



General Certificate of Secondary Education

Design and Technology (Food Technology) 3542

Full Course Higher Tier

Mark Scheme

2006 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.

**1 (a) World-class sporting events attract many people.
Name two different factors that affect the choice of foods made by**

- (i) competitors;
(ii) spectators.**

Factors affecting choice of foods:

Each answer may refer to:

- Age
- Gender
- Culture / tradition
- Lifestyle
- Type of sports event / endurance / hydration levels
- Indoor or outdoor events
- Personal preferences / likes / dislikes / appeal / interest
- Special dietary needs e.g. vegetarian, weight control, allergies
- Cost of foods on sale
- Amount of energy needed for event
- Season of year
- Hot or cold foods preferred
- Nutritional value of foods
- Advertising
- Size of portion
- Ease of use
- Any other answer as relevant to either sports person or spectator.

2 x 2 marks

(4 marks)

(b) How can manufacturers use computers to gather information about the food preferences of visitors from other countries?

Information from computer:

- email
- internet searches / websites
- comparative shops
- electronic sources e.g. CD roms
- market trends
- databases
- sales figures
- conferencing
- production of questionnaires, surveys
- clear presentation of results / use of Word processing / DTP / graphical images

detailed relevant answers

4 marks

a mixture of full or simplistic answers

2-3 marks

simplistic answer

1 mark

(4 marks)

2

A catering company is developing design ideas for savoury snack products for competitors at a sports stadium hosting world cup events.

The successful snack product must meet these design criteria:

- include freshly made pastry, not ready made pastry
- have a savoury filling
- be high in energy
- be suitable to hold in the hand
- will meet the cultural needs of competitors.

- (a) **Use notes and sketches to produce two different design ideas which meet the design criteria.**

Do not draw any packaging.

Sketches and notes should reflect the design criteria and may include other relevant points describing the design idea.

Ideas should be communicated through the use of notes and sketches, including 2D, 3D or cross section sketches.

For each design idea:

recognisable annotated sketches reflecting general design criteria	4-5 marks
recognisable annotated sketch but some point omitted or repeated	3 marks
products described lack detail, suitability or annotation	1-2 marks
products described are unsuitable and lack annotation	0 marks
2 x 5 marks	(10 marks)

- (b) **Choose one of your design ideas to develop.**

No marks given for choice. If no idea ticked read response to ascertain which product chosen.

- (i) **Explain how your chosen product is a high energy product**

- calorie value
- high carbohydrate
- fat content
- starch content
- filling having high energy foods...
- may give examples of specific nutrients / ingredients containing energy, e.g. cheese, potatoes, pastry as relevant to chosen product.
- 50% of food energy recommended to come from carbohydrates.

a mixture of full or simplistic answers	2 marks
simplistic answer	1 mark
	(2 marks)

(ii) meeting the cultural needs of competitors from other countries

- cultural flavours
- traditional recipes and ingredients
- may give examples of specific spices / flavours used
- foods linked with specific country e.g. British – potatoes, Chinese – rice
- ingredients used to cater for different religious beliefs, e.g. halal or kosher meats
- no meat content for vegetarian consumers due to religious beliefs e.g. Hindus no beef, Muslims no pork

a mixture of full or simplistic answers

2 marks

simplistic answer

1 mark

(2 marks)

(iii) suitable to hold in the hand.

- small in size
- not too hot to hold e.g. suitable for placing in a holder
- firm casing / will not break up easily, e.g. flaky pastry
- not too greasy
- has an outer structure to contain a filling, e.g. pastry
- convenient shape for holding
- filling – not too runny
- do not need cutlery to eat

a mixture of full or simplistic answers

2 marks

simplistic answer

1 mark

(2 marks)

- (c) **Produce a plan for making your chosen idea in the test kitchen.
Include details of processes and control checks used.**

You may use flow charts, diagrams, notes or sketches in your answer.

Marks awarded for prototype made in 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 time / temperatures, named process, control checks...

