

Surname					Other Names				
Centre Number					Candidate Number				
Candidate Signature									

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General Certificate of Secondary Education
June 2004



**DESIGN AND TECHNOLOGY:
FOOD TECHNOLOGY
Higher Tier**

3542/H

H

Monday 21 June 2004 9.00 am to 11.00 am

In addition to this paper you will require:
a pen, pencil, ruler, eraser, pencil sharpener and
coloured pencils.

For Examiner's Use	
Number	Mark
1	
2	
3	
4	
5	
6	
7	
TOTAL	
Examiner's initials	

Time allowed: 2 hours

Instructions

- Use blue or black ink or ball-point pen. Use pencil and coloured pencils only for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** the questions in the spaces provided.
- All working must be shown.
- Do all rough work in this book. Cross through any work you do not want marked.

Information

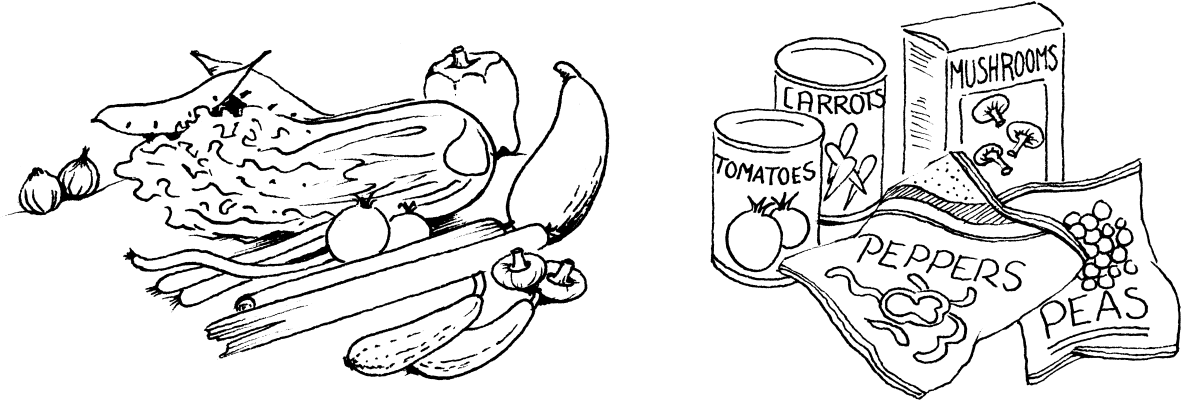
- The maximum mark for this paper is 125.
- Mark allocations are shown in brackets.
- Wherever calculations are needed you should show your working.
- You are reminded of the need for good English and clear presentation.

NO QUESTIONS APPEAR ON THIS PAGE

Answer **all** questions in the spaces provided.

Question 1 is about gathering information on food products.

1 A food manufacturer wishes to extend the range of vegetable products on sale.



(a) (i) Name **three** methods of gathering information about vegetable products.

- 1
- 2
- 3

(3 marks)

(ii) Describe how to carry out **one** method of consumer research in order to gather information on existing vegetable products.

Method chosen:

How to carry this out:

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(4 marks)

Turn over ►

- (b) The table below shows nutritional profiles for a range of existing multi-cultural vegetable products.

Product per 100 g	Energy (kJ/kcal)	Protein (g)	Carbohydrate (g)	Sugar (g)	Fat (g)	Dietary fibre (g)
Vegetable samosas	1155 kJ 276 kcal	9.7	28.2	1	13.8 2.2 saturates	1.4
Chinese spring rolls	1027 kJ 246 kcal	2.8	31.6	3.4	14.9 1.2 saturates	1.6
Vegetable kebabs	264 kJ 61 kcal	1.8	4.5	4.3	4.3 0.7 saturates	2.4
Chow mein stir fry	323 kJ 77 kcal	2.1	6	2.5	5 0.6 saturates	2.3

Using information from the table, explain why some vegetable products are often sold as “healthier options”.

