



**General Certificate of Education (A-level)
January 2012**

**Design and Technology: Food FOOD1
Technology**

(Specification 2540)

Unit 1: Materials, Components and Application

Final

Mark Scheme

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 events which all examiners participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for standardisation each examiner analyses a number of students' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, examiners encounter unusual answers which have not been raised they are required to refer these to the Principal Examiner.

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- 1** **Name two food sources of protein.**
- Meat, fish, eggs, milk and its products, quorn, tofu, wheat, soya, pulses, nuts, green vegetables. *(2 marks)*
- 2** **Name two functions of calcium in the diet.**
- Strong bones, teeth, nails, blood clotting, contraction of muscles. *(2 marks)*
- 3** **Define the meaning of DRVs and GDAs.**
- DRVs – dietary reference values, scientifically calculated estimates of the amounts of nutrients needed by different groups of people
GDAs – guideline daily amounts, guide to the amounts of calories, sugar, fat, saturated fat and salt people should try not to exceed to have a healthy balanced diet (nutrients). *(2 marks)*
- 4** **What is meant by the term energy balance?**
- Energy input = energy output *(2 marks)*
- 5** **Why is an adequate water intake essential in the diet?**
- Maintain hydration, essential for all bodily functions, transportation and composition of blood. *(2 marks)*
- 6** **Name the two groups of non starch polysaccharides.**
- Soluble and insoluble. *(2 marks)*
- 7** **Name two types of food additive. Give an example of each.**
- Example could be name or functions.
Any of the groups of additives listed in the specification will be credited and a suitable example of each – preservatives, sweeteners, emulsifying agents, flavourings, enhancers, antioxidants, colourings. *(4 marks)*

8 Describe the effects of heat / cooking on water soluble and fat soluble vitamins.

Water soluble – destroyed, may be dissolved in cooking water

Fat soluble – not all destroyed

1 mark for naming water soluble

1 mark for naming fat soluble

2 marks for the effects on each

(4 marks)

9 (a) Discuss current dietary guidelines and how they may affect the design of new food products.

Responses will refer to current dietary guidelines in connection to healthy eating. Reference will be expected to include:

- Set by government
- The Health of the Nation
- COMA
- RDAs
- DRVs
- DEFRA
- Eatwell plate
- Traffic lights on packaging.

More specifically

- reducing high fat , high sugar, salt.
- increasing fruit and veg
- increasing omega 3
- increasing fibre
- removal of transfats
- increase calcium/Vitamin D

and how it may affect the design of products.

Current guidelines will be considered at the time of marking and mark scheme amended in that light. NB if candidate is from outside the UK, the guidelines of the candidate's country will be accepted. Candidates may also receive credit if they discuss how these guidelines do not affect the design of new food products.

(To be amended at standardising)

Mark Range 8-10: responses will reflect a full discussion with at least 4-5 points justified

Mark Range 4-7: responses will include a discussion of 2-3 justified points, or up to 6 superficial points included which are not justified fully

Mark Range 1-3: responses will be superficial, with little or no justified points raised and may not necessarily 'discuss' the issue raised in the question

Mark Range 0: no points worthy of credit

(10 marks)

9 (b) Describe how environmental issues may impact on food choice.

Any well justified environmental issue will be credited:

- Organic crops due to people declining to have foods which contain pesticides, herbicides and hormones
- Fair trade products to ensure that people in other countries can afford to invest in new machinery etc
- Seasonal foods to avoid foods being transported around the world
- Locally sourced foods to save on pollution
- Loosely sold products to reduce on packaging
- Weather, natural disasters, methane
- Air miles, farming methods, genetically modified food
- Recycled packaging.

Candidates may also receive credit if they discuss how environmental issues may have no impact with regard to the choices of some consumers.

Mark Range 8-10: responses will reflect a full description with at least 5 points justified

Mark Range 4-7: responses will include a description of 3-4 justified points, or 5 plus superficial points included which are not justified fully

Mark Range 1-3: responses will be superficial, with little or no justified points raised and may not necessarily 'describe' the issue raised in the question

Mark Range 0: no points worthy of credit

(10 marks)

10 (a) Discuss how different types of vegetarian can meet their nutritional needs through their choice of foods.

Answers will discuss different types of vegetarians, e.g. vegans, lacto-ovo, fruitarians (some candidates may discuss how some describe themselves as vegetarians even though they eat fish – piscatarians – which is acceptable if described correctly) and the different issues related to nutritional needs of each.