- Logical sequence shown through the main stages of the flow chart. e.g. preparing self and kitchen, preparing pastry, preparing filling assembling filling and pastry, cooking pastry product. May use numbers, symbols or prose.
- dovetailing of tasks
- specialist terminology – named processes
- timings
- temperatures
- personal hygiene
- kitchen hygiene
- food hygiene
- safety precautions
- safety checks
- finishing techniques
- QC and QA procedures / checks on size, shape etc
- consideration given to HACCP in production plan
- feedback
- clarity of instructions

detailed answer showing logical plans	8-10 marks
detailed answer showing logical plans but with minor omissions	5-7 marks
some parts of the answer may not be logical or be omitted	3-4 marks
simplistic answer giving some relevant planning	1-2 marks
	(10 marks)

- (d) Describe your chosen design idea in more detail.**
- (i) List the main ingredients needed to make your product.**
- (ii) Include the quantity of each ingredient needed.**
- (iii) Give a different reason why each ingredient is used.**
- (i)** List of ingredients should reflect type of pastry product chosen:
Shortcrust: soft plain flour, mixture of fats, water, salt
Flaky: strong plain flour, mixture of fats, water, lemon juice, salt
Plus any fillings or finishes as per chosen design

Ingredients

List includes all main ingredients – workable recipe

2 marks

simplistic answer some omissions of main ingredients.

1 mark

(2 marks)

- (ii)** Quantities: use metric or imperial not a mixture of both.

shortcrust: 2 flour: 1 fat

e.g. 200g flour, 100 - 125g fat, water to mix, pinch salt

flaky: 4 flour: 3 fat

e.g. 200g flour, 130- 150g fat, water to mix, pinch salt, 2 tsp lemon juice

plus details of filling, finishing ingredients

List includes all correct proportions and weights of main ingredients

2 marks

simplistic answer some correct quantities of main ingredients

1 mark

(2 marks)

(iii) Main ingredients and reasons for use:

Flour for pastry

- shortcrust: soft plain has low gluten content for short crumb
- flaky; strong plain has high gluten for stretchy dough, rolling, folding into layers..
- forms structure
- dextrinises (browns) when baked at high temperatures

Flour for sauces etc

- gelatinisation
- forms structure

Water

- binds rubbed in fats and flour together
- improves ease of rolling out/ moisture
- develops gluten when mixed with strong flour
- causes starch to gelatinise
- flaky: combines with gluten for stretchy dough.

Fat (named white / lard / butter / margarine)

- flavour
- colour
- nutritive value
- keeping quality enhanced
- coats flour / shortening texture / adds richness

Salt

- develops flavour
- flaky: gluten strengthened

Lemon juice

- strengthens gluten
- counteracts fat

Ingredients for filling, finish may include reasons for use as appropriate:

- flavour
- colour
- texture
- enriching
- adding moisture / decorate / garnish / suitable accompaniment to make dish nutritionally balanced
- add nutritional value – any named nutrient acceptable
- any correct relevant answers that identify different reasons from others given.

Functions should offer different responses for full marks.

Includes correct functions for all / most ingredients

simplistic answer some omissions

3-5 marks

1-2 marks

(5 marks)

(e) Using notes and/or sketches to describe two different ways of giving a quality finish to your chosen idea.

- egg
- milk
- other appropriate glaze e.g. honey, BBQ sauce
- toppings: e.g. nuts, seeds
- other appropriate toppings e.g. cheese
- decorative edgings
- choice of equipment e.g. pastry cutters, brushes
- methods used
- quality controls e.g. sealed edges, evenness of finish
- lattice, leaves.

recognisable prose / sketch reflecting finish

4-6 marks

recognisable prose / sketch but some point omitted or repeated

1-3 marks

(6 marks)

3

The table below shows food facts for two similar pastry products.

(a) Explain which product provides the healthier option.

Product A may be healthier choice because:

- Less energy
- Slightly less carbohydrates
- Slightly more protein – growth / repair
- Lower fat / considerably reduced fat pastry content – lowers risk of heart disease
- Reduced fat cheese – full fat cream cheese in B
- More fibre – aids digestion
- Uses fresh flavours tomato / herb rather than artificial flavours – onion flavouring
- May refer to figures in the table as example or specify target groups.

May also choose Product B if qualified and appropriate response given e.g. linked to target group.

Detailed answers

5-6 marks

Mixture of simplistic and detailed answers

3-4marks

Simplistic answers

1-2 marks

(6 marks)

(b) A test kitchen is testing new ideas for pastry products using the following control sample.

(i) What does the term ‘control sample’ mean?

- Same ingredients
- Same quantities
- Same conditions for cooking / storing / preparation
- May give examples of consistent approach / one variable only changed at a time
- Fair testing technique
- Sample where all variables are kept the same to aid comparison

Detailed answers

2 marks

Simplistic answer

1 mark

(2 marks)

(ii) Why is the ratio and proportion of ingredients important when making pastry?

