Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
TOTAL	

General Certificate of Secondary Education
June 2010

Design and Technology: Food Technology 45451

Written Paper

Wednesday 23 June 2010 1.30 pm to 3.30 pm

For this paper you must have:
- a pen, a pencil, a ruler, an eraser, a pencil sharpener and coloured pencils.

Time allowed
- 2 hours

Instructions
- Use black ink or black ball-point pen. Use pencil and coloured pencils only for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 120.
- The question in Section A relates to the context referred to in the preliminary material that was previously issued.
- You are reminded of the need for good English and clear presentation in your answers. Quality of Written Communication will be assessed in Question 6 (a).

Section A

Answer this question.

Section A is about designing new products.

You should spend about 30 minutes on this question.

Research Context:	Protein rich foods
Design Theme:	Savoury, main meal products

1 (a) On the opposite page, sketch **two** different design ideas for a savoury, main meal product. You **must** annotate your sketches to explain how your ideas meet each of the design criteria below. Do **not** draw any packaging.

Here are the design criteria for this product.

The product must

- have sensory appeal
- include a flavoured sauce
- help towards the '5 a Day Campaign'
- include a main ingredient which is rich in protein from an animal source.

Design idea 1 **Product name** .....

Design idea 2 **Product name** .....

Question 1 continues on the next page *(12 marks)*

1 (b) Tick the box below to show which of your design ideas you will choose to develop.

Design Idea 1 ☐ Design Idea 2 ☐

1 (b) (i) Using the chart below, produce a plan for making your chosen design idea in a test kitchen.

Hygiene and safety checks	Stages of making	Quality control checks

(8 marks)

1 (b) (ii) Name **one** material suitable for packaging your chosen design idea.

.....

(1 mark)

1 (b) (iii) Give **two** reasons why this material is suitable.

1 .....

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2 .....

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(2 marks)

1 (c) Food packaging often shows nutritional information.

1 (c) (i) Complete the table below to show **two** different nutrients provided by your chosen design idea. In **each** case give the function of the nutrient in the body.

An example is given for you.

Nutrient	Function of this nutrient in the body
Protein	*For growth, repair and energy*

(4 marks)

Question 1 continues on the next page

1 (c) (ii) Explain how your chosen design idea could be developed for consumers who are vegetarians.

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(3 marks)

30

Section B

Answer **all** questions.

Question 2 is about market trends.

You should spend about 20 minutes on this question.

2 (a) (i) Give **two** ways a computer could be used when researching market trends.

1 .....

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2 .....

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(2 marks)

2 (a) (ii) Give **two** advantages of using computers to carry out research.

Advantage 1 .....

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Advantage 2 .....

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(2 marks)

2 (a) (iii) Explain **one** disadvantage of using computers to carry out market research.

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(2 marks)

Question 2 continues on the next page

2 (b) The table below shows the results of research into market trends for ready meals.

Units of ready meals sold 2000–2010 (thousands)

Type of ready meals sold	2000	2005	Predictions for 2010
Frozen meals	761	857	907
Chilled meals	330	457	574
Dried meals	112	130	139
Canned and ambient meals	793	781	778
Total number of units sold	1996	2225	2398

Use the information from the table above to answer the following questions.

2 (b) (i) Which type of ready meal product was most popular in the year 2000?

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(1 mark)

2 (b) (ii) Which type of ready meal product may be most popular in 2010?

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(1 mark)

2 (b) (iii) Which type of ready meal product may be least popular in 2010?

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(1 mark)

2 (b) (iv) Which type of ready meal product is predicted to make the largest increase in sales between 2005 and 2010?

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(1 mark)

2 (c) (i) What is meant by **each** of the following terms?

Chilled food

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Ambient food

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(4 marks)

2 (c) (ii) Explain why ready meal products are popular with consumers.

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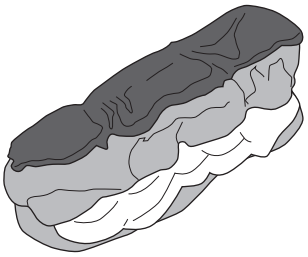
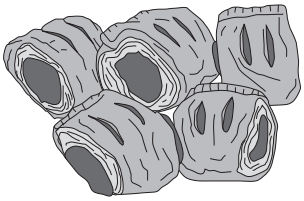
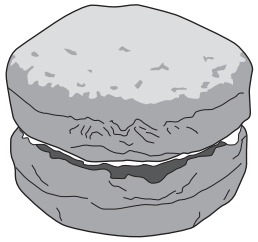
(6 marks)

20

Question 3 is about products that offer a healthier option.

You should spend about 20 minutes on this question.

3 (a) (i) Complete the chart below to explain **two** developments that will help **each** product meet healthy eating guidelines.

Development ideas for healthier chocolate éclairs 	*Development 1* .... *Reason*	*Development 2* .... *Reason* ....
Development ideas for reducing fat levels in sausage rolls 	*Development 1* .... *Reason*	*Development 2* .... *Reason* ....
Development ideas for increasing the fibre (NSP) content of a sandwich cake 	*Development 1* .... *Reason*	*Development 2* .... *Reason* ....

