropriate. [4]
- (b) Describe the order of work for quilting the fabric for the gilet. Use sketches where appropriate. [8]
- (c) Discuss the implications of re-cycling textile products. [8]

[Total: 24]

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