



**DESIGN TECHNOLOGY  
 STANDARD LEVEL  
 PAPER 2**

Tuesday 13 November 2001 (afternoon)

1 hour

Name

Number

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**INSTRUCTIONS TO CANDIDATES**

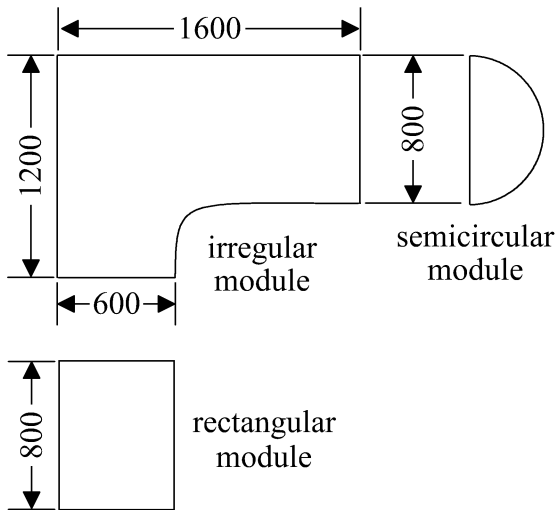
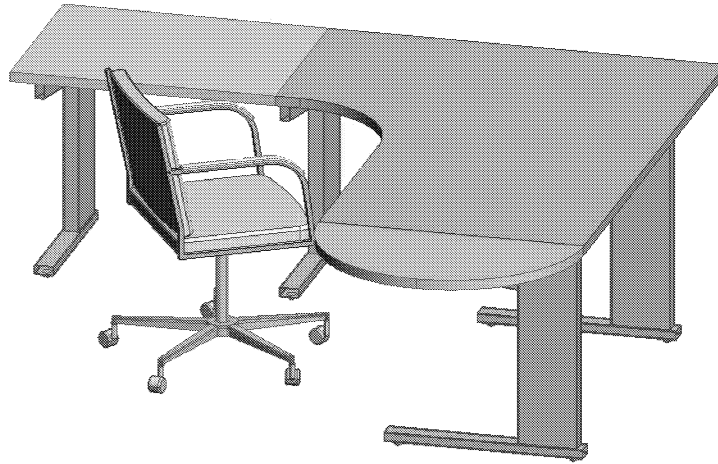
- Write your candidate name and number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Section A: Answer all of Section A in the spaces provided.
- Section B: Answer one question from Section B. Write your answers in a continuation answer booklet, and indicate the number of booklets used in the box below. Write your name and candidate number on the front cover of the continuation answer booklets, and attach them to this question paper using the tag provided.
- At the end of the examination, indicate the number of the Section B question answered in the box below.

QUESTIONS ANSWERED		EXAMINER	TEAM LEADER	IBCA
SECTION A	ALL	/20	/20	/20
SECTION B	.....	/20	/20	/20
NUMBER OF CONTINUATION BOOKLETS USED	.....	TOTAL /40	TOTAL /40	TOTAL /40

**SECTION A**

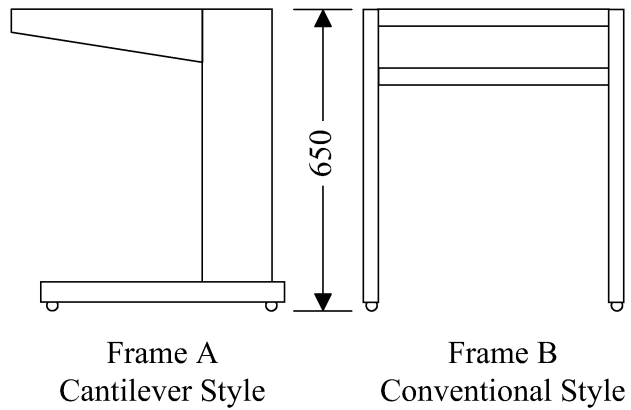
Candidates must answer **all** questions in the spaces provided.

1. Modular office furniture can provide flexible, attractive solutions. Users can choose from a range of modules and combine them to provide the personal workspace required.



The modules used to create the L-shaped layout shown in the picture.

Support Frame options.



All dimensions are mm.

