



General Certificate of Secondary Education

Design and Technology: Food Technology 3542

Full Course Higher Tier

Mark Scheme as of May 2008

2008 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.

Throughout the paper simplistic, unqualified answers are given 1 mark, qualified or extended answers will be credited with 2 marks where available.

1

(a) Explain how manufacturers could use the internet when designing and making a new range of hot drinks.

- Research competitors products
- Use of e mail / facilities to speed up communication
- Analyse existing products/recipes e.g. Identify price range
- Nutritional analysis e.g. to find out more about special diets
- Packaging simulations
- Collect information e.g. images/ data/costings/weights of ingredients
- Use websites e.g. Assess popularity of existing products
- Identify new ingredients e.g. recipe ideas/product ideas
- Sourcing of ingredients

Up to four simplistic answers or several detailed , qualified answers
Several simplistic answers or one detailed

(3-4 marks)
(1-2 marks)

4 marks

(b) What other types of electronic media may be used when researching existing products?

- E mail to contact manufacturers
- Digital camera
- Digital TV/ TV
- CD roms / software programmes
- DVD
- MP3
- EPOS electronic point of sale
- Video/camcorder
- Other relevant answers e.g. radio, scanner, telephone, texting
- Answers may give examples of use

2 x 1 mark
Total for question **(2 marks)**
6 marks

2

(a) Give reasons why manufacturers package food and drink products.

- To contain/ when transported/displayed
- To protect / against physical damage/ contamination
- To prevent tampering /sealing with foil/film etc
- For easy storage
- To preserve/extend shelf life/ cans/vacuum pack (not ‘fresh’)
- To advertise/ give information/give appeal
- To identify – labelling information
- Examples of each gain extra credit

Up to five simplistic answers or several detailed , qualified answers
 Several simplistic answers or one detailed
 Simplistic answer

(4-5 marks)
(2-3 marks)
(1 mark)
5 marks

(b) Cold drinks are usually packaged in bottles or cartons. Complete the table below to explain why the following are good materials for packaging cold drinks.

Plastic

- Can be moulded
- Lightweight
- Transparent so contents can be seen
- Recyclable
sometimes slow to biodegrade
- Reuseable
- Cheap to produce
- Resistant to acids/chemicals
- Water resistant
- Easily transportable/ durable
- Easy/comfortable to drink from

Waxed paperboard

- Fairly strong
- Lightweight
- Can be folded/ moulded
- Can be printed upon
- Moisture resistant
- Acid resistant
- Easy to stack, store, transport and distribute
- Cheap to produce
- Recyclable/ biodegradeable

Several simplistic answers and/or one detailed
 Simplistic answers

(2-3 marks)
(1 mark)
6 marks

2 x 3 marks

(c) (i) Why is it important that some milk drinks are kept chilled?

- Extends shelf life at 0-5C
- If warm conditions will deteriorate
- It is a high risk, moist, protein food
- Safeguards health of consumers / food poisoning danger
- Chilling slows down growth of bacteria / microbes naturally found in milk (do not accept 'go off')
- Prevents souring of the milk becoming unsafe to drink
- Better flavour if drank chilled

Two simplistic answers or one detailed answer – 2 marks

Simplistic answer – 1 mark

(2 marks)

(ii) How do retailers control the temperature of chill cabinets?

- Temperature monitoring (less than 5°C)
- Check temperatures of different shelves
- Keep doors shut when in use
- Regular monitoring
- Use of sensors/CAM/warning alarms
- Use of thermometers/temperature probes
- May give reasons for actions
- Record temperature readings
- Avoid locating chill cabinet next to another heat source
- Regular checks on chill cabinet seals/ maintenance of equipment
- Controlling the amount of food in chill cabinet, do not overfill, stack carefully to facilitate cooler flow
- Regular defrosting to maintain efficiency

Up to four simplistic answers or several detailed , qualified answers

(3-4 marks)

Several simplistic answers or one detailed

(1-2 marks)

4 x 1 mark

(4 marks)

Total for question

17 marks

3

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

Do not draw any packaging.

Sketches 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 sketches reflecting general design criteria: 5 marks

- notes and sketches
- meets special dietary needs e.g. healthy option product (low fat, sweeteners, wholemeal flour etc), vegetarians, high energy, diabetics, allergies, intolerances, religious, cultures, age related, heart disease etc
- more than one flavour
- decorative coating e.g. enrobing
- suitability for batch production
- extra information e.g. sizes, toppings. nutritional information etc

Recognisable annotated sketch but some point omitted or repeated 3-4 marks

Products described lack detail, suitability or annotation. 1-2 marks

Products described are unsuitable 0 marks

2 x 5 marks **(10 marks)**

- (b) **Which of your design ideas will you choose to develop?**

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

Explain how this idea meets the following design criteria.