- Consistent outcome
- Guarantee pastry will work
- If incorrect difficulty in rolling out
- Poor quality product
- If incorrect, texture and consistency would be affected

Detailed answers

2 marks

Simplistic answer

1 mark

(2 marks)

(iii) What would be the effects of changing the ingredients shown below?

Changing margarine to butter:

- improved colour
- improved flavour
- improved texture / richness

Changing plain flour to wholemeal:

- Colour change
- Adds fibre / NSP
- Coarser texture
- Improved nutty flavour

One detailed answer or 2 simplistic answers

2 marks

Simplistic answer

1 mark

2 x 2 marks

(4 marks)

4 (a) What does the following information mean?

Use by:

- product **MUST** be eaten / consumed by the given date / legal requirement
- danger of food poisoning if eaten after this date
- safety of food product not guaranteed after given date.
- Warns that food may be a high risk food / short life products

Best before:

- product may be eaten after the given date
- date warning to consumers / legal requirement
- Quality of the product is lessened after date given.
- May be found on lower risk foods / long life products / ambient / frozen

Detailed answer

2 marks

Simplistic answers

1 mark

2 x 2 marks

(4 marks)

(b) Why is datemarking information important

(i) for consumers

- Gives warning / legal requirement
- information on shelf life of product
- Helps to prevent food poisoning

(ii) for supermarkets?

- Information on how long the retailer can put food on sale
- Legal requirements must be met
- Against the law to sell food after sell by date / may be sued
- Helps with stock rotation
- Foods will only be sold within date given

Detailed answers or mixture of detailed / simplistic answers

2 marks

Simplistic answers or one detailed

1 mark

2 x 2 marks

(4 marks)

(c) **Explain why the following materials are often used to package food products.**

(i) **Paperboard**

- Flexible – can be folded
- Cheap
- Can be waxed to make water resistant
- Easy to print on
- Lightweight
- Environmental friendly

(ii) **Polystyrene**

- Cheap
- moulded to shape
- can be used for hot / cold food / insulation
- Lightweight
- Sturdy- protects product

Detailed answers – different for each material

2 marks

Simplistic answers

1 mark

2 x 2 marks

(4 marks)

5 Manufacturers of food products often use standard components.

(a) Name two different ways flaky pastry is sold as a standard component.

- Frozen
- Packet ready made dried
- Block ready made
- Vol au vents / pastry cases ready prepared
- Chilled
- Ready rolled
- Do not accept 'fresh'

2 x 1 mark **(2 marks)**

(b) What is the correct *storage temperature* for the following standard components?

- frozen vol au vents -18C domestic freezer or -28C if industrial
- tin of fruit pie filling 20-25C / ambient temp (accept any temp in this range)
- cheese 0-8C refrigerator (accept any temp in this range)

Do not accept refrigerator, freezer or room temperature.

3 x 1 mark **(3 marks)**

(c) What are the advantages and disadvantages of using standard components?

Advantages:

- save time
- save on costs of workers
- saves on buying / storing raw ingredients
- saves on buying specialist equipment
- consistency...same sensory attributes each time.
- Fewer cookery skills needed.

Disadvantages:

- cannot guarantee quality unless reliable supplier
- storage space special conditions may be needed
- expensive
- supplier may let down
- allow time for ordering
- may not be same nutritive value as freshly made products.
- difficult to change specification
- may contain additives / preservatives

Answers cover both advantages and disadvantages

5-6marks

Detailed answers or mixture of detailed / simplistic answers

3-4marks

Simplistic answers or one detailed

1-2 marks

(6 marks)

6 (a) **Control checks are made on different batches of salmon and prawn filo parcels.**

Problems found during the checks are listed below

- (i) **Give one cause of each problem.**
 (ii) **Explain how the problem may be prevented.**

Problem	(i) cause	(ii) prevention
Pastry is dry and breaks	<ul style="list-style-type: none"> • Incorrect proportions of ingredients • Over handling • Overcooking / time / temp • Not used in time 	<ul style="list-style-type: none"> • Weigh accurately • Monitor working temp / keep cool / moist • Training staff • Quality control checks • Cover before use
Filling leaks out	<ul style="list-style-type: none"> • Incorrect seal • Not used water to join edges • Too much filling / insufficient pastry • Pastry too thin / torn • Steam vent needed 	<ul style="list-style-type: none"> • Accurate weighing of filling • Quality control checks • Training of staff • Sealing of edges
Shell in the filling	<ul style="list-style-type: none"> • Lack of visual checks • Poor supplier • Quality control checks not completed • Poor quality shellfish 	<ul style="list-style-type: none"> • Check on suppliers • Clear specification • Quality control checks • Visual check • Regular monitoring
Sauce is thin and runny	<ul style="list-style-type: none"> • Insufficient cooking temp / temp • Insufficient cooking time • Inaccurate proportions • Too much liquid • Not enough sauce to thicken 	<ul style="list-style-type: none"> • Weigh accurately • Monitor working temp • Training staff • Quality control checks
Pale product	<ul style="list-style-type: none"> • Incorrect choice of fat in pastry • Not finished with egg / milk • Not cooked long enough / hot enough 	<ul style="list-style-type: none"> • Cook for longer / higher temp • Add finishing technique • Change to butter / margarine instead of white fats

