

Surname	Centre Number	Candidate Number
Other Names		0



GCSE

4091/01

DESIGN AND TECHNOLOGY

UNIT 1

FOCUS AREA: Food Technology

P.M. FRIDAY, 23 May 2014

2 hours

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
Section A	1.	15
	2.	10
	3.	10
	4.	25
Section B	5.	10
	6.	15
	7.	20
	8.	15
Total	120	

ADDITIONAL MATERIALS

You will need basic drawing equipment, coloured pencils and a calculator for this examination.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. Where the space is not sufficient for your answer, continue at the back of the book, taking care to number the continuation correctly.

You are reminded of the necessity for good English and orderly presentation in your answers.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

Section A*Marked out of 60 60 minutes*

1. This question is about Product Analysis. It is worth a total of 15 marks.

The photographs show a chicken breast fillets meal for one person.
The product is contained in a sectioned plastic tray covered with a film lid. There is a card outer sleeve.



Product information:

- meal for one;
- cost £3.29;
- weight 400g;
- can be cooked in a microwave or oven;
- must be kept refrigerated;
- must be kept flat;
- suitable for freezing.

- (a) The chicken breast fillets meal must be cooked before eating. State **one** suitable cooking method for the meal. [1]

(b) Explain why the chicken breast fillets meal is sold in a sectioned plastic tray. [2]

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(c) State **one** safety point related to the product and explain why this could be harmful to the consumer.

Safety point: [1]

Explanation:

..... [2]

(d) The chicken breast fillets meal includes a serving of mashed potato. Give **two** different reasons why this mashed potato is included. [2]

Reason 1:

Reason 2:

(e) Before starting to design the chicken breast fillets meal a design specification was written.

Write a detailed specification point for **each** of the following headings.

(i) The target audience for the chicken breast fillets meal. [2]

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(ii) The size of the chicken breast fillets meal. [2]

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- (f) The chart below shows the taste test results for the chicken breast fillets meal.

Product Characteristic	Taster 1	Taster 2	Taster 3
Moist chicken pieces	5	4	4
Strong onion flavoured gravy	2	3	3
Suitable portion size	4	3	3
Creamy mashed potato	3	4	4
Suitable texture of cooked carrots	3	5	4

Note: the lowest is 1, the highest is 5.

- (i) State which product characteristic achieved the highest marks. [1]

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- (ii) Calculate the total score awarded by **Taster 3** as a percentage (%). [2]
(Show all your workings.)

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2. This question is about the general issues of Design and Technology. It is worth a total of 10 marks.

(a) (i) Draw lines to join **each R** to the correct explanation. [3]

R	Explanation
REUSE	When a product stops working it is mended.
REPAIR	When a product has been used its materials are reprocessed for use in a new product.
RECYCLE	When a product stops being useful the materials are used for another purpose.

(ii) Explain what could happen to vegetable peelings in a household that is trying to be more sustainable. [2]

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(b) Complete the table below to show if the statement is **True** or **False** by placing a **tick (✓)** in the correct column. [2]

Statements	True	False
Additives must be listed on food labels.		
Additives do not need to be tested before they can be used in foods.		

(c) Fully explain why buying a convenience food from a supermarket like the mashed potato shown below has a bigger environmental impact than buying fresh produce. [3]



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4. This question is about the Design Process and how it is used. It is worth a total of 25 marks.

(a) **Underline** the correct term for the following statements.

(i) A statement of what you intend to design and make. [1]

specification task design brief

(ii) This stage involves prototyping ideas or products. [1]

evaluation design development research

(b) Product designers analyse existing products during the design process. Give **two** reasons for carrying out this task. [2]

Reason 1:

Reason 2:

(c) Explain the importance of completing a final evaluation. [3]

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- (d) A manufacturer is planning to extend its range of chilled savoury products by introducing a savoury wrap.

Specification.