- (i) **is suitable for consumers with special dietary needs**

Answers may give examples relating to any of the following:

- Vegetarians/vegans
- Diabetics e.g. controlled carbohydrate/sugar
- Coeliacs e.g. gluten free
- Health option diets e.g. Reduced fat diets / low salt / low cholesterol /high fibre diets
- Lactose Intolerance diets e.g. Dairy free
- Non allergenic, e.g. nut free, additive free
- Age /culture/religion related
- Any other relevant dietary needs/cultures/ high energy

Detailed relevant answers 3 -4 marks

A mixture of full or simplistic answers 2 marks

Simplistic answer 1 mark

(4 marks)

(ii) has a variety of flavours

- Range of flavours identified e.g spicy, fruity, bitter, sour, salty, garlicky, different flavours of chocolate used etc
- Easily adapted to take alternative flavours

A full or 2 simplistic answers

2 marks

Simplistic answer

1 mark

(2 marks)

(c) (i) What is meant by the term *product specification*?

- Describes what a product is like
- What it can do
- What can and cannot be changed
- A detailed list that describes the product
- May give relevant examples e.g. size, shape

A mixture of full or simplistic answers

2 marks

Simplistic answer

1 mark

(2 marks)

(ii) Write a four-point product specification for your chosen design idea.

Points describe what product is like, can do or what can and cannot be changed e.g.

- Portion size
- dimensions
- Weight given per portion/per product
- Number served given
- Storage instructions/temperatures
- Specific methods named
- Specific ingredient choices named
- Nutritional information, e.g. low salt / sugar / fat
- Packaging details /shelf life/ materials

4 x 1 mark

(4 marks)

(iii) Why is it important to evaluate the development of a new design idea against the product specification?

- check products meet criteria
- Identify quality of product/ engages consumer satisfaction/ future sales
- Identify potential improvements/changes
- Able to correct any errors prior to full scale making

2 x 1 mark

(2 marks)

(d) Describe two different control checks that could be used to make sure your biscuits are of good quality.

Answer may relate to any of the following;

- Cooking times
- Temperatures of making, storage of ingredients
- Sensory testing/Removal of inferior products/attributes
- Visual checks on ingredients/ sell by dates
- Visual checks on final product /size/shape/colour
- Weight checks using computers / digital scales
- Personal hygiene of workers
- Food safety. Storage of raw ingredients
- Work area hygiene – cleanliness of equipment
- Physical contamination checks, e.g. metal detectors
- Biological and chemical contamination checks, e.g. PH
- Other relevant checks

2 x 2 marks

Two well explained answers

3-4marks

Two Simplistic answers

1-2 mark

(4 marks)

(e) Using notes, sketches or flowcharts describe the processes needed to make your chosen idea in a test kitchen.

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/notes/stages/steps

Preparations

- Kitchen hygiene
- Personal hygiene
- Weighing ingredients
- Equipment e.g. pre heating oven

Production

- Preparing product
- Preparing filling/ topping/coating/decorations as relevant
- Dovetailing of tasks
- Named processes e.g. baking, rubbing in, creaming, melting, grating, piping etc
- Finishing techniques

Control checks:

- timings
- temperatures
- food safety
- portion control/ use of cutters/templates
- safety precautions e.g. use of oven gloves
- checks on size, shape etc
- feedback
-

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)
Total for question	38 marks

4

(a) **How are these ingredients suitable for consumers choosing a healthy option product?**

- Wholemeal flour – high fibre, energy, iron, Vit B
- Sweeteners – reduced sugar content
- Polyunsaturated margarine – lower in saturated fats, heart disease, lower in cholesterol
- Skimmed milk, Low fat yoghurt – lower in fat, lower cholesterol, lower calories
- Eggs – protein, Vit A D, iron.
- Blueberries – fruit portion towards 5 a day, some Vitamin C, fibre
- Information on health links may be credited e.g. heart disease, dental caries, obesity, digestion, cancer etc

Several simplistic answers and /or detailed relevant answers

5-6 marks

A mixture of full or simplistic answers

3-4 marks

Simplistic answer

1-2 marks

(6 marks)

(b)

(i) **Why are bicarbonate of soda and baking powder used when making muffins?**

- They are raising agents
- Allow chemical reaction to take place/Co₂ produced
- Increase volume of mixture
- Bicarbonate of soda on its own would leave an unpleasant taste and yellow flavour
- Bicarbonate of soda has a quick reaction rate
- Provide aeration
- Gives light, soft, well risen texture to the product

2 x 1 mark

(2 marks)

(ii) **Explain why it is important to combine the muffin ingredients quickly.**

- Reaction happens quickly
- Mixture will spoil / not rise if too long taken
- So that Co₂ does not escape in advance of baking
- Important for reaction to happen when mixture is in oven.

