

# GCSE 2004

## *June Series*



# Mark Scheme

## Design and Technology: Food Technology *(3542 – Full Course Foundation)*

---

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.

*The answers given in the following mark schemes are neither exhaustive nor exclusive. Candidates whose answers do not appear directly on the mark scheme, but who have demonstrated knowledge, understanding, or skills relevant to the question will receive appropriate credit for their answers.*

Further copies of this Mark Scheme are available from:

Publications Department, Aldon House, 39, Heald Grove, Rusholme, Manchester, M14 4NA  
Tel: 0161 953 1170

or

download from the AQA website: [www.aqa.org.uk](http://www.aqa.org.uk)

Copyright © AQA 2004 and its licensors

#### COPYRIGHT

AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales 3644723 and a registered charity number 1073334. Registered address AQA, Devas Street, Manchester. M15 6EX.

*Dr Michael Cresswell Director General*

**ASSESSMENT AND QUALIFICATIONS ALLIANCE**  
**GENERAL CERTIFICATE OF SECONDARY EDUCATION**

Summer Examination 2004

DESIGN AND TECHNOLOGY: FOOD TECHNOLOGY

**Full Course – Foundation Tier**

Question 1

- (a) (i) Any three relevant answers e.g.
- Interview with consumers/ experts
  - Consumer surveys
  - Taste panels
  - Questionnaires
  - Internet search
  - Literature search, books, magazines
  - Media sources e.g. T.V, videos
  - Comparative shop/ market research/ supermarket survey
  - Analysis of existing products/ disassembly
  - Market trends/ sales figures
  - Electronic sources e.g. CD ROMS
  - Primary research
  - Secondary research

3 x 1 mark  
**3 marks**

- (ii) Questions may begin with who, what, where, how, when, why.

Questions may relate to

- Nutrient content
- Cost/ profit
- Size/ dimensions/ weight
- Number of portions
- Special claims/ dietary information
- Target group
- Selling
- Likes/ dislikes
- Packaging materials
- Product range; frozen, tinned, fresh, dried, organic, vegetarian
- Cooking/ storage method
- Frequency of purchases

3 x 1 mark  
**3 marks**

- (b) (i) Answers should refer to an individual product  
Stir fry or samosas are healthier for different reasons.  
Answers may relate to nutritional values or healthy eating goals

**1 mark**

- (ii) Samosas:
- High level of protein needed for growth/ repair/ secondary energy/ LBV
  - Lower in sugar content less risk of tooth decay/ obesity

Stir fry:

- Low in fat/ saturates less risk of heart disease/ cholesterol/ weight gain
- Good source of dietary fibre/ less risk of diverticulosis/ bowel cancer
- Lower energy content from carbohydrates/ less calories for those on calorie counted diet

Two simplistic reasons, or one detailed with reasons, with reference to the table.	2 marks
Simplistic answer may lack detail or not refer to table.	1 mark

**2 marks**

- (iii)
- Energy comes from starch, carbohydrate rather than from excess sugar, fat, saturates/ samosas may contain high levels of starch, veg also high in energy kcals
  - Stir fry may use no additional or little fat for cooking/ but cooks in own juices
  - May relate to why samosa/ spring rolls are higher in energy due to addition of fat during cooking/ cooking method
  - Spring rolls/ samosas have pastry wrapping therefore high in carbohydrate/ energy

- (c) Explain why manufacturers are selling more multi- cultural vegetable products.
- Increase in cultural diversity/ social awareness
  - Lifestyle factors/ increased foreign travel
  - People more willing to try new foods/ recipes/ different food choices
  - Greater awareness of cultural foods
  - Greater variety of foods available/ new technology/ transporting of foods
  - Influence of TV/ media/ advertising/ recipe books
  - Multi-packs may offer some multi-cultural products
  - Increased variety of celebrations
  - Reducing costs - as become more popular

Several simplistic reasons, and/ or one/ two detailed with reasons	4-5 marks
Simplistic answer(s) may lack detail	1-3 marks

**5 marks**

Question 2

- (a) (i) Each sketch should reflect the design criteria.  
Ideas should be communicated through the use of notes and sketches, including 2D, 3D or cross section sketches

For each design idea:

