

Examiners' Report Summer 2009

GCE

GCE Design & Technology - Food Technology (8FT01)

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**Principal Moderators Report, Summer 2009
GCE AS Design & Technology: Product Design
Food Technology Unit 6FT01**

General

Most centres have made a very promising start to the new specification and there were a range of levels of outcome from very good to weak. It was obvious where centres had been to training or used exemplar material as the work was better organised with a greater degree of clarity between the three different sections. Interesting work was presented on topics such as Luxury Desserts for a Gastro Pub, Luxury Food for a Hamper, Fusion Foods and Celebration Foods.

Administration

- Almost all work arrived on time, most CABs and Optems were completed correctly, but there were still several arithmetic errors or incorrect transfers from CAB to Optems.
- AS and A2 work sent in the same parcel caused difficulty, as did all of a centre's DT scripts arriving in one parcel. Each material area should be sent separately and clearly marked.
- Annotation in the CABs varied from excellent to non-existent. There were examples of page references in the annotation having little relevance to the numbering on the script. There were some scripts without any page numbers and others had numbered each task separately.
- Some scripts were submitted unbound, some in paper clip, some loose and others unidentifiable as they were without any name, candidate number or centre number. For each candidate, all three tasks should be submitted as part of a portfolio of creative skills, bound together with logical page numbering and clearly identified to the candidate and centre.
- CABs should not be attached to scripts.
- Several scripts contained flaps. A number had several pages in one poly-pocket. This is not acceptable and makes moderation very slow.
- Where internal moderation was undertaken in centres with marks altered, it was difficult to decide which mark the final mark was awarded by the centre because a number of marks existed for each assessment criterion.
- It was difficult to agree centre marks for product manufacture when the photographs submitted in the CABs were of ingredients or components of the product.
- Centres could choose to submit work on A4 or A3, with many using A4 very effectively.

Product Investigation Task

Some good work particularly in sections A and B. It would benefit centres to use the headings from the assessment criteria eg Technical Specification, Advantages/Disadvantages, Comparison with Similar Product, Alternative Ingredients, Environmental Considerations, Selection of Manufacturing Processes, Advantages/Disadvantages, Alternative Method of Production, Environmental Considerations, Quality Control Checks, Relevant Standards, Quality Assurance

System. This would act as a check list to ensure that all the criteria have been covered.

Choice of product was an issue for some centres because where the product lacks component parts or has a very brief ingredient list it could be harder to meet all the specification points as descriptions are limited. Quite a lot of work presented for manufacturing, environment and quality was extremely generic. This information must be applied to the product. This section was also better where photographic evidence was used to support work. This would include a photograph of the chosen product that is being investigated and one of the existing similar comparison product. A photograph of the product disassembly was also useful.

Criterion A

Generally a good section, candidates showed good justification in the technical specifications. Where they had followed the headings in the assessment criteria, candidates were able to keep their work well organised and avoided repetition of information. Some contrasting products chosen for comparison were not similar, and this caused problems when comparing with the original product. A number of candidates chose to tabulate this information and this was effective.

Criterion B

The disassembly of the chosen product allowed candidates an opportunity to understand the component parts and structure of the product. Many candidates worked out the % contribution of each component and justified its inclusion in the product. Alternative ingredients were suggested, but often needed more justification. Words like 'improve texture' could have been expanded upon to include an explanation. Some work was too wordy and this section would have benefited from work being presented in table format. Impact on the environment often focussed on packaging and many generic, general books based responses rather than being related to the product.

Criterion C

This was generally well done with some centres downloading and annotating pictures to illustrate manufacture, or using flow diagrams to show the different processes and production methods used to manufacture the chosen product. Some centres chose to cook a similar product in their test kitchen and compare it to mass production; others used small scale batch production in the school canteen kitchen as an alternative method of production. Both were effective. Again, information on the environmental issues was often generic and unrelated. However, those centres that explored CO₂ emissions, use of energy to power machinery, use of standard components on the production line to reduce production processes and applied them to their chosen product were largely successful in this section.

Section D

Candidates suggested a good range of quality checks, but these must be specifically related to the product with a description of each quality check. It is far better to

choose and describe two/three quality control checks linked to the chosen product than produce a long list of unrelated quality control checks. The main relevant standards and quality assurance were weak areas with most responses being generic and taken from secondary research with no reference to the chosen product.

