AQA

A S S E S S M E N T and
Q U A L I F I C A T I O N S
A L L I A N C E

General Certificate of Education

Design and Technology: Food Technology 1540

FOOD1

Mark Scheme

2009 examination - June 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. Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

1   **Explain two functions of Non Starch Polysaccharide (NSP) in the diet.**

Aids the functions of the digestive system, prevents bowel disorders, controls body weight, slows rate of sugar absorption, reduces cholesterol, high satiety

(2 marks)

2   **Define the following terms:**
- **Dietary Reference Values (DRVs)**
- **Basal Metabolic Rate (BMR).**

DRV – is a term used to cover EAR and RNI
BMR – energy required for essential bodily functions whilst at rest

(2 marks)

3   **Name two functions of fats in the diet.**

Fat soluble fatty acids, vitamins A and D, energy, insulation, protection of internal organs

(2 marks)

4   **State two sources of folic acid in the diet.**

Liver, nuts, pulses, bread, fortified breakfast cereals, sweetcorn, asparagus (and green vegetables), citrus fruit, meat, dairy produce, fruits.

(2 marks)

5   **What do you understand by the term energy balance?**

Energy output = energy input
2 marks for a clear and correct answer
1 mark for a partial, or partially inaccurate answer

(2 marks)

6   **Explain the complementation of protein foods.**

Two or more low biological value proteins to ensure the full complement of amino acids
2 marks for a clear and correct answer
1 mark for a partial, or partially inaccurate answer

(2 marks)

7   **Describe two effects of Vitamin B2 (Riboflavin) deficiency in the body.**

Tiredness, slows growth, eye and skin problems, inflammation of mouth and throat, cracks at corner of mouth and sore throat, goitre
2 marks for each effect, to be marked as follows:
2 marks for a full and accurate description
1 mark for a partial or inaccurate answer, or for providing an unexplained example.

(4 marks)

8   **Explain two functions of iron in the body.**

Red blood cells; found in myoglobin and carries oxygen in muscles; used in enzyme systems, aids blood clotting process, prevents anaemia
2 marks for each function, to be marked as follows:
2 marks for a full and accurate explanation
1 mark for a partial or inaccurate answer, or for providing an unexplained example.

(4 marks)

9 (a) **Discuss why many elderly people in the UK have a poor diet.**

Responses will include well justified points relating to the diets of the elderly and may include:

Age and the demand for food reducing
Poor teeth
Poor eyesight
Immobile, difficulty moving around
Difficulty shopping – out of town, transport
Foods sold in large quantities
Poor cooking / storage facilities
Ability to cook – limited skills
Problems physically eating – teeth
Rely upon ready meals
Low income / pension, demand on fuel (and other) bills
Lack of motivation to cook, tiredness
Lack of knowledge
Isolation
A number of different illnesses / medical conditions make cooking difficult
May be in a care home etc where food provided is not of a high enough quality
Modern mobility means that elderly often live far away from family members who could otherwise keep an eye on them

Mark Range 8-10: responses will include a full and accurate discussion, with specific points raised and justified. Candidates will consider the question in the context of the UK.

Mark Range 4-7: responses may not offer any points specific to the UK. A number of points will be either raised superficially or few points will be raised but will be justified fully.

Mark Range 1-3: responses will be superficial with little or no justified points raised. There may be some inaccuracies in the answer.

Mark Range 0: no points worthy of credit.

(10 marks)

**9   (b)   Explain why additives would be used when
                  producing food products.**

Responses are likely to include the following:

- Preservatives
- Sweeteners
- Flavourings
- Anti-oxidants
- Colours
- Emulsifiers
- Stabilisers
- Flavour enhancers
- Nutrient lost during processing
- Fortification of nutrients

Mark Range 8-10: responses will include a full and
accurate explanation, with specific points raised and
justified. Candidates will consider the issue of additives
in relation to food products, but will not consider why they
would not be used (as the question does not ask for
that).

Mark Range 4-7: a number of points will be either raised
superficially or few points will be raised but will be
justified fully. Candidates may drift away context of the
question and discuss why food additive would not be
used in food products.

Mark Range 1-3: responses will be superficial with little
or no justified points raised. There may be some
inaccuracies in the answer.

Mark Range 0: no points worthy of credit.

