

DESIGN TECHNOLOGY HIGHER LEVEL PAPER 3	Name
Wednesday 14 November 2001 (morning)	Number
1 hour 15 minutes	

INSTRUCTIONS TO CANDIDATES

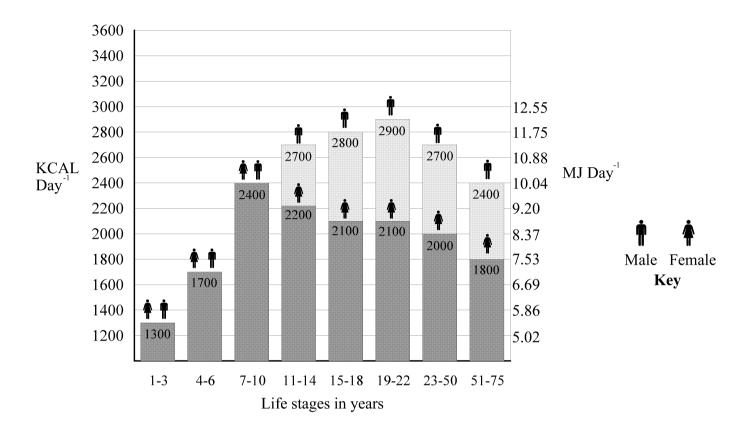
- Write your candidate name and number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Answer all of the questions from two of the Options in the spaces provided. You may continue your answers in a continuation answer booklet, and indicate the number of booklets 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		TIONS ANSWERED EXAMINER		IBCA
		/20	/20	/20
		/20	/20	/20
NUMBER OF CONTINUATION BOOKLETS USED		TOTAL /40	TOTAL /40	TOTAL /40

881-199 9 pages

Option D – Food technology

The bar chart shows the energy requirements for people at different stages of their life.

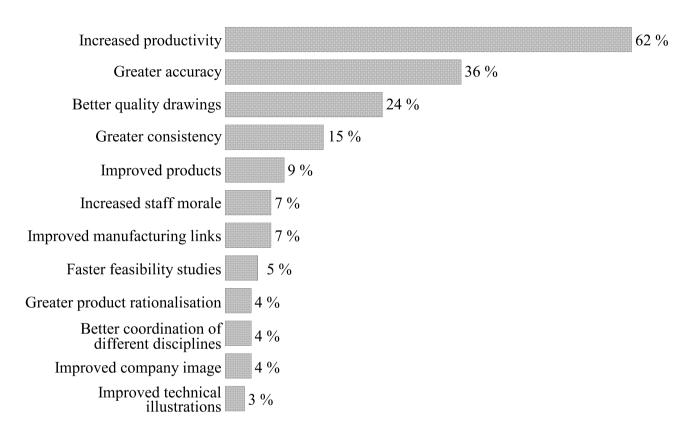


D1.	(a)	State the age span over which females have an energy requirement of 2100 Kcal per day.	[1]
	(b)	Describe the relationship between the energy requirements for males and females over the whole lifespan.	[2]
	(c)	Outline how nutritional requirements and food choice change as a person gets older.	[3]

D2.	Describe how food irradiation affects the storage properties of fruit.	[3]
D3.	Outline a lifestyle issue resulting from the increase in the popularity of cook-chill food products in many parts of the world.	[2]
D4.	Discuss the advantages and disadvantages for consumers of the use of transgenic techniques in the production of tomatoes.	[9]

Option E - Computer aided design and manufacturing

The bar chart shows the results of a survey carried out in the 1980s of 74 companies across a variety of design professions asking what benefits the companies felt they had actually received from using CAD.



E1.	(a)	State one reason why increased productivity was considered the major benefit of using CAD.	[1]
	(b)	Identify one reason why the use of CAD increased staff morale.	[2]
	(c)	Explain the relationship between greater consistency and greater accuracy when using CAD.	[3]

E2.	Outline the difference between a numerically controlled machine (NC) and a computer numerically controlled machine (CNC).	[2]
E3.	Compare physical models with computer simulations as a means of communication for designers.	[3]
E4.	Using examples of domestic products, discuss the use of fuzzy logic and expert systems technologies.	[9]

Option F – Invention, innovation and design

The illustration shows a racing bicycle incorporating the latest technology in its design.



F1.	(a)	State one reason why the bicycle wheel shown can be classified as innovative compared to previous bicycle wheel designs.	[1]
	(b)	Outline one reason for the re-design of the handlebars.	[2]
	(c)	Explain one advantage of the use of new materials in the design of the bicycle in general.	[3]
F2.	Outl	ine an example of market pull in relation to the design of ovens.	[2]
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F3.	Explain, with reference to a suitable example, one reason why the pace of innovation continues to quicken.	[3]
F4.	Modern communication innovations are allowing more people to work from home. With reference to two specific innovations, discuss the advantages and disadvantages of this trend for physically impaired people.	[9]

Option G – Health by design

The table describes a range of different types of contact lenses available on the market.

Туре	Description
Hard	The original lens – needs cleaning daily and is not suitable for all users.
Rigid Gas Permeable	Made from stiff plastic and gradually replacing hard lenses. More durable than soft lenses but takes time to get used to them.
Soft	Made from oxygen-permeable soft plastic. High comfort and compatibility rating.
Frequent Replacement	Soft disposables used for a week to a month depending on wear but must be cleaned each day.
Daily Disposable	Soft and used on a daily basis with no need for cleaning.
Extended Wear	Similar to frequent replacement but no need to take them out at night for cleaning.
Coloured	Coloured and patterned lenses to change eye appearance.

G1.	(a)	State the name of the lens used primarily for cosmetic purposes.	[1]
	(b)	Explain one reason why the earliest type of lens was hard.	[2]
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	(c)	Outline three reasons why so many different lenses are available.	[3]
G2.	State	two disadvantages of the use of the conventional liquid-in-glass medical thermometer.	[2]

G3.	Evaluate the benefits of the development of the disposable syringe to people with diabetes.	[3]
G4.	Explain how designers of future motor vehicles may be able to reduce the impact of the use of the vehicles on the health of people.	[9]