Product Design Task

This task was generally very well done. Many of the tasks were imaginative and creative, where candidates demonstrated high level design and development skills and techniques. Development was excellent in many centres which led to an effective final design proposal, which could be evaluated against the design criteria in order to justify the design decisions taken. The most successful centres did not over complicate the process and avoided unnecessary industrial work. Most candidates included practical development work, though very occasionally this was extremely superficial. Most final products showed significant differences to the original idea. Good photography aided communication.

Section E

This was generally a strong section, with initial ideas and then a good range of design ideas with detailed annotation, linking to the understanding and working characteristics of ingredients and processes. Some centres continue to include background information, mood boards and questionnaires, which are not needed in this task. Where candidates had annotated their design intentions, the design work supported the modelling/making work. Some centres continue to produce superficial developments eg changing one ingredient and therefore did not make any significant changes for the final design proposal. There was some good third party testing and feedback evidenced, with an evaluation against the design criteria. Several centres included a detailed manufacturing specification for their final proposal with excellent technical information.

Section F

Good communication techniques were shown with an impressive range of methods used. There was some evidence of sketching but this continues to be a weak area. Candidates are increasingly showing annotation to convey ideas and development of work, with good explanation and detailed technical information. Most candidates made their design ideas and photographic evidence was used to support marks in this section. Black and white photographic images are unhelpful and do not illustrate the dishes well.

Product Manufacture Task

The quality of work submitted for this task varied enormously. Some centres chose to do a separate manufacturing task, which resulted in a range of different practical items being made for this task. Other centres chose to continue the product design task into the manufacturing task and submitted a number of additional practical items that would be suitable for the combined option, as well as the final design proposal from the product design task. Where centres only used the final design proposal from the previous task (product design) for the making section, they were

awarding marks twice. Some centres produced some outstanding practical work, demonstrating skill, flair and creativity in their making.

Section G

Production plans were generally very good with consideration of realistic time scales and deadlines for the scale of production. Some candidates included thumbnail pictures as part of the production plan, which were effective and clear. Occasionally timings were not always evidenced, but when included were generally accurate and relevant.

Section H

Making varied enormously in terms of quality, technicality and complexity. Some centres did not produce a discrete range of products in this section. Quality finish and demanding high level skills and techniques continues to need focus for GCE AS level. Photographic evidence, although better, continues to disadvantage some candidates. However, some centres had clearly followed advice from training and exemplar material, by selecting food products where candidates could demonstrate accuracy and precision when working with a variety of ingredients/components/processes and techniques. These candidates were awarded with high marks if the evidence was apparent in their coursework.

Section I

An interesting range of tests were evidenced by some centres. However, responses were disappointing where testing was simplistic or superficial. Many centres simply evaluated their work against the design criteria, with subjective comments or a brief summary of work completed for the task. Relevant, measurable points of the design brief/criteria must be objectively referenced, to achieve the top box marks. Candidates must describe and justify a range of tests that were carried out to check the performance or quality of the products. This might include a range of different sensory tests, storage life tests, transportation testing, viscosity tests, and tolerance testing against a manufacturing specification and nutritional analysis where relevant to the design brief.

**Principal Examiners Report, Summer 2009
GCE AS Design & Technology: Product Design
Food Materials Technology Unit 6FT02**

General

This year it was good to see that generally the quality of responses was better than in previous years. A higher proportion of candidates were being entered according to ability and attempts at questions elicited a range of good responses. However, still too many responses showed a lack of understanding on the more technical questions and the same old problem of vagueness and use of generalisations was evident.

There were a number of responses that referred to last year's paper and this has become more of an occurrence over the past few years. Use of past papers as a revision tool is an excellent idea but candidates should be aware that no two questions will appear in consecutive years. Certainly, a number of questions in various forms do get repeated over the lifetime of a specification but previous years responses will gain no marks. Also when any new part of the specification is being examined many candidates draw a blank. This may suggest that previous unexamined areas of the specification are not being taught by some centres. It should be noted that the examination team intend to examine as much of the specification as possible. Centres need to teach the whole specification, there is no set pattern as to what will and will not be examined over the next few years.

Teachers should encourage candidates to write their answers in the spaces provided. There is more than sufficient room for the responses required. The use of additional sheets of paper is also to be discouraged. Too many candidates either wrote out of clip and/or provided additional paper. In far too many cases candidates failed to gain any extra marks.

Question 1(a)

Complete the following table by naming one example for each carbohydrate: monosaccharide; disaccharide; simple polysaccharide; complex polysaccharide. (4 marks).

