



**DESIGN TECHNOLOGY
HIGHER LEVEL
PAPER 3**

Tuesday 21 May 2002 (morning)

1 hour 15 minutes

Name

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Number

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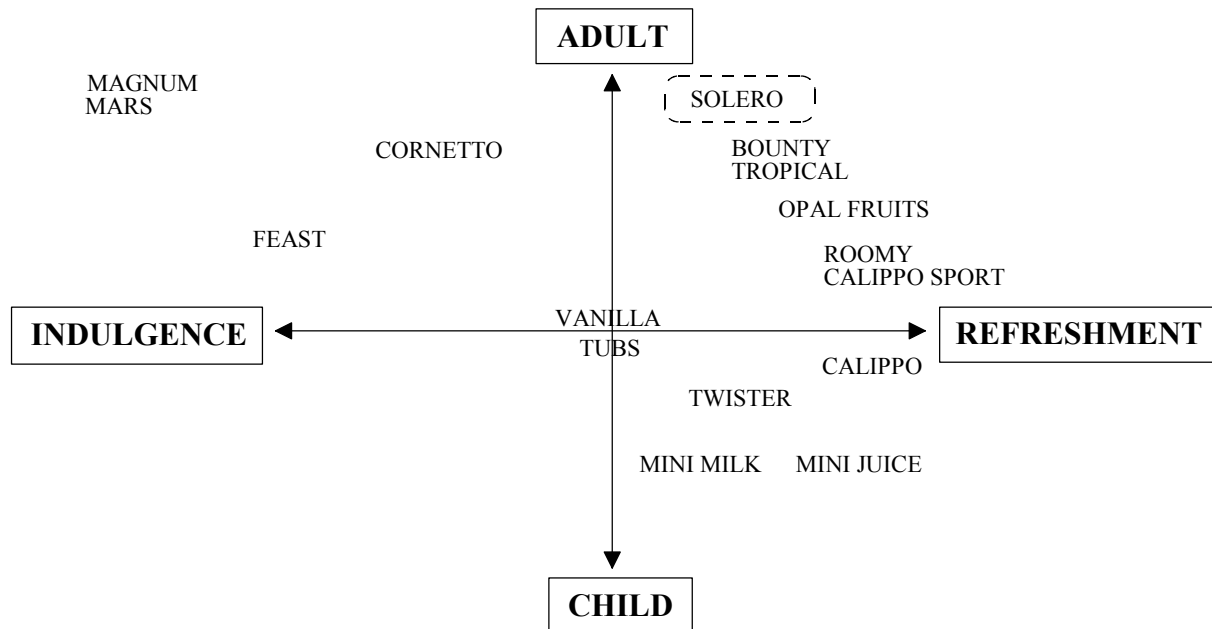
INSTRUCTIONS TO CANDIDATES

- Write your candidate name and number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Answer all of the questions from two of the Options in the spaces provided. You may continue 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 letters of the Options answered in the boxes below.

OPTIONS ANSWERED		EXAMINER	TEAM LEADER	IBCA
		/20	/20	/20
		/20	/20	/20
NUMBER OF CONTINUATION BOOKLETS USED	TOTAL /40	TOTAL /40	TOTAL /40

Option D – Food technology

- D1.** The graph below shows two bipolar axes (indulgence-refreshment, adult-child) which can be used to identify two markets (adult, child) and two distinct types of ice cream product (indulgence products (e.g. thick chocolate and rich ice cream products) and refreshment products (e.g. fruit ices)).



- (a) Identify (from the graph above) **one** ice cream product designed for children. [1]

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- (b) Outline the role of tasting panels in developing the specification of new products. [2]

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- (c) Explain the importance of being able to compare new food products with existing products. [3]

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D2. Outline **one** factor that determines a need for primary food processing. [2]

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D3. (a) Define *aeration*. [1]

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(b) Outline how aeration affects the physical properties of bread. [2]