Recognisable annotated sketch reflecting general design criteria	4 marks
Recognisable annotated sketch but some point omitted or repeated	3 marks
Products described lack detail, suitability or annotation	1-2 marks

2 x 4 marks

**8 marks**

- (ii) Choose one of your design ideas for the manufacturer to develop.  
No marks given for choice. If no idea ticked read response to ascertain which product chosen.  
Explain in detail how the chosen design idea meets the design criteria, i.e. fresh veg, portion size.  
Any relevant reason, related to the criteria and expanding on criteria given in question.  
May give justification for inappropriate ingredient or choice.  
Must be reasoned answer considering the necessary factors

Two full or several simplistic answers	3-4 marks
One full or two simplistic answers	2 marks
1 simplistic answer	1 mark

\*maximum of 2 marks if straight repeat of design criteria only

**4 marks**

- (b) (i) The product specification for the chosen design idea should refer back and develop the earlier design specification by adding detail.

The product specification may include:

- Portion size e.g. 150g per person/ proportion of ingredients
- Costs e.g. will be sold for £1.50
- Target group/ consumer e.g. product will be suitable for children
- Volume/ weight e.g. total weight of the product will be 450g.
- Dimensions of vegetables e.g. chunky texture: use coarse grater, size of pizza
- Shape e.g. cut 5mm cubes
- Product to be stored in the freezer/ refrigerator
- Reheating/ chilling giving times and temps
- Shelf life e.g. will store for 3 months in freezer or two days in the fridge
- Nutrition/ dietary details e.g. will be low fat, providing 5g fat per serving
- Details of finishing techniques
- Preparation/ cooking methods
- CCP's - times, temps.
- Designated tolerances
- Specific sensory details
- Specific types of ingredients e.g. strong flour

N.B. **Not** number of servings as shown to be individual servings

**Not** 'pizza product' as shown, but credit can be given for specific pizza products e.g. calzone or use of standard components, pizza bases

5 x 1 mark  
**5 marks**

(ii) Explain why each ingredient is used.

Quantities of ingredients

- Accept metric or imperial but not a mixture of both
- Correct proportions
- Prototype for test kitchen not large scale production

Ingredients:

- Workable recipe. no major ingredients omitted?
- Ingredients specified e.g. butter not 'fat', plain flour not 'flour'.
- Any standard components identified

Reasons for use:

Relevant reason given (appropriate for type of base/ topping chosen) for use of main ingredients in both base and filling/ topping sections e.g.

- Flours- bulking agent, addition of dietary fibre, vitamin B, thickening, gluten content, dextrinisation, elasticity
- Liquids- binding, increase volume/ consistency, thickness/ thinness, nutrient content, developing gluten
- Vegetables- colour, flavour, texture, vitamin content, dietary fibre
- Standard components- to save time, effort and for consistency
- Yeast- aeration, lightening, raising
- Cheese- flavour, colour, nutrients, texture, holding topping in place
- Herbs/ spices for colour, flavour, finish
- Sugar - activates yeast
- Salt- flavour, strengthening gluten
- Other toppings with relevant reasons e.g. tomato purée

Detailed answer giving correct quantities, ingredients and relevant reasons	7-8 marks
Detailed answer giving correct quantities, ingredients and some relevant reasons. Minor omissions.	5-6 marks
Some detailed answers giving quantities, ingredients and some relevant reasons	3-4 marks
Simplistic answer giving some relevant quantities ingredients and/ or reasons	1-2 marks

\* Maximum 4 marks if only base or filling

**8 marks**

- (iii) Marks awarded are for prototype made in a test kitchen not large scale production.  
N.B. Answers do not need to cover all aspects in order to gain full marks.

Look for candidates showing awareness of different aspects e.g. at least one reference to important temperatures, named process, control check.

