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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Education

Design and Technology: Food Technology 5541/6541

FTY1

Mark Scheme

2008 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) Describe the effect of heat on eggs.

Eggs – ovalbumin coagulates at 60C°, until white is solid and opaque. Egg yolk coagulates at 70C° until dry and hard. Irreversible reaction, denaturation, iron sulphide ring around egg yolk

(6 marks)

(b) Explain the importance of each of the following terms used in food production.

(i) **Shortening**

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

(3 marks)

(ii) **Aeration**

Incorporating air into the pastry when rubbing fat into flour. Whisking, Creaming, Foaming, Sieving, Folding

(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 to be rich in both vitamin D and calcium.

Any two suitable food products will be accepted and the sources of vitamin D and calcium must be clear.

2 suitable food products =1 mark
2 sources of Vitamin D = 2 marks
2 sources of calcium = 2 marks

(5 marks)

(d) Explain the difference in composition of 100g of the different foods listed in the table below.

Mark range 10 – 12: Responses should make it 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 4 food products should be mentioned and the nutritional differences per 100g explained.
Mark range 7 – 9: 3 – 4 food products will be mentioned and reference made to the data, using the information accurately.
Mark range 4 – 6: 2 – 3 food products will be mentioned and reference made to the data or each of the food products will be mentioned superficially.
Mark range 1 – 3: Food products will be mentioned superficially and little / no reference made to the data.
Mark range 0: No points worthy of credit.
Data only = 6 marks maximum

(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 Biological protein, versatile, cheap, variety, high satiety , high calcium and fat soluble vitamins, cooked or raw, indulgence aspects of food eaten at special occasions. Wide target audience

Mark range 8 – 10: Responses should make clear reference to 4 – 5 points, including specific examples
Mark range 5 – 7: 3 – 4 points will be mentioned and specific examples given.
Mark range 2 – 4: 2 – 3 points will be mentioned accurately or more superficially.
Mark range 1 – 3: Points will be mentioned superficially and little / no reference made to specific examples.
Mark range 0: No points worthy of credit.

(8 marks)

2. (a) Name three different types of rice and compare their nutritional properties.

Rice: Long grain (Patna), Basmati, Short grain (Carolina), Easy Cook, Ground, Flaked, Wholegrain/ Brown. Wild. Reference: thiamine, NSP, carbohydrates, protein, low fat.

(3 x 3 marks)

(b) Explain how a research and development team could modify the nutritional value, flavour and texture of a product range based on pasta.

Addition of protein foods e.g. chicken, prawns, ham, pulse.
Increase fibre e.g. wholegrain pasta.
Increased vitamins / minerals with fresh vegetables e.g. grated carrot.
Use of herbs, spices, garlic.
Use of raw fresh vegetable.
Any well justified response will be credited.

Mark Range 10 – 12: Responses should explain with specific examples of each how the nutritional value, flavour and texture of a product range could be developed based on pasta.
Mark Range 7 – 9: Response will explain but with fewer specific examples of how the nutritional value, flavour and texture of a product range may be developed on pasta.
Mark Range 4 – 6: Responses will focus upon 3 areas superficially or two areas in more detail on how a product range may be develop on pasta.
Mark Range 1 – 3: Food products will be mentioned superficially and little / no reference made to the pasta.
Mark Range 0: No points worthy of credit.

(12 marks)

(c) Describe the effects of cooking with moist heat on rice or pasta.

Rice **or** Pasta – upon contact with boiling water the starch absorbs water and become tender. If over cooked the starch gelatinises and molecules stick together.

(4 marks)

(d) Explain why cooked rice is a high risk food.

Cooked rice is very suitable for bacterial growth.
Bacillus – moisture, warmth, food, time.

(3 marks)

3. (a) Describe the effects of heat on fats and oils.

When fat is heated it melts to oil, hydrogen bonds break, eventually ignites. Some can be heated to higher temperatures than others. Smoke point-thin, bluish haze of smoke given off which will give unpleasant flavour. Flash point – fat ignites and burns fiercely.

(6 marks)

(b) Explain why a food manufacturer would use soya when designing food for a school canteen.

Soya would be a suitable ingredient for a range of food products for a school canteen:

- Suitable for vegetarians, different religions, lactose intolerance
- Cheap
- Easy to store, prepare and cook, little waste, different shapes and forms. Bland taste, absorbs flavours. Not too strong.
- Source of HBV Protein, easy to fortify
- Environmental issues.

Mark Range 6 – 8: Responses will reflect a full discussion with at least 4 plus justified points raised.
Mark Range 3 – 5: Responses will include a discussion of 2-3 justified points or 6 plus mentioned superficially.
Mark Range 1 – 2: Responses will be superficial with little / no justified points raised.
Mark Range 0: No points worthy of credit.

(8 marks)

(c) (i) **Name two water soluble micro-nutrients.**

Vitamin B complex, Vitamin C, Iron, Sodium, Potassium, flouride

(2 marks)

(ii) **Name two macro-nutrients.**

Fats, Carbohydrates, Protein

(2 marks)

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

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.

Mark Range 8 – 10: Responses should make clear references to 4 – 5 water soluble and fat soluble micro nutrients. Specific examples of the micro nutrient must be given.
Mark Range 5 – 7: 3 – 4 micro nutrients will be mentioned and specific examples must be given.
Mark Range 3 – 4: 2 – 3 micro nutrients will be mentioned accurately or more superficially.
Mark Range 1 – 2: Micronutrients will be mentioned superficially and little / no reference made to specific examples
Mark Range 0: No points worthy of credit.

(10 marks)

4 (a) Name six different rich sources of Non Starch Polysaccharide (NSP) in the diet.

Wholegrain cereals: wheat, rice, oats, bread, pasta, fruits, vegetables.

(6 marks)

(b) Describe the functions and importance of Non Starch Polysaccharides in the diet.

Absorbs water, binds food residues to itself to aid the removal of waste produce from the body. Failure to do so may result in Constipation, Diverticular disease, Haemorrhide, Hernias. Difference between soluble and insoluble NSP

Mark Range 8 – 10: Response should describe the function and importance in the diet in detail, with 4 – 5 well justified points.
Mark Range 5 – 7: Responses will describe the function and importance in the diet with 3 – 4 well justified points.
Mark Range 3 – 4: Responses will be general with 2 – 3 well justified points mentioned accurately or more superficially.
Mark Range 1 – 2: Responses will mention superficially the function and / or importance of NSP with little / no reference to specific examples.
Mark Range 0: No points worthy of credit.

(10 marks)

(c) Explain how a research and development team could increase the Non Starch Polysaccharide content of biscuits.

Product development should include examples based on the rich sources identified in (a). Sensory characteristics should be clear using subject terminology correctly e.g. sweet rather than nice.

Mark Range 10 – 12: Responses should explain with 6 or more specific examples how the NSP content of biscuits, either sweet or savoury, could be increased.
Mark Range 7 – 9: Responses will explain with 4 – 5 specific examples of how NSP content of biscuits, either sweet or savoury, could be increased.
Mark Range 4 – 6: Responses will explain with 2 – 3 specific examples of how NSP content of biscuits, either sweet or savoury, could be increased.
Mark Range 1 – 3: Responses will explain generally with 1 – 2 examples of how NSP content of biscuits, either sweet or savoury, could be increased.
Mark Range 0: No points worthy of credit.
Maximum 6 marks for a simple list

(12 marks)