(12 marks)

3 (a) (ii) How do food manufacturers inform consumers about healthy eating guidelines?

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(3 marks)

3 (b) Consumers are encouraged to use the 'Eat well Plate'.

Explain **five** key features of the 'Eat well Plate'.

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(5 marks)

20

Question 4 is about the production of quality food products.

You should spend about 20 minutes on this question.

4 A food manufacturer uses the following ingredients in a new pizza product for children.

Pizza Base	**Pizza Topping**
strong plain flour salt sugar yeast water – hand hot oil	mozzarella cheese parmesan cheese tomatoes – sliced tomato puree

4 (a) Complete the list of product specification points for this pizza product.

The pizza product must:

1 *be suitable for young children*

2 .....

3 .....

4 .....

5 .....

(4 marks)

4 (b) (i) Explain **two** different control checks a test kitchen may make when adding pizza toppings.

Control check 1 .....

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Control check 2 .....

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(4 marks)

4 (b) (ii) During pizza production in a test kitchen the following two problems, shown in the table below, were found.

Complete the table below to show **two** causes of each problem.

Explain how each problem may be prevented.

Problem 1: Slices of the cooked pizza were dry.	Cause	Prevent by ....
	Cause	Prevent by ....
Problem 2: The dough base did not rise.	Cause	Prevent by ....
	Cause	Prevent by ....

(8 marks)

4 (c) Explain how the use of standard components can give a consistent pizza product.

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(4 marks)

20

Turn over ►

Question 5 is about maintaining high standards of food hygiene.

You should spend about 18 minutes on this question.

5 (a) How do food workers prepare themselves **and** make sure they are hygienic and fit for work?

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(5 marks)

5 (b) (i) Explain why food probes are used in a test kitchen.

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(2 marks)

5 (b) (ii) Give **three** instructions that need to be followed when using a food probe.

Instruction 1 .....

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Instruction 2 .....

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Instruction 3 .....

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(3 marks)

5 (b) (iii) Explain how refrigerators and chillers are kept at the correct temperature for safe food storage.

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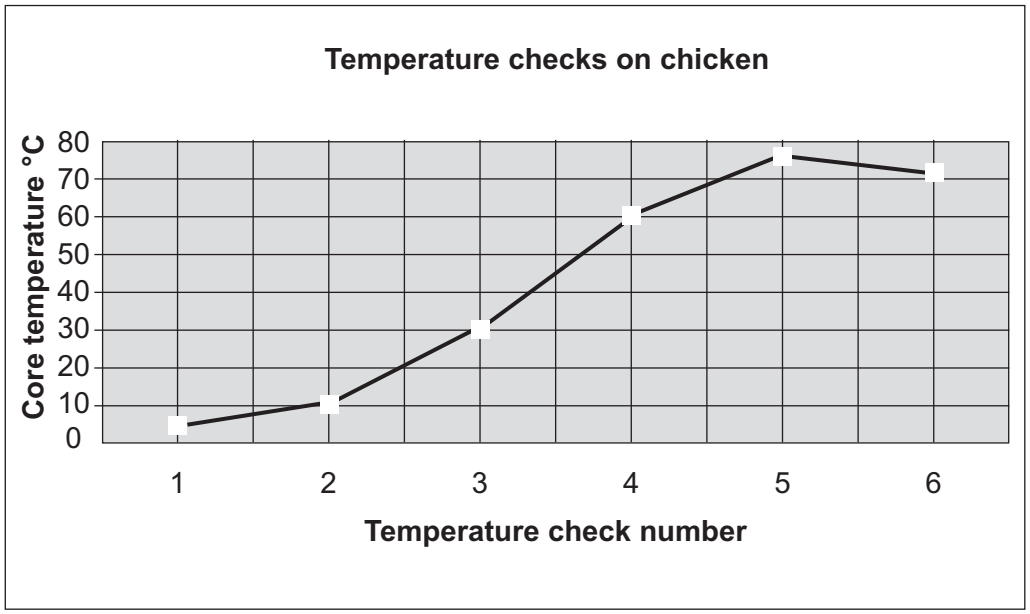
(4 marks)

Question 5 continues on the next page

5 (c) The graph below shows the results of temperature checks on a chicken product.

Use the information from the graph to fill in the missing information in the reports.



REPORT 1

At temperature check one the chicken was taken out of the refrigerator.

The refrigerator was at the correct temperature of

..... °C.

REPORT 2

By temperature check two the core temperature of the chicken had entered the danger zone

..... °C to ..... °C. (This is when bacteria are most active.)

REPORT 3

At temperature check five the cooked chicken was safe to eat because the core temperature was at least

..... °C for 2 minutes.

(4 marks)

18

Turn over for the next question

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Question 6 is about issues related to food production.

You should spend about 12 minutes on this question.

6 (a) Explain some of the issues related to the packaging of food products.

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(6 marks)

6 (b) Explain some of the issues related to food miles.

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(4 marks)

6 (c) Explain some of the issues related to the use of new technologies to extend shelf life, eg GM foods or nanotechnology.

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(2 marks)

12

END OF QUESTIONS

There are no questions printed on this page

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