



General Certificate of Education

Design and Technology: Food Technology 5541/6541

FTY1

Mark Scheme

2007 examination - June series

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GCE Food Technology Unit 1

Quality of Written Communication

The following marks are allocated to the quality of the candidate's written communication. Make a separate assessment of the candidate's overall ability as demonstrated across the paper using the criteria given below.

<i>Performance Criteria</i>	Marks
The candidate will express complex ideas extremely clearly and fluently. Sentences and paragraphs will follow on from one another smoothly and logically. Arguments will be consistently relevant and well structured.	
There will be few, if any, errors of grammar, punctuation and spelling.	4
The candidate will express moderately complex ideas clearly and reasonably fluently, through well-lined sentences and paragraphs. Arguments will be generally relevant and well structured. There may be occasional errors of grammar, punctuation and spelling.	3
The candidate will express straightforward ideas clearly, if not always fluently. Sentences and paragraphs may not always be well connected. Arguments may sometimes stray from the point or be weakly presented. There may be some errors of grammar, punctuation and spelling, but not such as to suggest a weakness in these areas.	2
The candidate will express simple ideas clearly, but may be imprecise and awkward in dealing with complex or subtle concepts. Arguments may be of doubtful relevance or obscurely presented. Errors in grammar, punctuation and spelling may be noticeable and intrusive, suggesting weaknesses in these areas.	1

- 1 (a) Describe the effects of heat on starch,**

(i) starch,
Starch grains absorb water, swells, thickens liquid, bursts, dextrinisation

(3 marks)

- (ii) sugar.

Dry heat – melts, caramelises, burns leaving a black residue
Moist heat – dissolves, becomes a syrup which caramelises

(3 marks)

- (b) Explain the importance of each of the following in food production.**

- (i) shortening

texture of the final product. Reference to the type of fat in pastry, type of flour in cake making

(3 marks)

- (ii) aeration

incorporating air into a mixture, e.g. the pastry when rubbing fat into flour; meringue, making, soufflé, whisking, creaming, folding, sieving, appearance, texture

(3 marks)

- (iii) dextrinisation

when products like bread or cakes are cooked using a dry heat such as baking, the starch changes to dextrin on the surface of the product and then caramelises, producing characteristic flavours and aromas

(3 marks)

- (c) With reference to specific ingredients, describe two food products that could be developed rich in the B-Vitamins and Iron.**

Any **two** suitable food products will be accepted and the sources of the B-Vitamins and Iron must be clear.

1 mark for two food products

1 mark for B-Vitamins in each product

1 mark for Iron in each product

(5 marks)

- (d) **Explain the differences in the composition of 100 g of the different cheeses listed in the table below.**

Mark Range 8-10

Responses should make clear reference to all of the data provided, using the information given accurately. The correct use of the units of measurement for each nutrient and the differences between each should be explained. Each of the 5 food products should be mentioned and the nutritional differences per 100g explained. 100g must be mentioned at least once.

Mark Range 5-7

Food products will be mentioned and reference made to the data, using the information accurately. Data only = 5 marks

Mark Range 3-4

Food products will be mentioned and reference made to the data or each of the food products will be mentioned superficially

Mark Range 1-2

Food products will be mentioned superficially and little / no reference made to the data

Mark Range 0

No points worthy of credit

(10 marks)

- (e) **Discuss, with specific examples, why cheese would be a suitable ingredient when producing a range of food products for special occasions.**

High protein, versatile, cheap, variety, high satiety, high calcium and fat soluble vitamins, cooked or raw, indulgence aspects of foods eaten at special occasions

Mark Range 8-10

Responses should make clear reference to 4-5 points / food products

Mark Range 5-7

3-4 points will be mentioned and specific examples given

Mark Range 3-4

2-3 points will be mentioned accurately or more superficially

Mark Range 1-2

Points will be mentioned superficially and little / no reference made to specific examples

Mark Range 0

No points worthy of credit

(10 marks)

- 2 (a) **Explain the importance of soluble and insoluble Non Starch Polysaccharides (NSPs) in the diet.**

Soluble Non Starch Polysaccharides – help to control blood sugar levels, reduce blood cholesterol. Candidates may refer to oats, pulses, fruit and vegetables.

Insoluble Non Starch Polysaccharides – absorb water, increase bulk. Prevents cancer of the colon, aids digestive system

(4 marks)

- (b) **Using examples, explain how a food manufacturer could develop a range of either savoury or sweet products high in NSP.**

Responses should include specific examples to either savoury or sweet products with clear justification. Addition of ingredients such as bran to soups, dried fruits, wholemeal pasta, rice, flour, edible skins of fruit and vegetables to be included in products.

Mark Range 8-10

Responses should make clear reference to 4-5 points

Mark Range 5-7

3-4 points will be mentioned and specific examples given

Mark Range 3-4

2-3 points will be mentioned accurately or more superficially

Mark Range 1-2

Points will be mentioned superficially and little / no reference made to specific examples

Mark Range 0

No points worthy of credit

(10 marks)

- (c)
(i) **Name two sources of Vitamin A.**

Apricots, bananas, green vegetables, broccoli, dairy produce, milk, carrots, tomatoes, eggs, offal...
Any rich source will be credited.

(2 marks)

- (ii) **Name two sources of Vitamin C.**

citrus fruit, dark green vegetables, peppers...
Any rich source will be credited.