*(This question continues on the following page)*

*(Question 1 continued)*

(a) (i) State the dimension that must be common to all the modules. [1]

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(ii) Calculate the smallest rectangular floor area into which the L-shaped layout will fit. [2]

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(b) State **two** other ergonomic considerations other than anthropometric ones that should be taken into account in the design of the workspace. [2]

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(c) The modules are available with oak veneer or plastic laminate as the surface finish. Identify **two** criteria that can be used to choose between the oak veneer and the plastic laminate. [2]

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(d) Suggest **two** reasons why Frame A is more expensive to manufacture than Frame B. [2]

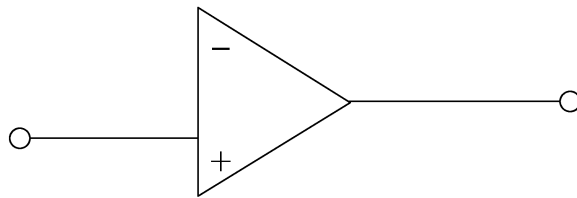
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2. A sensor provides a signal in the range  $-0.25\text{V}$  to  $+0.25\text{V}$ . An amplifier is needed to produce an output from this in the range  $-2.5\text{V}$  to  $+2.5\text{V}$ .

(a) Calculate the gain required. [1]

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(b) Complete the following circuit showing all other relevant components and values to show how this gain can be achieved. [4]



3. Designers often use modelling techniques. A designer has a brief to produce a new range of coffee cups.

(a) State an advantage of using sketching to produce the initial ideas. [1]

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(b) Describe **two** disadvantages of the use of Computer Aided Drawing (CAD) to design the coffee cups. [2]

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4. Craftsman jewellers are often asked to produce one-off commissions for individual clients.

(a) Define *craft production*. [1]

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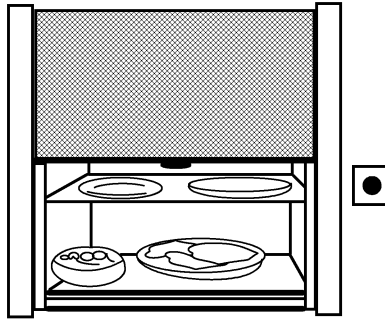
(b) Explain why planned obsolescence is **not** relevant in this context. [2]

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**SECTION B**

Answer **one** question. Up to three additional marks are available for the construction of your answer. Write your answers in a continuation answer booklet. Write your name and candidate number on the front cover of the continuation answer booklets, and attach them to this question paper using the tag provided.

5. A food lift (dumbwaiter) in an hotel taking food from the kitchen to the dining room on another floor is to be automated. The lift can be called by pressing a button on either floor.



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The lift has buttons and indicators at the kitchen and dining levels as follows:

Buttons	Call lift Lift ready
Indicators	Lift here Lift ready

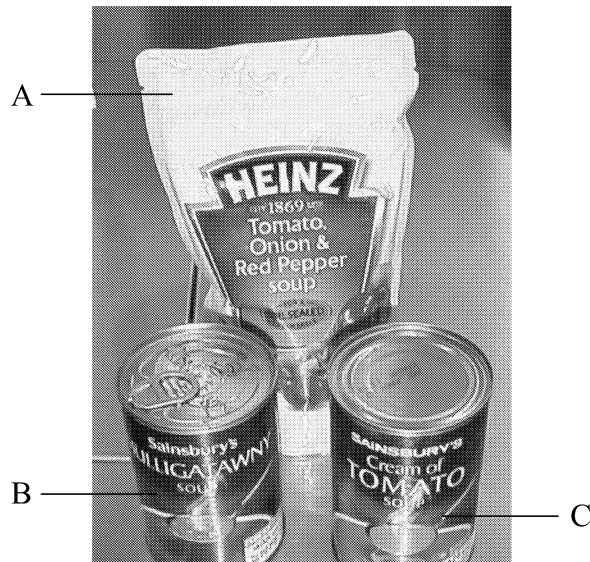
- (a) (i) State a suitable device to be used for the indicators. [1]
- (ii) Draw the circuit symbol for the device selected in (a) (i). [1]
- (b) Describe **three** safety issues connected with the operation of the lift. [6]
- (c) Design a flow chart to describe the operation of the lift. [9]

6. A school is redesigning its sports hall to cater for a wider range of activities.



- (a) (i) State the type of physical model the designer could use to obtain responses from potential users. [1]
- (ii) Identify **two** aspects of the design to which legislation would apply. [2]
- (b) (i) Describe **two** strategies the designer could use to obtain relevant ergonomic information. [4]
- (ii) Suggest **two** criteria for the floor of the new sports hall. [2]
- (c) Some of the activities are spectator events attracting large audiences. Discuss how the designer can produce a specification that recognises the conflicting demands of the players and the spectators. [8]

7. The picture shows three packages for a new range of soups to be marketed.



A is a flexible foil pack, B is a ring pull can and C is a conventional can.

- (a) (i) Define *ergonomics*. [1]
  - (ii) Identify:
    - (a) safety issues for **two** of the packages. [2]
    - (b) 'ease of use' issues for **two** of the packages. [2]
  - (b) The ring pull can is more expensive to manufacture. Suggest **three** reasons why the manufacturer would choose this package. [3]
  - (c) Discuss the reuse and recycling opportunities presented by each of the packages. [9]
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