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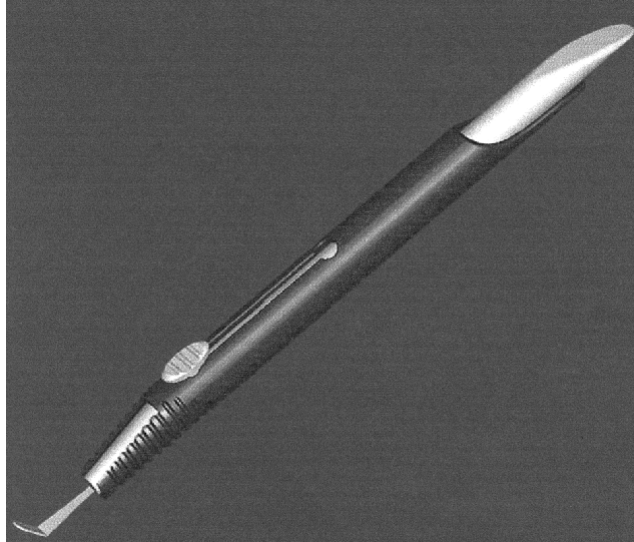
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D4. Discuss the acceptance by the general public of foods produced by novel techniques.

[9]

Option E – Computer aided design and manufacturing

E1. The picture below illustrates a product developed using CAD/CAM.



- (a) Identify **one** input device that can be used by a CAD system. [1]

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- (b) Outline the impact of CAD/CAM on working conditions for the workforce. [2]

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- (c) Explain how the application of virtual reality in the marketing of consumer products can help conserve resources. [3]

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E2. Outline **one** disadvantage of JIT (Just-in-Time) to manufacturers. [2]

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E3. (a) Define *patent*. [1]

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(b) Outline the implications of computerised manufacture on the infringement of copyright and patent laws. [2]

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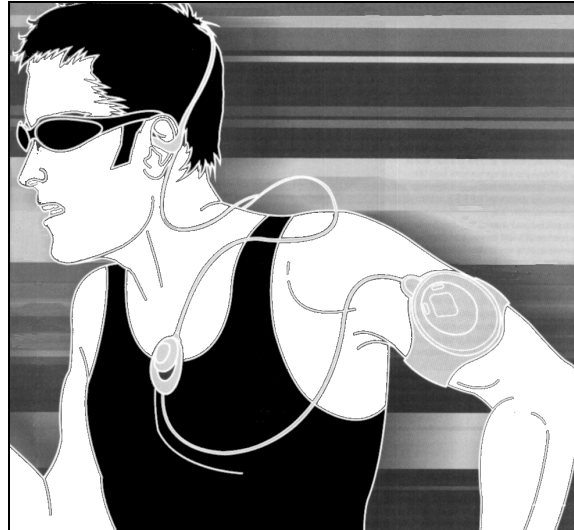
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E4. Explain how multinational companies may utilise modern communications technology to enhance the efficiency of their operation. [9]

Option F – Invention, innovation and design

- F1.** A portable sports audio MP3 player can be used to download music from the Internet. The diagram below shows a portable sports audio MP3 player strapped onto an athlete's arm so that the music can be listened to whilst the athlete is exercising.



- (a) Define *innovation*. [1]

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- (b) Outline the meanings of *technology push* and *market pull*. [2]

Technology push:
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Market pull:
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- (c) Discuss whether this design is an example of technology push or market pull. [3]

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F2. Draw a simple model to describe innovation.

[2]

F3. (a) Define *invention*.

[1]

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(b) Outline how **one** scientific invention has contributed to the development of the telephone.

[2]

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F4. Discuss how technological developments have had positive and negative impacts on physically-impaired people. [9]

Option G – Health by design

- G1.** The photograph below shows an individual diabetic urine testing stick and the side of the bottle showing the colour panels used to quantify the amount of sugar in the urine.



- (a) State **one** advantage of using diabetic testing sticks over earlier methods of testing. [1]

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- (b) Outline how diabetic sticks work. [2]

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- (c) Explain how the availability of diabetic sticks has impacted on the lives of diabetics. [3]

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- G2.** Outline how developments in manufacturing techniques have led to the widespread use of disposable syringes. [2]

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- G3. (a)** Draw a conventional liquid-in-glass thermometer. [2]

- (b)** State **one** disadvantage of a liquid-in-glass thermometer for measuring a patient's temperature. [1]

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G4. Explain how exhaust gases from motor vehicles affects air quality.