(10 marks)

10   (a)   Discuss the effects of changes in consumer lifestyles in the UK and the opportunities that these have provided for food product development.
Responses will discuss the effects of changes in consumer lifestyles in the UK and the effects upon food product development, which could include:

- Aging population
- Increased leisure time / different use of leisure time (e.g. computer games)
- Disposable income
- Working mothers
- One parent families
- Unemployment
- Dietary goals
- Obesity issue and snack / junk foods
- Eating out
- Cultural influences.

Mark Range 8-10: responses will include a full and accurate discussion, with specific points raised and justified. Candidates will remain focused on both consumer lifestyles and food product development.

Mark Range 4-7: a number of points will be either raised superficially or few points will be raised but will be justified fully. Answers may not always remain focused on both aspects of the question.

Mark Range 1-3: responses will be superficial with little or no justified points raised. There may be some inaccuracies in the answer.

Mark Range 0: no points worthy of credit.

(10 marks)

10 (b) **Describe in detail two methods of market research currently used when designing and developing new food products.**

Two methods of market research will be described in full with reference to designing and developing new food products. Methods may include:

- Questionnaires / surveys
- Product analysis
- Interviews
- Taste panels / sensory analysis
- Focus groups
- Existing products / internet
- Shop visits

Each method must be accompanied by a clear explanation of how the process works and how the results are recorded and analysed.

Mark Range 8-10: responses will include a full and accurate discussion, with specific points raised and justified. Candidates will consider two methods of market research and designing and developing new food products.

Mark Range 4-7: responses will cover either both methods superficially or they may cover only one method, but in detail (at the lower end of this mark range). A number of points will be either raised superficially or few points will be raised but will be justified fully.

Mark Range 1-3: responses will be superficial with little or no justified points raised. There may be some inaccuracies in the answer.

Mark Range 0: no points worthy of credit.

(10 marks)

11 (a)   **Describe how a range of food products based on
dairy produce could be developed to**

- **reduce saturated fat content,   (5 marks)**
- **increase Non Starch Polysaccharide content,
                                                        (5 marks)**
- **improve texture,   (5 marks)**
- **develop aesthetic qualities.   (5 marks)**

**You may use annotated sketches to illustrate your
answer in the space below.**

Responses will refer to different types of dairy foods and
their nutritional qualities:

- Identifying saturated fat sources and replacing
  with unsaturated fats and oils
- Addition of NSP / dietary fibre / changing texture
  – fruits, nuts, oats, bran, skins
- Specific examples of improving texture
- Colour, smell, sight, flavour

                                                                    (20 marks)

11 (b) How would you prevent bacterial growth occurring in high risk foods?

NB: High risk food – a food which has a high protein and moisture content which can provide ideal conditions for bacterial growth, e.g. raw meat, fish, dairy products, cooked meats and poultry

Ways of preventing growth:
- Remove moisture by drying / dehydrating
- Changing temperature
- Freezing or below 5°C
- Cooking, sterilising, canning, vacuum packaging, modified atmosphere packaging
- Changing ph – pickling
- Irradiation

Mark Range 8-10: responses will include a full and accurate answer, with specific points raised and justified. Candidates will consider bacterial growth in high risk foods in detail.

Mark Range 4-7: a number of points will be either raised superficially or few points will be raised but will be justified fully. High risk foods may not necessarily be considered.

Mark Range 1-3: responses will be superficial with little or no justified points raised. There may be some inaccuracies in the answer.

Mark Range 0: no points worthy of credit.

(10 marks)

11   (c)   Explain the importance of labelling on food products.

Reference to:

- Legal requirements
- Allowing full (or not) consumer choice and understanding
- Name of product
- Special claim
- Average quantity / weight
- Manufacturer's (or Distributor's) name and address
- Description
- Price
- Nutritional value
- Guarantee
- Best before date / Use by date
- List of ingredients
- Cooking and storage instructions

Mark Range 8-10: responses will include a full and accurate discussion, with specific points raised and justified.

Mark Range 4-7: A number of points will be either raised superficially or few points will be raised but will be justified fully.

Mark Range 1-3: responses will be superficial with little or no justified points raised. There may be some inaccuracies in the answer.

Mark Range 0: no points worthy of credit.

(10 marks)