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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Education

Design and Technology: Food Technology 5541/6541

FTY1

Mark Scheme

2006 examination - January series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

GCE Food Technology Unit 1

1 (a) Explain and give two examples of each of the following:

- **Soluble Non Starch Polysaccharides;**
- **Insoluble Non Starch Polysaccharides.**

Soluble Non Starch Polysaccharides – helps to control blood sugar levels, reduce blood cholesterol. Examples: oats, pulses, fruit and vegetables.
Insoluble Non Starch Polysaccharides – absorbs water, increases bulk.
Examples: wholemeal bread and flour, wholegrain breakfast cereals, rice and pasta.
Any suitable examples accepted.

(2 x 4 marks)

(b) Using examples, explain how a food manufacturer could develop a range of *savoury* food products that are high in Non Starch Polysaccharides.

Responses should include specific examples with clear justification.

Mark allocation

Explanation	Mark range
Responses will mention only 1 example or vague examples with little / no reference to Non Starch Polysaccharides. If NSP not mentioned cannot move above 3 marks maximum.	1 – 3
Responses will list products and / or examples without accurate reference to specific ingredients. 2 food products may be mentioned.	4 – 7
Responses will explain how a food manufacturer could develop a range (3 or more) of **savoury** products with specific and accurate reference to ingredients such as bran to soups, dried fruits, wholemeal pasta, rice, flour, edible skins of fruit and vegetables in products such as curry, chilli.	8 – 10

(10 marks)

(c) Explain the differences in the composition of 100g of the food products listed in the table listed below.

Mark allocation

Explanation	Mark range
Responses will mention 1 example only or superficially mention a number of the food products, with little / no explanation of the differences in the composition. Each of the 3 food products need to be mentioned to move above 3 maximum marks.	1 – 3
Responses will refer to most of the data listed and attempt to explain it accurately. Some of the differences in the composition of the food products will be listed.	4 – 7
Responses should make clear reference to the data provided, using the information given accurately. The correct use of the units of measurement and the differences between each should be explained for each of the nutrients stated.	8 – 10

(10 marks)

(d)

(i) What is 'enzymic browning'?

If some foods (e.g. apples) are cut or bruised, the damaged surface will discolour, turning brown due to enzyme action.

(2 marks)

(ii) Give two examples of 'enzymic browning' in the production of food products.

Any two examples: fruit salad, cider / apple drinks, any suitable examples will be credited.

(2 marks)

(e) Explain why a food manufacturer would use standard pre-manufactured components in a product range.

Responses will reflect sound and accurate knowledge of why a food manufacturer would use Standard Food Components in a product range. Examples include:

To save production time due to fewer manufacturing processes.
To reduce the amount of equipment needed, reduce production costs, less energy, fewer staff.
To save time purchasing and preparing raw materials.
To ensure consistency in terms of size, weight, shape, flavour and preparation.
To make stock control easier and extend range of products available.
To ensure correct measurements/recipes
To reduce food safety risks e.g. cross contamination
Any well justified response will be credited

(8 marks)

2 **Ingredients for small cakes:**

- **150g Self Raising Flour**
- **150g Soft Margarine/Butter**
- **150g Caster Sugar**
- **3 Medium Sized Eggs**

(a) **Explain the functions of each of the ingredients for small cakes above.**

Self Raising Flour – structure, texture, raising agent, bulk
Soft Margarine/Butter – texture, colour, flavour, increased shelf life, holds air
Caster Sugar – holds air, increases volume, sweetens, flavours
Eggs – enriches, flavours, colours, nutritional value, raising agent.

(4 x 2 marks)

(b) **Explain the importance of each of the following processes in the production of a creamed mixture:**

- **Emulsification**
- **Moisture Retention.**

Emulsification – ensures food products remain in a stable condition. Oil in water emulsion. Texture of product
Moisture Retention – to prevent the cakes from drying out, becoming stale, improves shelf life

(2 x 3 marks)

(c) **Describe how the favour, texture and nutritional value of this recipe using these ingredients could be developed to produce a range of small cakes.**

Mark allocation

Explanation	Mark range
Responses will be very superficial in all 3 areas or focus upon one area.	1 – 3
Responses will refer in general terms to flavour, texture and nutritional development or focus on two areas in particular.	4 – 7
Responses will include suggestions that would develop the flavour, texture and nutritional value of the cakes. Changes to basic ingredients, e.g. wholemeal flour, brown sugar; or the addition of ingredients, e.g. spice, dried fruit, essences. Responses will link each suggestion specifically to flavour, texture and nutritional value. All 3 areas of focus must be mentioned.	8 – 10

(10 marks)

(d) **Describe four finishing techniques that could be applied to small cakes to make them more appealing to the consumer.**

Icing – butter cream, fondant, glacé, sugar. Use of colour and decorations – dried fruit, glacé cherries. Cutting cake – butterfly cakes. Melted chocolate. Finishing techniques should be permanent.