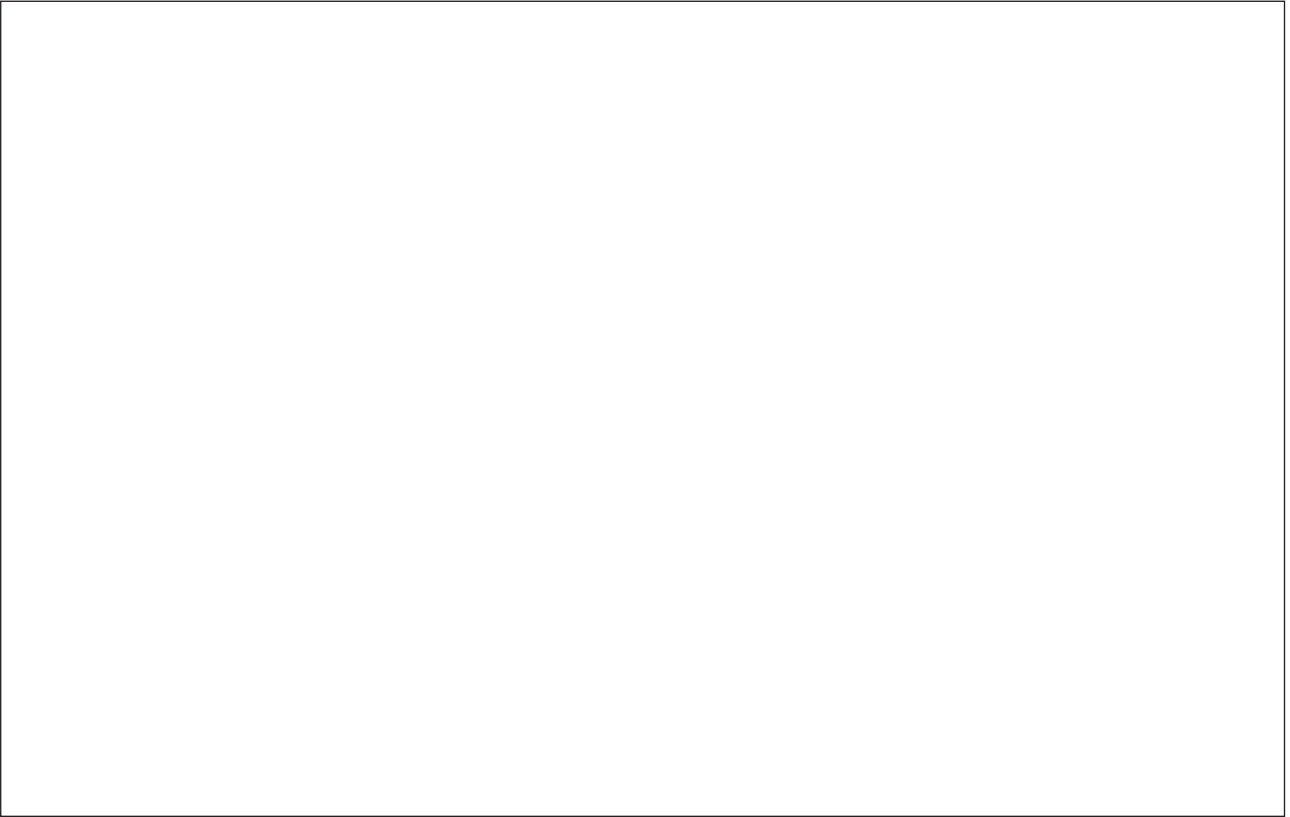
The design must:

- be suitable to be handheld;
- include a moist filling;
- include foods that would give colour and crunchy textures;
- include a range of flavours;
- provide a good source of protein.

