

GCSE 2004

June Series



Mark Scheme

Design and Technology: Food Technology (3552 – Short Course Foundation)

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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.

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ASSESSMENT AND QUALIFICATIONS ALLIANCE
GENERAL CERTIFICATE OF SECONDARY EDUCATION

Summer Examination 2004

DESIGN AND TECHNOLOGY: FOOD TECHNOLOGY

Short Course – Foundation Tier

Question 1

- (a) (i) Any three relevant answers e.g.
- Interviews with consumers/ experts
 - Consumer surveys
 - Taste panels
 - Questionnaires
 - Internet search
 - Literature search, books, magazines
 - 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
 - Media sources e.g. TV, video
- 3 x 1 mark
3 marks
- (ii) 3 reasons why food manufacturers are selling more cultural vegetable products.
- Increase in cultural diversity celebrations
 - Lifestyle factors/ foreign holidays
 - 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
 - To raise business/ profit
- 3 x 1 mark
3 marks

- (b) (i) Answers should refer to an individual product. Stir fry or samosas are healthier for different reasons.

1 mark

- (ii) Answers may relate to nutritional values or healthy eating goals e.g.

Samosas:

High level of protein needed for growth/ repair/ secondary energy

- Lower in sugar content less risk of tooth decay/ obesity
- Good source of protein for growth and repair/ LBV/ secondary energy.

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

Several 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 dietary fibre, carbohydrate rather than from excess sugar, fat, saturates/ samosas have high starch/ content/ high energy – kcals
 - Stir fry uses no additional 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
 - Stir fry has mainly vegetables- low in energy

Several simplistic reasons, and/ or one detailed with reasons	3 marks
Simplistic answer(s) may lack detail	1-2 marks

3 marks**Total 12 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, and suitability and annotation	1-2 marks
Products described are unsuitable and lack annotation	0 marks

2 x 4 marks
8 marks

- (ii) 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.
Any relevant reason, related to the criteria and expanding on criteria given – not repeating
- 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
One simplistic answer	1 mark

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

4 marks

- (b) (i) Explain why each ingredient is used.

Quantities of ingredients:

- Accept metric or imperial but not a mixture of both?
- Correct proportions/ may be for individual or larger product
- Prototype for test kitchen not large scale production?

Ingredients:

- Workable recipe no major ingredients are omitted
- Ingredients specified e.g. butter not fat, plain flour not flour
- Standard components may be identified

Reasons for use:

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

- Flours –bulking agent, addition of dietary fibre, vitamin B, thickening, gluten content, dextrinisation, elasticity
- Liquids –binding, nutrient content, consistency, developing gluten
- Yeast- aeration/ rising/ lightening
- Cheese- flavour, texture, colour, holding topping in place
- Vegetables –colour, flavour, texture, vitamin content, dietary fibre
- Standard components to save time/ effort and for consistency
- Herbs/ spices – colour, flavour, finish
- Sugar- activate yeast
- Salt- flavour, strength gluten
- Other topping ingredients with relevant reason

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 of only base or filling

8 marks

- (ii) 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 candidate showing awareness of different aspects e.g. at least one reference to important temperatures, named process, control check, feedback

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

Up to 8 marks

Appropriate critical controls:

- Times
- Temperature
- Hygiene
- pH
- Bacterial count

2 x 1 mark

Detailed answer showing logical plans, controls	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 30 marks

Question 3

- (a) Describe with reasons, two ways of developing a mixed vegetable soup to meet the new design criteria.

<p>Developments: May relate to the developing process e.g.</p> <ul style="list-style-type: none"> Identifying gap in market Testing, trialling, evaluating multi cultural design ideas 	<p>Reason:</p> <ul style="list-style-type: none"> To match product design to needs To improve existing products
<p>Answers may relate to any two of following</p> <ul style="list-style-type: none"> General development relating to improving sensory appeal ‘Multi cultural’ Addition of curry powder Addition of herbs e.g. coriander Addition of spices e.g. paprika Addition of multi cultural vegetables e.g. sweet potato, yams, okra, chillies, garlic, beansprouts Addition of pasta, rice, noodles, croutons, lentils, barley 	<p>Reasons should relate to development given.</p> <ul style="list-style-type: none"> Improving colour, texture, appearance To give a taste of India, China, Italy... To give a multi cultural taste of hot and spicy, sweet and sour...

2 answers- giving some/ both development and related reason	3-4 marks
1-2 simplistic answers giving some development/ reasons- may not relate to ‘multi-cultural’	1-2 marks

4 marks

- (b) (i) Equipment chosen: food processors/ blenders/ sieves/ liquidisers.
NOT: ‘mixer’

1 mark

- (ii) Use of electrical equipment:
- Cutting food into suitable sizes to fit equipment
 - Keeping fingers away from blades
 - Securing lids/ covers correctly
 - Activate machine/ speed control/ until food is required size
 - Safety in setting up of electrical equipment/ electricity: water
 - Storing blades with covers
 - Safety with electricity: no water in contact
 - PAT-electrical testing carried out regularly
 - Covers for sharp blades
 - Care with fitting attachment
 - Switch on only after setting up
 - Training of staff
 - Not overfilling
 - Visual checks on condition of flexes, plugs
 - Checking condition of machine base/ cover/ controls

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

- (c) Tin can
- Strong
 - Withstands heat
 - Can be shaped
 - Good seal
 - Easy to store
 - Long shelf life for product/ keeps fresh
 - Impermeable/ airtight
 - Cheap
 - Can be stored without refrigeration

Plastic carton

- Lightweight
- Container can be reused/ recycled
- Food can be eaten straight from container
- Can be printed on
- Can be microwaved
- Easy to store
- Can be moulded to shape/ more attractive
- Moisture resistant
- Strong- less likely to break
- Cheap
- Resistant to chemicals/ acid/ high and low temperature
- Easier to open than other materials e.g. tins

Glass jar

- See through
- Strong
- Low cost
- Reusable/ reclose
- Easy to recycle/ reuse
- Can be microwaved
- Food can be eaten straight from container

3 x 2 marks any 2 relevant but different answers acceptable

6 marks
Total 15 marks

Question 4

- (a) Describe different control checks that would be made at each stage.
Accept critical and quality control checks

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

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
Mixture of detailed and simplistic checks. Some errors/ omissions	3-4 marks
Simplistic answer giving some relevant control checks, lacks detail	1-2 marks

8 marks

(b)

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

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

12 marks
Total 20 marks

Question 5

- (a) Potatoes, turnips, swede, parsnips, peas, sprouts, sweetcorn, peppers, onion.
Any three suitable vegetables
Not chips, tomatoes, cucumber, lettuce

3 x 1 mark
3 marks

- (b) (i)

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

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

3 x 2 marks

6 marks

- (ii) Three other items of information that may be on the label
- Name of food
 - Name address of manufacturer
 - Cooking/ preparation instructions
 - List of ingredients
 - Special claims
 - Nutritional information
 - Smart/ bar codes/ batch numbers
 - Serving suggestions
 - Recycling information
 - Description of product/ picture

4 x 1 mark
4 marks

Total 12 marks

Question 6

- (a)
- Team of 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- limited run

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 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**Total 11 marks****Total marks on Paper 100**