(2 marks)

- (d) **Discuss the effect of food processing on vitamins. Make reference to specific food products in your answer.**

Fat soluble vitamins remain relatively unchanged. Water soluble - effects of heat, dehydration, water, acid, alkali, oxidation referred to accurately. Specific examples of products must be given. Canning. Fat or water soluble.

Mark Range 8-10

Responses should make clear reference to 4-5 water soluble and fat soluble vitamins. Specific examples of the micro nutrient must be given.

Mark Range 5-7

3-4 vitamins will be mentioned and specific examples given

Mark Range 3-4

2-3 vitamins will be mentioned accurately or more superficially

Mark Range 1-2

Vitamins will be mentioned superficially and little / no reference made to specific examples

Mark Range 0

No points worthy of credit

(10 marks)

- 3 (a) **Explain the functions of each of the ingredients above.**

Caster sugar – holds air, increases volume of biscuits, sweetens, flavours, colour, moisture retention, improved shelf life

Soft margarine / butter – texture, colour, flavour, increases shelf life, holds air

Cornflour – texture, palatability (mouth feel), crumbly, soft, structure

Plain Flour – structure, texture, bulk

(4 x 2 marks)

- (b) **Describe how a food manufacturer could develop the flavour, texture and nutritional value of Shortbread biscuits to produce a product range.**

Any suitable suggestions that would develop the flavour, texture and nutritional value of the biscuits. Changes to basic ingredients, e.g. wholemeal flour, brown sugar, or the addition of ingredients, e.g. spice, dried fruit, essences.

Mark Range 8-10

Responses should make clear reference to 4-5 points with reference to flavour, texture and nutritional value.

Mark Range 5-7

3-4 points will be mentioned and specific examples given

Mark Range 3-4

2-3 points will be mentioned accurately or more superficially

Mark Range 1-2

Points will be mentioned superficially and little / no reference made to specific examples

Mark Range 0

No points worthy of credit

(10 marks)

- (c) **Explain why a food manufacturer may be reluctant to use artificial sweeteners in the production of baked food products.**

May sometimes leave a bitter aftertaste. Reduces the palatability and shelf life in products. Do not have the same properties of sugar necessary in many cooking processes. Used in smaller quantities and bulk may be needed. Do not caramelize like sugar. Market interests. Credit given to specific examples of sugar substitutes.

(6 marks)

- (d) **Describe four finishing techniques that could be applied to the biscuits to make them more appealing.**

Icing – buttercream, fondant, glaze, sugar. Use of colour and decorations – dried fruit, glace cherries. Dusting icing sugar / cocoa powder. Glazing, chocolate coating, use of fork / cutting into shapes

(4 marks)

- 4 (a) **Explain the disadvantages of using standard pre-manufactured components in a product range.**

NB this answer now needs reversing

Responses will reflect sound and accurate knowledge of why a food manufacturer would not use SFCs in a product range: e.g increased packaging and transport, expensive, buying SFCs changes spec., failure to deliver, all the same, quality control

(10 marks)

(b)

- (i) **Describe the effects of moist heat on rice.**

During cooking, rice absorbs liquid (swelling)until gelatinisation takes place. Tossing the rice with a little oil will coat the gluten and gelatinised starch on their surfaces and help prevent them from sticking to each other. Starch released.

(4 marks)

- (ii) **Explain why rice is a high risk food.**

Ideal food in which harmful bacteria grow. Rice often reheated, take away foods, difficult to destroy spores. Bacillus cereus must be mentioned. Rice must be stored 0-5° C, eaten within 24 hours

(4 marks)

- (c) **Describe, giving examples, why a food manufacturer may use additives to colour, flavour and increase the nutritional content of food products.**

To make food visually attractive to the consumer. Colours are added to meat products such as sausages to give them a red colour rather than the natural brown colour as consumers associate the red colour with freshness. Consumers associate certain colours with flavours, e.g. green with mint flavours. To replace colour that is lost during processing. During processing, strawberries and peas turn brown, blackcurrant cordial turns grey, therefore artificial colours make them look more attractive. Additives make sure that different batches are consistently coloured, to boost natural colouring strawberry yoghurt, to colour products that are normally colourless, e.g. ice cream, confectionary. To produce novelty foods, e.g. coloured sugar crystals. Emulsifiers and stabilisers ensure food products remain in a stable condition, e.g. jam. Flavours ensure continuity, many extracted from oils, e.g. peppermint. Flavour enhancers, e.g. monosodium glutamate, to bring out the flavour, e.g. cheese. Foaming agent to ensure bubbles are evenly distributed, e.g. ice cream. Glazing agents to give a shiny outer layer, e.g. sweets, humectants to stop foods drying out, e.g. soft centres in chocolates. Modified starch to add bulk, e.g. baby foods. Gelling agents to enhance texture, propellants to make texture of aerosol cream, thickeners, e.g. in yoghurts to improve texture.

Mark Range 8-10

Responses should make clear reference to 4-5 points

Mark Range 5-7

3-4 points will be mentioned and specific examples given

Mark Range 3-4

2-3 points will be mentioned accurately or more superficially

Mark Range 1-2

Points will be mentioned superficially and little / no reference made to specific examples

Mark Range 0

No points worthy of credit

(10 marks)