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(6 marks)

(c) What are the advantages **and** disadvantages to consumers of using ready prepared vegetable products?

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(5 marks)

18

TURN OVER FOR THE NEXT QUESTION

Turn over ►

Question 2 is about food product development.

2 A manufacturer wishes to extend the range of vegetarian pastry products.

The *test kitchen* works to the following design criteria.

The successful product will:

- use fresh vegetables
- be served in individual portions
- include pastry
- have a crisp and chunky texture
- be attractive and appealing to a variety of consumers.

(a) (i) With the aid of notes and sketches, produce **two** different design ideas which meet the design criteria. Do **not** draw any packaging.

Design idea 1

(5 marks)

Design idea 2

(5 marks)

(ii) Choose **one** of your design ideas for the manufacturer to develop.

Idea 1

Idea 2

Explain in detail how your chosen design idea meets the design criteria.

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(4 marks)

(b) (i) Write a product specification for your chosen design idea.

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(5 marks)

QUESTION 2 CONTINUES ON THE NEXT PAGE

Turn over ►

(ii) List the ingredients needed to make your chosen design idea in the test kitchen.

Explain the function of each ingredient used.

	Quantities	Ingredients	Functions
Pastry:			
Filling:			

(10 marks)

(iii) Produce a plan for making your chosen idea in the test kitchen. *(8 marks)*

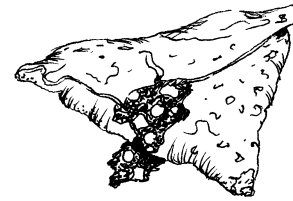
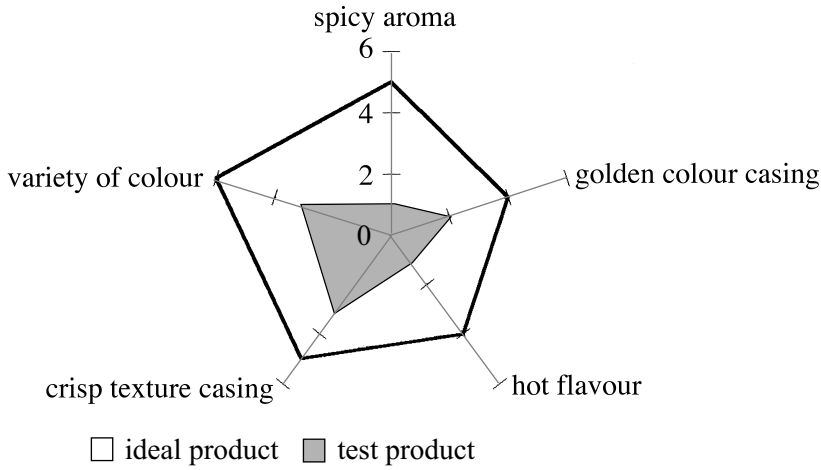
Include details of:

- **two** critical control points (CCPs) used *(2 marks)*
- **two** examples of feedback given after control checks. *(2 marks)*

You may use flow charts, diagrams, notes or sketches in your answer.

Question 3 is about developing prototypes in a test kitchen.

3 Sensory testing is carried out on a samosa product with the following results.



Ingredients: flour, water, potato, salt, ghee, cauliflower, peas

1 = poor result: 6 = good result

(a) Describe a development that would improve the samosa product in **two** different sensory areas.

Sensory area	Development
1	
2	

(6 marks)

(b) Explain how a manufacturer could correct the following problems during the production of samosas.

(i) A number of samosas are uneven in size and shape.

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(2 marks)

(ii) After frying, the samosas are too greasy.

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(2 marks)

10

TURN OVER FOR THE NEXT QUESTION

Turn over ►

Question 4 is about control checks.

4 (a) What is meant by:

(i) a critical control point (CCP)?