A mixture of full or simplistic answers

2 marks

Simplistic answer

1 mark

(2 marks)

(c) **What are the causes of the following problems during the production of muffins?**

Problem	Cause
A piece of metal is found in a cooked muffin.	<ul style="list-style-type: none"> • Lack of personal hygiene by workers – no jewellery, hair pins • Quality checks have not taken place • Metal from packaging not checked • Machinery faulty /Poor maintenance of machines
Fruit pieces in a cooked muffin have a dry texture.	<ul style="list-style-type: none"> • Faulty metal detector • Not reconstituted sufficiently • Dried fruit used • Stale fruit used • Insufficient liquid • Muffin cooked too long • Too high a temperature used. • Excess fruit used on topping
Cooked muffins are an uneven size.	<ul style="list-style-type: none"> • Poor quality control • Poor portion control • Temperature too low • Insufficient cooking time • Temperature too high causing peaks • Incorrect balance /mixing of ingredients • Visual quality control not carried out. • No templates, different sized tins used • Incorrect tolerances / weights used.

3 x 2 marks

(6 marks)

(d) Explain why these instructions are important to the consumer.

'Store in an airtight container .Use within 3 days of purchase'

- Consumer awareness/knowledge of storage conditions e.g. helps consumer to
- Know how long it is safe to eat/prevent staleness – to keep product in best condition
- extend shelf life of product
- avoid bacterial contamination of product
- use a reputable supplier -shows manufacturers meets legal requirement- storage instructions to be displayed
- Food deteriorates if these instructions not followed/ becomes unsafe to eat/may cause food poisoning
- Deterioration of sensory attributes e.g. loss of flavour/taste/texture/appearance etc consumer satisfaction

A mixture of full or simplistic answers

3-4 marks

Simplistic answer

1-2 mark

(4 marks)

Total for question

20 marks

5

(a)

(i) Which ingredients help to give a golden colour to the fruit slice?

- Wholemeal flour
- Soft brown sugar
- Apricots
- Polyunsaturated margarine

Simplistic answers

2 x1 mark
(2 marks)

(ii) Describe one way of developing the fruit slice product to improve the flavour.

- Addition of different fruits, more fruits or mixture of fruits, e.g. cranberries
- Any other idea that adds 'fruit' flavour, essences
- Addition of spices e.g. nutmeg, cinnamon
- Addition of sweetness
- Carry out further sensory testing

Detailed answer

2 marks

Simplistic answers

1 mark
(2 marks)

(iii) Describe two ways of developing the fruit slice product to improve the texture.

- Addition of nuts, coconut, seeds
- Named type of texture identified e.g. crunchy, soft, sticky
- Oats in place of wholemeal flour
- Any other idea that adds 'crunchy'
- Cook for correct time to give crunch
- Reference to the method of making e.g. rubbing in correctly
- Dried and fresh fruit added
- Different types/quantities of ingredients used e.g. fats, sugars, flours to change outcome
- Size of ingredients e.g. grated v chopped

Detailed answer

3-4 marks

Simplistic answers

1-2 marks
(2 marks)

2 x 2 marks (4 marks)

(iv) Describe one way of developing the fruit slices to give an appealing, quality finish.

- Sugar topping
- Pinched edges
- Egg wash
- Milk wash
- Forked patterns on top
- Icing sugar dredged
- Chopped nuts. seeds topping, e.g. almonds
- Add ready prepared decorations
- Add fresh or dried fruit toppings
- Add fruit glaze, yoghurt topping, flavoured cream cheese etc.
- Add drizzled chocolate, jams, glaze icing, named fruit, coloured...

Detailed answer, or mixture of simplistic and detailed answers

2 marks

One detailed or two simplistic answers

1 marks

(2 marks)

(b)

(i) Explain why manufacturers use sensory testing.

- To inform decisions on future product
- Identify what needs improving
- To gather information about the product
- To gain information on consumer preferences
- To compare product against other existing products
- To decide the sensory characteristics of a product
- To evaluate the product against sensory characteristics of specification
- To ensure a successful product in terms of sales/meets consumer appeal

Some detailed or several simplistic answers

3-4 marks

One detailed answer or two simplistic answers

1-2 marks

(4 marks)

(ii) What are the advantages of using a computer to record the results of sensory testing?