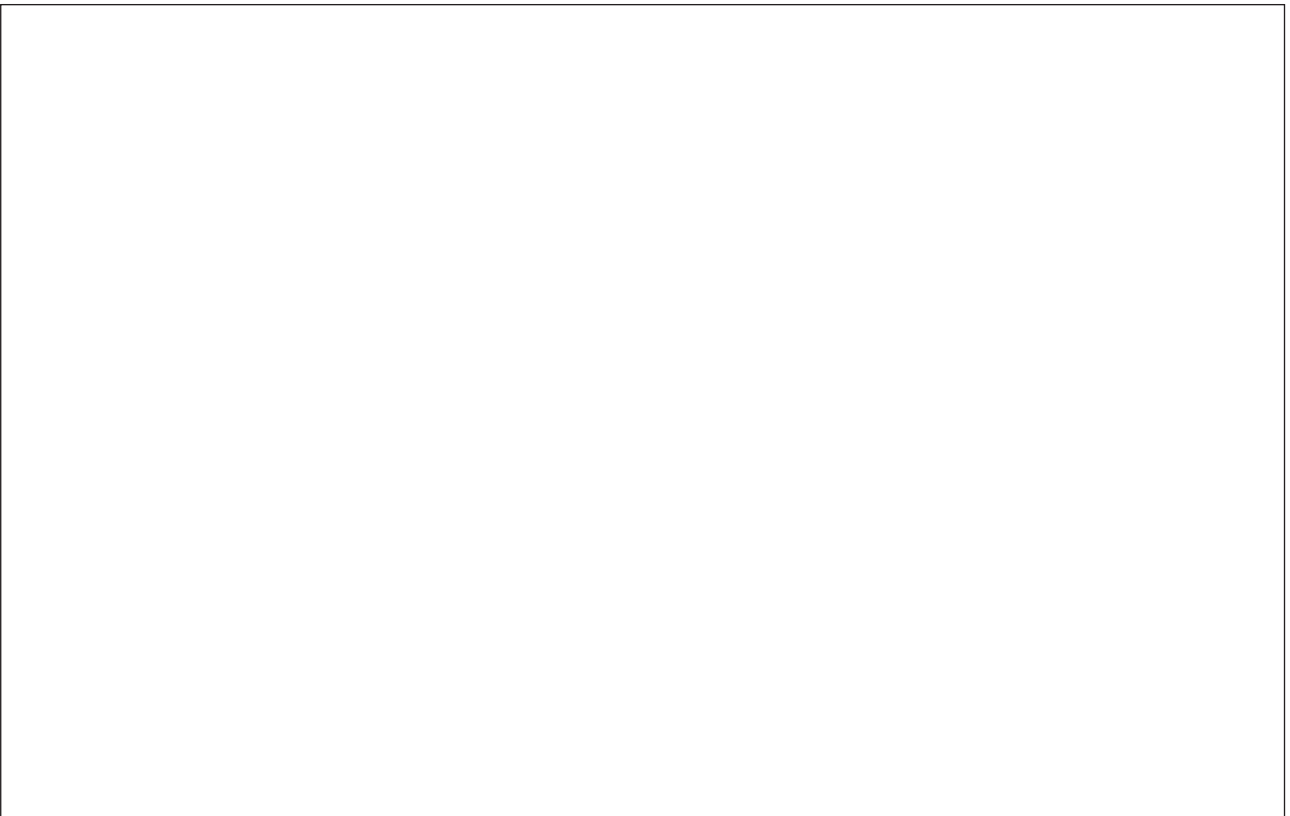
Marks will be awarded for:

- | | |
|---|-----|
| (i) a suitable savoury hand held wrap; | [3] |
| (ii) including a moist filling; | [2] |
| (iii) including a range of crunchy, colourful and flavoursome fillings; | [6] |
| (iv) stating the good source of protein; | [1] |
| (v) quality of communication to include a design drawing; | [3] |
| (vi) labelled diagrams showing how the product is assembled and folded. | [3] |

Draw and label your design in the box below.



Use labelled diagrams to show how your wrap would be assembled and folded.