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(2 marks)

(ii) a quality control check?

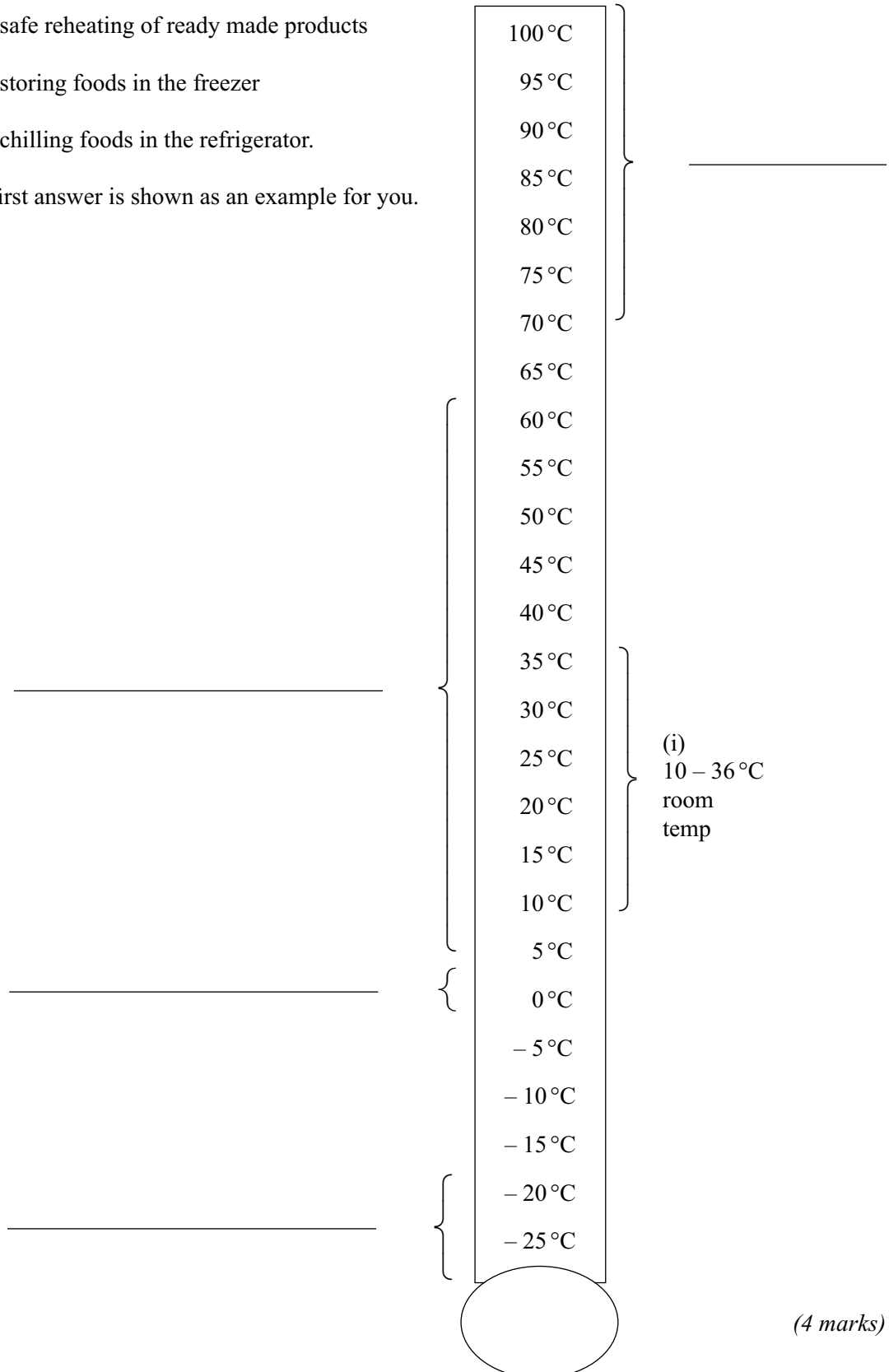
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(2 marks)

(b) Temperature control is important when manufacturing food products. Label the diagram to show the critical temperature ranges needed for the following:

- (i) room temperature 10–63 °C
- (ii) danger zone for bacterial growth
- (iii) safe reheating of ready made products
- (iv) storing foods in the freezer
- (v) chilling foods in the refrigerator.