Mark Range 8-10: responses will reflect a full discussion of at least 3 different types of vegetarians, highlighting their food choices in order to meet their nutritional need

Mark Range 4-7: responses will include a discussion of 2 different types of vegetarians and how they meet their nutritional needs through food choice

Mark Range 1-3: responses will be superficial, with little or no justified points raised; the candidate may talk of vegetarians in general or only one specific type

Mark Range 0: no points worthy of credit.

(10 marks)

10 (b) Explain the use of Information Technology (ICT) in the food industry.

Reference to computer modelling, CAD/CAM, nutrition, costing; word processing / DTP, spreadsheets, digital photography, market research, online shopping.

Mark Range 8-10: responses will reflect a full explanation with at least 5 points justified

Mark Range 4-7: responses will include a explanation of 3-4 justified points, or 7 plus superficial points

Mark Range 1-3: responses will be superficial, with little or no justified points raised and may not necessarily 'explain' the issue raised in the question

Mark Range 0: no points worthy of credit

(10 marks)

11 (a) Discuss how a range of savoury snacks based on cheese can be developed.

In your answer make reference to:

- **aesthetic qualities (12 marks)**
- **nutritional value. (8 marks)**

Appropriate choice of savoury snacks.

Aesthetic qualities – shape, colour, texture, smell, taste

Shape/size – e.g. hand held and appropriate for target audience, indication of how shape can make a product more attractive to the consumer

Colour – low fat cheese does not brown as easily, affects appearance on garnishes / finishes

Texture – range, use of different ingredients to add texture, low fat ingredients will alter texture / mouth feel

Smell – e.g. cheese and onion recognised as pleasing and used in tasting sessions

Taste – different strengths of cheese, mild for children

Ethnic food products

Unpasteurised cheese not suitable for pregnant women, v. young and elderly; pastry often used in such products, which is high in fat (may offer low fat alternatives)

Mark range 8-12: responses will reflect a full discussion of the aesthetic qualities of savoury snacks based on cheese. At least 4 – 6 justified points must be made

Mark range 4-7: responses will include a discussion of 2-4 justified points or 7 plus points mentioned superficially

Mark range 1-3: responses will be superficial with regard to aesthetic qualities, with few justified points raised

Mark range 0: no points worthy of credit

Nutritional value – protein, fat, starch, fat soluble vitamins A and D, calcium, Iron, non- starch polysaccharides, riboflavin protein, Vitamin C added as an ingredient as lacking in cheese; no carb in cheese; high calorific value – may wish to offer low fat alternatives

Mark range 6-8: responses will reflect a full discussion of the nutritional value of savoury snacks based on cheese with at least 3 – 4 nutrients mentioned with well justified points raised

Mark range 3-5: responses will include a discussion of 2-3 nutrients mentioned accurately with well justified points or 4 plus nutrients mentioned superficially

Mark range 1-2: responses will be superficial with regard to the nutritional value of the savoury snacks, with few justified points raised or a simple list of nutrients

Mark range 0: no points worthy of credit. (20 marks)

11 (b) Explain current food hygiene legislation.

Responses should discuss current food hygiene legislation which should include:

Food Safety Act 1990
Food Hygiene Regulations 1995

Reference should be made of the importance of food hygiene legislation to the consumer, role of the environmental health officer. Specific temperatures: 0-5°C, -18°C, 72°C
NB current legislation will be included and added to mark scheme at the time of the examination, should there be any changes to this to 2012. Overseas candidates may refer to legislation in their own country, which may be credited.

Mark Range 8-10: responses will reflect a full explanation with at least 5 points justified

Mark Range 4-7: responses will include an explanation of 3-4 justified points, or up to 8 superficial points included which are not justified fully

Mark Range 1-3: responses will be superficial, with little or no justified points raised and may not necessarily 'explain' the issue raised in the question

Mark Range 0: no points worthy of credit

(10 marks)

11 (c) Discuss, with examples, physical, chemical and biological contamination of food products.

Mark Range 8-10: responses will reflect a full discussion with justified points and examples raised in each category with reference to preparation, cooking and storage for all three areas

Mark Range 4-7: responses will include a discussion of justified points with reference to preparation, cooking and storage but quite superficially (or look at very few points but in depth). It may not necessarily look at all three areas or provide a full range of examples.

Mark Range 1-3: responses will be superficial, with little or no justified points raised. Examples may be lacking and all three areas will not be discussed.

Mark Range 0: no points worthy of credit

(10 marks)