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Section B

Marked out of 60 60 minutes

5. This question is about Commercial Manufacturing Processes. It is worth a total of 10 marks.

(a) Put a **tick (✓)** in the table below to indicate the correct method of production that matches **each** of the statements. [2]

One example has already been completed.

Statement	One-off production	Batch production	Mass production
Large numbers of identical products made continuously over a long period of time.			✓
A single product made for the specific needs of a customer.			
A specific number of the same food product made as a small scale production system.			

(b) Name the industrial equipment shown below. [2]



(i)

(ii)

(iii) Give a detailed reason why a manufacturer would use the equipment shown in (i) when manufacturing food products. [2]

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- (c) Food manufacturers have to 'scale up' to enable them to produce food products in volume.
Explain what a manufacturer has to do to a recipe to 'scale up'. [2]

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- (d) When a food product goes into large scale production a manufacturing specification will have been written.
Explain why a manufacturing specification is needed. [2]

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6. This question is about Materials and Components. It is worth a total of 15 marks.

- (a) The chart below contains pictures of three food products which have been made using different types of flour. Complete the chart by naming the correct type of flour used to make **each** product. [3]

<i>Food Product</i>	<i>Type of flour used</i>
 <p>Victoria Sandwich Cake</p>	<p>.....</p>
 <p>Éclairs</p>	<p>.....</p>
 <p>Shortcrust pastry mince pie</p>	<p>.....</p>

- (b) The picture below shows a typical cheese sandwich which may be sold in supermarkets. The nutrition information is shown alongside.



Typical Values Per Pack	
Energy	272 kcal
Protein	15.2g
Carbohydrates	36.5g
Fat	22.2g
Fibre	1.8g

- (i) The sandwich contains 15.2g of protein. State the main protein source. [1]

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- (ii) The fibre content of the sandwich is low at 1.8g. Identify **two** changes you could make to the sandwich to increase the fibre content. [2]

Change 1:

Change 2:

- (c) When apples are peeled they can go brown. Give **one** cause of the browning effect and **one** method of preventing it.

Cause of browning: [2]

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Method of prevention: [1]

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(d) The shelf life of milk is extended by a method that involves the application of heat.

Name and explain a method used to extend the shelf life of milk.

Name:

[1]

Explanation:

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..... [2]

(e) The potato bake shown in the picture below contains a white sauce.



During the making of the white sauce it is heated which causes the starch to gelatinise.

Describe the main stages of gelatinisation.

[3]

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Turn over for Question 7

7. This question is about Tools, Equipment and Making. It is worth a total of 20 marks.

(a) Complete the table by naming the equipment pictured below and give the main use for each one. [6]

<i>Equipment</i>	<i>Name</i>	<i>Use</i>
	<p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>
	<p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>
	<p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>

- (b) The picture below shows a spicy meatball calzone. A bread dough has been used in the making of the calzone.



Name **two** ingredients which are used to make a bread dough. [2]

Ingredient 1:

Ingredient 2:

- (c) The picture below shows ravioli made using fresh pasta. The ingredients used to make the fresh pasta are listed alongside.



Fresh pasta ingredients
 100g of flour
 1 egg
 1 tablespoon of oil

- (i) The method for making fresh pasta is listed in the table below. Complete the **two** missing stages. [2]

Stages	Method for making pasta
1	Sieve the flour into a mixing bowl and make a well.
2	Crack the egg and beat together with the oil in a small bowl.
3	Add the egg and oil mixture to the flour.
4	
5	
6	Wrap and chill in a fridge to rest before rolling out.

- (ii) When making the ravioli the pasta squares must be moistened and sealed. Name an ingredient that could be used to moisten the pasta squares. [1]

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- (d) The picture below shows a puff pastry cheese, potato and onion envelope style product made by a student in a school.



Use notes and sketches to explain how the student assembled the envelope style product after the pastry had been made and chilled. [6]

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- (e) Students are making a large batch of mini millionaire's tarts as shown in the photograph below.