- Fewer human errors/ efficient/accuracy.
- can share / show results more quickly and with more people,
- range of graphics and methods of presentation,
- neater – easier to see, organise etc
- can be reproduced in the future/saved for use later/copies made
- can be changed easily
- easy to make comparisons

One detailed or two simplistic responses

(2 marks)

Total for question

16 marks

6

(a) Describe the health and safety rules to be followed by food workers using electrical equipment.

- Keep away from water
- Follow manufacturers instructions
- Check condition of flexes
- Check wiring on plug
- Do not use with wet hands
- Do not leave flexes across water supplies
- Check equipment has passed safety checks. PAT tests
- accept equipment specific responses, e.g. blender, mixers
- Hold securely / securely based during use.
- Keep fingers / clothing/ hair away from any moving parts
- Have training in correct use of equipment
- Equipment should be clean before/after use
- Personal safety precautions/ Wear clean, protective clothing
- Concentration during use/ do not leave unsupervised.
-

Detailed answer, or mixture of simplistic and detailed answers

5 marks

Some detailed or several simplistic answers

3-4 marks

One detailed answer or two simplistic answers

1-2 marks

(5 marks)

(b) What are the advantages of using tunnel ovens when baking batches of biscuits?

- consistency of outcome
- process can be timed accurately
- even colour for biscuits
- CAM more efficient than using human workforce/to make large quantities
- less human input due to computer control/ less human error
- different temperatures can be set for different stages of production
- cost effective after initial set up
- some tunnel ovens lead into cooling towers at the end for rapid cooling / saving time
- continuous flow for large scale production

Some detailed or several simplistic answers

3-4 marks

One detailed answer or two simplistic answers

1-2 marks

(4 marks)

Total for question

9 marks

7

(a) Why is fresh cream classed as a high risk food?

- Protein food e.g. dairy product
- Risk of contamination if not pasteurised
- Moist
- Short shelf life
- Easily contaminated if not kept at correct temperature
- Provides ideal conditions for micro organisms/bacteria to develop/may cause food poisoning

3 x 1 mark

(3 marks)

(b) Describe two actions taken to prevent each of the hazards.

Step	Hazard	Actions
Buying the fruit	Mould found on strawberries.	<ul style="list-style-type: none"> • Buy from reputable supplier • Check before buying • Use by date mark (do not accept 'fresh') • Stock rotation • When buying check stored in chill cabinet
Storage of milk	The milk tastes sour.	<ul style="list-style-type: none"> • Keep in refrigerator • Cool 0-5C • Sealed/ Covered <ul style="list-style-type: none"> • Store in door or away from other raw foods • Check use by date • Stock rotation
Preparation of milkshake	Whisk blades are dirty.	<ul style="list-style-type: none"> • Cleaning routines • Quality checks • Thorough cleaning of equipment

3 x 2 marks

(6 marks)

Total for question

9 marks

8 Explain the meaning of the following symbols.

(a) AFS symbol

- Known as the red tractor symbol
- A guarantee of quality/ shows food has been checked before sale.
- Found on animal, dairy, sugar, fruit and flour products.
- Foods carrying this label have complied with approved standards for food safety, hygiene, animal welfare, equipment used, animal foods, animal health, environmental and responsible use of pesticides, and waste.
- All products can be traced back to the farm /supply chain
- The union flag log indicates food has been produced in U.K./England

Detailed answer, or mixture of simplistic and detailed answers

3-4 marks

One detailed or two simplistic answers

1 -2 marks

(3 marks)

(b) Vegetarian symbol

- Suited for vegetarians / but not necessarily for vegans
- Mainly found on soya, cereal products, vegetables, fruit
- No animals killed for the production/meat free
- May help those who do not believe in eating animal foods
- People may be allergic to animal products
- May be against peoples' religion, therefore need to know if animal products used.

Detailed answer, or mixture of simplistic and detailed answers

One detailed or two simplistic answers

(4 marks)

(c) Fair trade symbol

- Supports trade from other countries
- Supports workers rights in 3rd world countries
- Grown from reputable, registered farms
- Better deal for 3rd world food producers.
- Trade support for developing countries
- Guarantee that disadvantaged farmers and workers are getting fair deal.
- Profits / money regenerated into local community projects, e.g. schools, medical centres
- Food is not made/produced in this country

One detailed or two simplistic answers

1 -2 marks

(3 marks)

Total for question 10 marks

Total for question paper 125 marks