- Logical sequence shown through flow chart/ prose/ bullet points
- Specialist terminology
- Timings
- Temperatures
- Named processes
- Personal hygiene
- Safety
- Clear instructions
- Feedback
- Food hygiene
- Kitchen hygiene

Up to 8 marks

Appropriate critical controls:

- Times
- Temperatures
- Hygiene
- Bacterial count
- pH

2 x 1 mark

Detailed answer showing logical plans, control	8-10 marks
Detailed answer showing logical plans, controls. Minor omissions	5-7 marks
Some parts detailed but may not be logical and misses controls	3-4 marks
Simplistic answer giving some relevant planning	1-2 marks

**10 marks**

**Total 35 marks**



Question 3

(a)

<b>Developments</b>	<b>Reason</b>
'Multi-cultural' <ul style="list-style-type: none"> <li>• Addition of curry powder</li> <li>• Addition of herbs e.g. coriander</li> <li>• Addition of spices e.g. paprika</li> <li>• Addition of multi cultural vegetables e.g. sweet potato, yams, okra, chillies, garlic, beansprouts</li> <li>• Addition of pasta, rice, noodles, barley, lentils, croutons</li> </ul>	<ul style="list-style-type: none"> <li>• To give a taste of India, China, Italy</li> <li>• To give a multi cultural taste of hot and spicy, sweet and sour</li> </ul>

2 answers- giving some/ both development and related reason	3-4 marks
1- 2 simplistic answers giving some development/ reasons	1-2 marks

**4 marks**

(b) Equipment Chosen: food processors/ blenders/ liquidisers/ hand blenders  
NOT 'mixer'

**1 mark**

(c) Answers may include personal safety during use/ setting up or safety with electricity e.g.

- Correct training before use
- Visual checking condition of flexes/ plugs
- Checking condition of machine base/ cover/ controls
- Safety with electricity: no water in contact
- Switch on only after setting up
- Care with fitting attachments
- Covers for sharp blades
- Personal safety: no loose clothing/ hair
- PAT testing
- Not overfilling
- Cooling soup before using blender
- Cutting food into suitable sizes to fit into equipment
- Keeping fingers away from blades
- Securing lids/ covers correctly
- Activate machine/ speed control/ until food is required size.

Selects appropriate equipment, describes several simplistic points and/ or some detailed points relating to safe use	3-4 marks
Selects appropriate equipment, describes simplistic points relating to safe use	1-2 marks

**4 marks****Total 9 marks**

Question 4

- (a) Describe different control checks that would be made at each stage.  
Both critical and quality control acceptable in answer

Pastry casing 1	<ul style="list-style-type: none"> <li>• Check even mixing of oil and flour</li> <li>• Check correct proportions of water: flour: oil accurate measurement/ weighing of ingredients</li> <li>• Check use by dates</li> <li>• Reputable supplier</li> <li>• Correct storage temperatures/ conditions</li> <li>• Checking of quality of ingredients on arrival</li> <li>• Checks on personal hygiene of workers</li> <li>• Checks on kitchen hygiene and workplace</li> </ul>
Filling 1	<ul style="list-style-type: none"> <li>• Accurate weighing of ingredients</li> <li>• Consistent size of vegetables</li> <li>• Correct cooking/ cooling temps and times</li> <li>• Checks on condition of equipment</li> <li>• Checks on personal hygiene of workers</li> <li>• Checks on kitchen hygiene and workplace</li> <li>• Quality checks post preparation</li> <li>• Reputable supplier</li> <li>• Correct storage temperatures/ conditions</li> <li>• Checking of quality of ingredients on arrival</li> <li>• Use of appropriate equipment/ training in use</li> </ul>
Casing 2	<ul style="list-style-type: none"> <li>• Accurate division dimensions/ shape of casing</li> <li>• Checks on condition of equipment</li> <li>• Checks on personal hygiene of workers</li> <li>• Checks on kitchen hygiene and workplace</li> </ul>
Filling 2	<ul style="list-style-type: none"> <li>• Accurate weighing/ portion control</li> <li>• Shape/ sealing of casing</li> <li>• Checks on condition of equipment</li> <li>• Checks on temperature control/ time</li> <li>• Checks on personal hygiene of workers</li> <li>• Checks on kitchen hygiene and workplace</li> <li>• Final visual checks on product e.g. shape, seal, colour</li> </ul>

4 x 2 marks

Detailed answer showing different, well explained control checks	7-8 marks
Detailed answer showing different control checks. Minor errors	5-6 marks
Some errors/ omissions. Mixture of detailed and simplistic answers.	3-4 marks
Simplistic answer giving some relevant control checks, lacks detail	1-2 marks

**8 marks**

- (b) i Room temperature 10-36°C GIVEN – NO MARKS  
 ii Danger zone for bacterial contamination matched up to 5 to 63°C  
 iii Safe reheating of ready made products matched up to 72 ° and above  
 iv Storing foods in the freezer matched up to -18 to -27°C  
 v Chilling foods in the refrigerator matched up to 1 to 4°C  
 4 x 1 mark for correctly placing label.  
 Temps not needed for mark as brackets indicate range.