- (i) The students will carry out a visual check on the mini millionaires tarts when they have been made. State **one** feature the students will be assessing during the visual check. [1]

- (ii) Explain why this visual check is important. [2]

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8. This question is about ICT, CAD, CAM, Systems and Processes. It is worth a total of 15 marks.

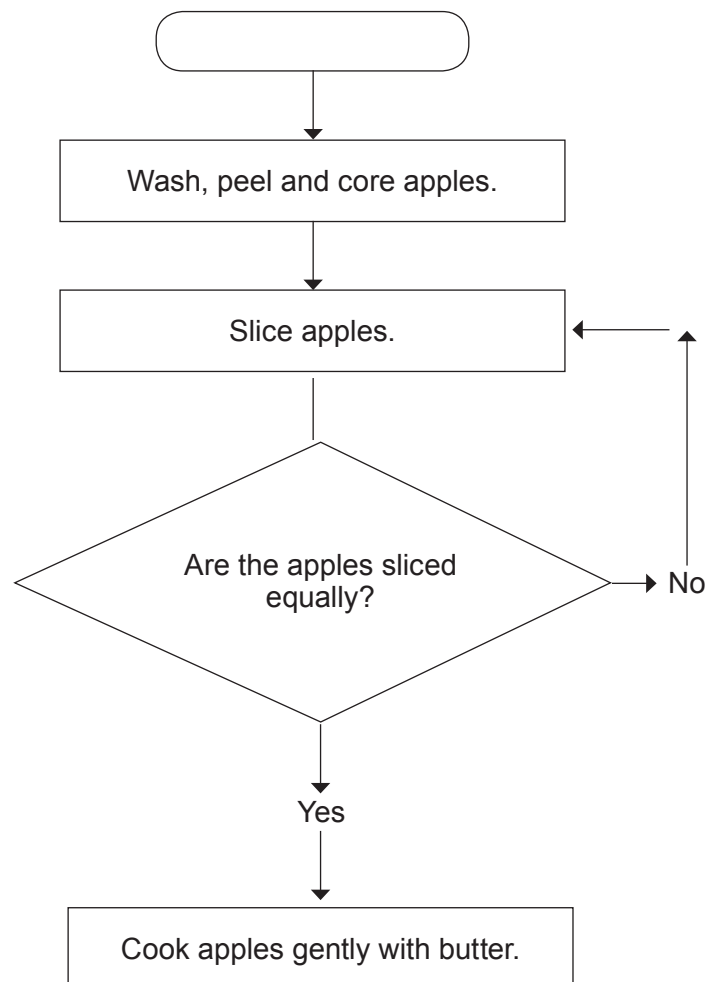
(a) ICT, CAD and CAM are frequently used in food technology when developing new products.

Complete the table below by placing a **tick (✓)** in the correct column.

[3]

Statement	ICT	CAD	CAM
Computers controlling machinery.			
Using computers to present information.			
Using computers to develop ideas.			

(b) An example of a flowchart for the beginning of the making of an apple crumble is shown below.


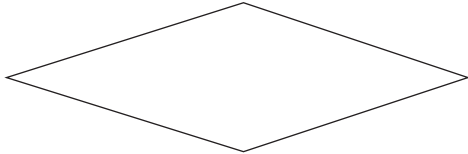



- (i) Explain the meaning of the term 'flowchart'. [2]

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- (ii) Complete the table below by stating the meaning of **each** of the symbols used in the flowchart. [3]

<i>Symbol</i>	<i>Meaning</i>
	<p>.....</p>
	<p>.....</p>
	<p>.....</p>

- (iii) Explain why flowcharts are used by manufacturers when making products. [2]

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- (iv) Explain why it is important for feedback to happen straight away when manufacturing a food product like the apple crumble. [2]

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- (c) Explain what is meant by 'quality control'. [3]

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