The first answer is shown as an example for you.



(4 marks)

Turn over ►

(c) Explain how to use a food probe to take the temperature of food.



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(4 marks)

Question 5 is about selecting and using equipment in the test kitchen.

- 5 (a) Using notes and sketches, produce **two** different design ideas for potato toppings for a shepherds pie.

Idea 1

(3 marks)

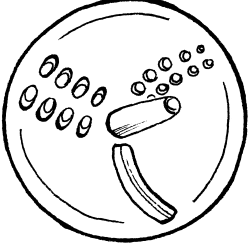
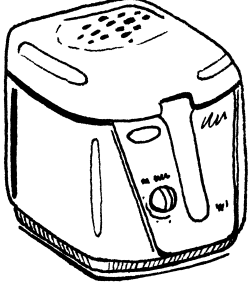
Idea 2

(3 marks)

QUESTION 5 CONTINUES ON THE NEXT PAGE

Turn over ►

- (b) Explain, with reasons, what safety precautions should be taken when using the following equipment to prepare and cook potatoes.

Equipment	Safety precautions	Reasons
 <p data-bbox="277 763 507 869">Grating and slicing disc for a food processor</p>	1	
	2	
 <p data-bbox="277 1283 475 1350">Electric deep fat fryer</p>	1	
	2	

(8 marks)

- (c) Explain the advantages of using Computer Aided Manufacture (CAM) when using industrial deep fat fryers.

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(2 marks)

Question 6 is about production costs and packaging.

6 Manufacturers use computers to help them work out batch production costs.

(a) What is meant by batch production?

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(3 marks)

(b) A manufacturer uses a spreadsheet to work out the costs of a 5kg batch of salad. The spreadsheet is shown below.

	A	B	C	D	E	F	G
1	Ingredients	weight bought(kg)	cost	cost per kg	weight used(kg)	cost used	
2	tomatoes	10.00	£3.60	£0.36	1.75	£0.63	
3	olives	10.00	£10.00	£1.00	0.50	£0.50	
4	red onion	2.50	£1.50	£0.60	0.50	£0.30	
5	cucumber	5.00	£7.00	£1.40	1.00	£1.40	
6	olive oil	0.50	£3.50	£7.00	0.10	£0.70	
7	feta cheese	1.00	£3.50	£3.50	1.00	£3.50	
8	lemon juice	0.50	£1.30	£2.60	0.15	£0.39	
9					5.00	£7.42	
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11							

(i) What are the advantages of using a computer spreadsheet to work out the final selling price?

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(4 marks)

Turn over ►

(ii) Describe **one** way the manufacturer could lower the cost of ingredients without reducing the weight or quality of the final product.

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(2 marks)

(c) Explain why the following types of packaging are suitable for ready prepared salads.

Type of packaging	Reasons
Rigid plastic containers	
MAP (modified atmosphere packaging)	

(6 marks)

(d) The following information is shown on a pack of ready prepared salad.

Explain the meaning of the information given.

Labelling information	What it means
150g e	
"Wash before use"	
Use by July 11th	

(6 marks)

TURN OVER FOR THE NEXT QUESTION

Question 7 is about organic vegetables.

7 Some vegetable products are now labelled “Organic”.

(a) Explain what is meant by the term “organic vegetables”.

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(2 marks)

(b) Give reasons why organic vegetables are becoming more popular with consumers.

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(5 marks)

END OF QUESTIONS