**4 marks**

- (c) Using a food probe
- Used as a sensor for food temperature
  - Reset control
  - Use of anti bacterial wipes
  - Clean before and after use
  - Insert into centre of food
  - Avoid base of container
  - Leave until temp. stabilised
  - Should reach 72°C or above/ food spoilage bacteria killed
  - For minimum of 2 minutes to ensure/ safe to eat

Explains 1 or 2 points in detail or several simplistic differences	3-4 marks
Explains one point in detail or 2 simplistic differences	1-2 marks

**4 marks****Total 16 marks**

Question 5

<b>Problem</b>	<b>Cause of problem</b>	<b>To prevent this problem</b>
The filling is not set	<ul style="list-style-type: none"> <li>• Insufficient cooking time</li> <li>• Temperature too low</li> <li>• Incorrect proportion of ingredients for setting</li> <li>• Faulty oven/ thermostat</li> </ul>	<ul style="list-style-type: none"> <li>• Cook for longer</li> <li>• Cook at higher temperature</li> <li>• Use 1 egg per 125ml liquid</li> <li>• Regular equipment/ temp control checks</li> </ul>
The pastry base is thin and collapses during cooking	<ul style="list-style-type: none"> <li>• Rolled too thinly/ inaccurately</li> <li>• Not within tolerances</li> <li>• Pastry stretched during rolling</li> <li>• Temp too low</li> <li>• Pastry not allowed to relax/ in cool conditions</li> <li>• Poor quality control</li> <li>• Fat very soft at room temp. when rubbed in</li> <li>• Insufficient pastry</li> </ul>	<ul style="list-style-type: none"> <li>• Quality control checks on thickness of pastry</li> <li>• Increase quantity of pastry</li> <li>• Weight/ proportion checks</li> <li>• Checking of temperature</li> </ul>
Pieces of metal are found in the finished product	<ul style="list-style-type: none"> <li>• Parts of equipment/ packaging have fallen off</li> <li>• Workers may be wearing jewellery</li> <li>• No metal detector checks</li> </ul>	<ul style="list-style-type: none"> <li>• Regular checking of equipment</li> <li>• Workers not allowed to wear jewellery</li> <li>• All products to go through metal detector</li> <li>• Ensure metal detector is working</li> </ul>

Explains one detailed cause or several simplistic reasons for each problem area. With well described, related preventative measures	10-12 marks
Some detailed causes or a range of simplistic reasons for problem areas. With related preventative measures	7-9 marks
A range of simplistic reasons for some problem areas and/ or related preventative measures	4-6 marks
Simplistic reasons and/ or preventative measures	1-3 marks

**Total 12 marks**

Question 6

- (a)
- Team workers
  - Making large quantities of same product
  - Making identical products
  - Quick response to changing market/ saving time
  - Workers often have own specific part in production/ sharing of tasks
  - May give example e.g. seasonal products in limited numbers

2 detailed or several simplistic answers	3 marks
Mixture of detailed and/ or several simplistic answers	1-2 marks

**3 marks**

- (b)
- |       |                              |        |
|-------|------------------------------|--------|
| (i)   | £7.42 (£ sign not necessary) | 1 mark |
| (ii)  | Olive oil                    | 1 mark |
| (iii) | Feta cheese                  | 1 mark |
| (iv)  | Tomatoes                     | 1 mark |

**4 marks**

- (c)
- Reduces human error
  - Saves time/ calculations quicker
  - Can make alterations or modifications easily
  - Simulates effects of possible design changes e.g. profit margins
  - Changes made without having to remake product
  - Can handle larger numbers/ calculations more efficient than human workers
  - Enables storage of data for future use
  - Improved presentation
  - Less paperwork
  - Easier to communicate and share information with others/ easier to read

2 detailed or several simplistic answers	3-4 marks
Mixture of detailed and/ or several simplistic answers	1-2 marks

**4 marks**

(d)

Low cost packaging idea for frozen vegetable curry and rice.