5 x 1 mark

5 x 1 mark

(10 marks)

(b) Results from critical control checks are shown below

- (i) Identify the cause of contamination in each example.**
(ii) Suggest one way of preventing the contamination.

	(i) cause	(ii) prevention
Mould on filling	Biological	<ul style="list-style-type: none"> • store at correct temperature/time • check condition of raw foods before use – visual check • good personal hygiene • staff training • check use by date • stock rotation
Metal detected	Physical	<ul style="list-style-type: none"> • check on condition of equipment used • check staff do not wear jewellery
PH alkaline	chemical	<ul style="list-style-type: none"> • remove all traces of cleaning materials • regular checks on equipment, work surfaces • routine procedures for cleaning food preparation areas • safe storage of cleaning materials

3 marks

6 marks

(9 marks)

(c) Explain why some control checks are done by computers.

- saves manufacturer time
- less staff
- more reliable / accurate / consistent
- less human error
- easier for monitoring
- alerted immediately if problems
- credit specific examples e.g. for temp, time, control, weight checks, PH, metal detection

Detailed, well explained answers or several simplistic

3-4 marks

Simplistic answers lacking detail

1-2 mark

(4 marks)

7 (a) **Explain why colour coded equipment is used when preparing beefburgers.**

- Prevents cross contamination
- Colour coded knives / boards allow different foods to be prepared separately
- May give colours used for raw meat (red) cooked burger (yellow) / vegetables (brown) / bread (white) / fish (blue) / salad (green)
- Keeps foods apart so that bacterial infection not at risk
- High risk foods kept separately

Detailed answer or mixture of simplistic / well explained answers

3 marks

Simplistic answers lacking detail

1-2 marks

(3 marks)

(b) **Explain how and why food probes are used when cooking and serving savoury pies.**

How:

- Bacterial wipes used before use
- Check temp reset before using
- Place in centre of pasty when cooked / outer edges may be different temperature.
- Check temp above 72C
- For 2 mins

Why:

- To measure temperature
- To check if food is safe to eat
- If below 72C not safe to eat
- To prevent contamination of food in temp danger zone

Detailed answer or mixture of simplistic / well explained answers

3-4 marks

Must give a response in both sections for full marks

Simplistic answers lacking detail

1-2 marks

(4 marks)

8

Explain how manufacturers could develop food products that are suitable to meet the nutritional and cultural needs of *competitors* and *spectators* at world-class sporting events.

Similar needs of both competitors and spectators noted.

- different portion sizes
- different price ranges
- range of international flavours
- range of religious cultures catered for e.g. halal
- appeal to different age groups
- appeal to different social needs GM, Organic

Different needs noted between competitors and spectators

Competitors:

- Nutritionally balanced
- Different needs before, after and during events
- Needs may vary according to type of sporting event
- Needs may vary according to endurance of event.
- Need for protein to replace / repair cells / secondary source of energy
- Carbohydrates for effective energy release
- Glucose as a quick energy release
- Low in saturated fat and cholesterol
- May use alternative proteins, e.g. soya, tofu... as healthier substitutes for meat
- and suited to vegetarian competitors
- Fish for fatty acids, low sat fat
- Calcium rich products to aid strength on bones
- High vitamin rich foods, for general good health
- Iron rich foods to carry oxygen through blood
- Water to prevent dehydration, assist digestion, absorption
- May mention a range of nutritious foods with justified functions

Spectators:

- Healthy option choices: low fat, low sugar for spec, high for competitors, low salt, high fibre

Credit may be given for answers that detail methods for carrying out developmental testing,

- use of research e.g. surveys, questionnaire
- testing/ trialling of ideas
- use of results for development

Detailed logical communication covering both competitor and spectator needs	7-9 marks
Detailed answer or mixture of simplistic / well explained answers	4-6 marks
Simplistic answers lacking detail	1-3 marks

(9 marks)

Total for Paper 125