(4 marks)

3 (a) Describe the working characteristics of starch during the production of a roux sauce.

Upon heating at 60°C, the starch granules absorb the liquid and begin to swell. As the temperature increases, so does the swelling until around 85°C the granules reach five times their original size and the liquid becomes thickened. If heating continues, some of the granules rupture, releasing a gel. Upon cooling, the gel will set and the sauce becomes solid.

(4 marks)

(b) Explain how a food manufacturer could develop the consistency and flavour of a range of roux based sauces.

Credit should be given for original and innovative ideas, sweet or savoury sauces may be discussed. In order to gain full marks both consistency and flavour must be mentioned Names of different types of milk, flour, fat, and the sensory characteristics associated with them. Addition of ingredients – mushrooms, cheese, onion, colourings, flavours, e.g. vanilla.

(8 marks)

(c) Describe two food products that a food manufacturer could produce that are rich in both Vitamin C and Iron. Make reference to specific ingredients in your answer.

Any **two** suitable food products will be accepted. There must be a clear identification of the source of Vitamin C and Iron. Products may be existing or original.
1mark =food product, 1mark=Vitamin C source, 1mark=Iron source

(2 x 3 marks)

(d) Discuss the effect of food producing methods on both

- **Water soluble; and**
- **Fat soluble micro-nutrients.**

Minerals and fat soluble vitamins remain relatively unchanged. Effects of heat, dehydration, water, acid, alkali, oxidation referred to accurately. Specific examples of products must be given.
In order to gain maximum marks the effects of food processing methods must refer to both water soluble and fat soluble micro nutrients.

(10 marks)

4 (a) Explain why a food manufacturer would use food additives to improve the

- **'sensory';**
- **'physical'; and**
- **'nutritional qualities'**
-

of food products. Use specific examples in your answer.

Examples include:*

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, because consumers associate the red colour with freshness.

To replace colour that is lost during processing. During processing strawberries and peas turn brown and blackcurrant cordial turns grey; therefore artificial colours make them look more attractive. Additives make sure that different batches are consistently coloured and boost natural colouring (strawberry yoghurt).

To colour products that are normally colourless, e.g. ice cream, confectionery.

To produce novelty foods, e.g. coloured sugar crystals.

Emulsifiers and stabilisers ensure that food products remain in a stable condition, e.g. jam. Flavours to ensure continuity, many extracted from oils, e.g. peppermint. Flavour enhancers, e.g. monosodium glutamate, to bring out the flavour, e.g. cheese.

Foaming agents 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.

(3 x 4 marks)

(b)

(i) Name two sources of Vitamin D.
Any appropriate sources will be accepted.
Vitamin D – cod liver oil, oily fish, milk, sunlight margarine,

(2 marks)

(ii) Name two sources of Vitamin A.
Any appropriate sources will be accepted.
Vitamin A – milk and dairy produce, offal, carrots, spinach, watercress, oily fish

(2 marks)

(c) Explain why soya would be a suitable ingredient when producing snack foods.

- Soya would be a suitable ingredient for a range of snack food products:
- Suitable for vegetarians, lactose intolerance (soya milk), coeliacs (no gluten)
- Cheap
- Easy to store, prepare and cook, little waste, different shapes and forms
- Source of HBV Protein, easy to fortify – affects taste, flavour
- Low in fat
- Environmental issues.

Responses must be well justified.

(8 marks)

(d) Explain each of the following in the production of food products based on eggs:

- **Denaturation**
- **Coagulation.**

Denaturation – change to chemical structure of protein to produce food products. Tis is a permenant change and cannot be reversed
Coagulation – to change proteins from a liquid to a solid, or semi-solid, state

(2 x 2 marks)