Packaging idea:	
<ul style="list-style-type: none"> <li>• Recognisable sketch showing packaging for curry and rice</li> <li>• Annotation</li> <li>• Must be suitable for product given e.g.</li> <li>• rigid/ moulded container/ tray/ bag</li> <li>• With a lid/ cover/ sealed/ airtight</li> <li>• Sleeve/ label/ box for information</li> <li>• May contain curry and rice in separate sections</li> </ul>	
Materials chosen:	Reasons for choice (as appropriate to material):
<ul style="list-style-type: none"> <li>◆ Plastic/ thermoplastic/ DP/ PVC/ PET containers/ bags/ trays/ seal</li> <li>◆ Paperboard sleeve/ paper labels</li> <li>◆ Foil sachets/ trays</li> </ul> NOT 'cardboard'	<ul style="list-style-type: none"> <li>◆ Easy to print on</li> <li>◆ Protects food</li> <li>◆ Can be fused to seal/ prevent mixing of foods</li> <li>◆ Odour control</li> <li>◆ Cost</li> <li>◆ Easy to transport, lightweight</li> <li>◆ Easily moulded into sections</li> <li>◆ Withstands low temperatures</li> <li>◆ Suitable for reheating in oven/ microwave/ boil in bag</li> <li>◆ Holds information</li> <li>◆ Food is visible</li> <li>◆ Recyclable</li> </ul>

Answers may be accepted anywhere within answer e.g. annotations may give relevant responses that may be omitted in other parts of answer.

Recognisable annotated sketch of relevant packaging	3-4 marks
Attempt at sketch for relevant packaging	1-2 marks
Named relevant packaging materials	2 marks
One named, relevant packaging material	1 mark
Two detailed or several simplistic reasons	2-3 marks
Simplistic reasons for choice	1 mark

**9 marks****Total 20 marks**

Question 7

- (a) (i) Potatoes, turnips, swede, parsnips, peas, sprouts, sweetcorn, peppers, onion  
Any two suitable vegetables 2 x 1 mark  
NOT chips, lettuce, tomatoes, cucumber **2 marks**
- (ii) Explain how freezing helps stop decay in vegetables.
- Low temperatures
  - Slow down growth of micro organisms
  - need to blanch
  - Action of enzymes slowed that cause the decay of the food
  - Production of ice during production draws out the water content
  - Causes dehydration and also prevents growth of micro organisms
  - 0 to -18°C in freezers in 12 minutes
  - Stored at -18 to -27 °C
  - Extends shelf life (lasts longer- not 'keeps fresh')

1 detailed or two simplistic answers	2 marks
Mixture of detailed and/ or several simplistic answers	1 mark

**2 marks**

(b)

Label	Meaning
**	<ul style="list-style-type: none"> <li>• Store in freezer compartment/ at -12°C</li> <li>• For 1 month</li> <li>• After this time not at its best</li> <li>• Legal requirement</li> </ul>
150g e	<ul style="list-style-type: none"> <li>• Weight 150g</li> <li>• g = grams</li> <li>• Weight/ volume of product</li> <li>• Weight must be on by law</li> <li>• e = average quantity</li> <li>• Product weight only, not packaging/ net weight</li> </ul>
Best before July 11th	<ul style="list-style-type: none"> <li>• Legal requirement</li> <li>• If not used by date given quality of food will reduce</li> <li>• Food still can be eaten after the date given</li> <li>• Used for non perishable foods</li> <li>• Warning to consumers</li> </ul>

one detailed or two simplistic answers	2 marks
Mixture of detailed and/ or several simplistic answers	1 mark

3 x 2 marks  
**6 marks**

- (c)
- Convenience
  - Out of season produce
  - Saves time
  - Saves effort in preparation/ cooking if lacking in culinary skills
  - Vegetables retain colour
  - Retain nutrient content
  - Less wastage
  - More appropriate storage in today's homes
  - Assured good quality if buying reputable brand
  - Nutritional information on the label
  - Prevents decay/ longer shelf life
  - Economical- can buy in different size/ bulk

Some detailed and/ or range of simplistic answers	4-6 marks
Mixture of detailed and/ or several simplistic answers	1-3 marks

**6 marks**

**Total 16 marks**

**Total marks on Paper 125**