The majority of candidates scored the full four marks by giving one example for each carbohydrate. Popular responses were: glucose; sucrose; starch; pectin. Various other correct responses were provided. Some candidates confused simple and complex polysaccharides. Most candidates knew the sugars but a few did not know the polysaccharides.

Question 1(b)

Complete the following table by giving one example for each function of protein: structural; physiological; nutritional. (3 marks).

The responses to this question were very disappointing and the majority of candidates failed to score the full three marks. This is surprising as it is explicit in the specification (page 39) protein types by function: structural; physiologically active; nutrient. This is a new area to be examined and this may have led to many centres not covering this topic. A few very good centres scored the full three marks suggesting that the specification had been taught. One word responses such as:

skin/muscle; enzymes/hormones and HBV/essential amino acids would have sufficed for the full three marks. Many candidates confused structural with the structure of protein and for nutrient gave a high protein food eg meat. Candidates could have gained marks if they had avoided using vague terms such as growth and repair and explained what they meant by growth and repair. Eg growth and repair of muscle tissue/cells.

Question 1(c)

Outline what occurs in the Maillard reaction. (3 marks)

The Maillard reaction is a popular topic and the responses would suggest that it has been taught well. The majority of candidates scored at least two marks and a good number scored the full three marks. Some confusion over the requirements of the question with candidates explaining what it was (non enzymic browning) rather than what was occurring. A reducing sugar reacts with an amino acid, to produce a brown pigment in dry heat. Some candidates referred to browning of fruit or use of enzymes in the reaction and had obviously confused enzymic and non enzymic browning.

Question 2(a)

Give three reasons for blanching vegetables before further processing. (3 marks).

The majority of candidates scored at least two marks and many candidates scored the full three marks. Popular responses were: cleans the product; reduces/kills bacteria; shrinks and inactivates/kills enzymes. Weaker candidates were able to score at least one mark on this question. Some candidates referred to domestic techniques eg place in colander over a saucepan of boiling water. An aid to processing is too vague a response and was not credited.

Question 2(b)

Give two problems that are caused by blanching. (2 marks).

Various responses to this question with many candidates focusing on the reasons for blanching as being a problem, eg shrinks the product. This is what the manufacturer may want to do and therefore it is not a problem. Many candidates also confused the blanching process with a cooking process and gave answers such as loss of flavour/colour, makes the food last longer. Popular correct responses were: loss of water soluble vitamins/nutrients and softening of texture/cells and possible increase in bacteria if not processed quickly. A large number of candidates scored at least one mark.

Question 2(c)

Describe the steam blanching process. (3 marks).

Too many candidates referred to domestic blanching and were not credited. Use of domestic techniques in the classroom is a good way to get a point across / demonstrate a technique but must be cross referenced with the industrial technique. A large number of candidates seized on the word 'steam' and wrote about steam cleaning and peeling. A large number of candidates did score at least one mark by showing that they had some awareness about how the process may work. Eg food is taken by conveyer belt to a chamber to be sprayed with steam. Other correct

responses were: short/quick process, rapid/quick cooling after process. Lack of technical knowledge was evident in responses to this question.

Question 3(a)

Name two groups of bacteria that cause food poisoning. (2 marks).

Surprisingly this question was not as well answered as it should have been. All that was required was the naming of two bacteria groups. Any two named bacteria such as: salmonella, staphylococcus, listeria, E.coli or bacillus, etc. would have sufficed. A large number of candidates did score the full two marks. However, far too many candidates referred to moulds/fungi and yeasts, these are not bacterial but other forms of micro-organisms. Referring to last year's paper perhaps?

Question 3(b)

Describe two factors which influence the growth of micro-organisms. (4 marks).

Many candidates scored at least two marks by naming two factors that influenced the growth of micro-organisms. Reference to bacteria, moulds and yeasts were acceptable as long as explanation was correct. Many candidates failed to gain the second mark by not explaining how that factor influenced growth. There were also far too many vague responses to this question. Answers such as, bacteria grow faster in warm temperatures did not tell the examiner why. What do candidates mean by the term warm or bacteria grow? Or bacteria do not like acidic conditions - why? Candidates need to remember to tell the examiner and explain the answer. Tell the examiner, explain the answer. Good responses provided a detailed or clear indication to the influence of the factor. Eg Temperature - ideal temperature range for bacterial growth is within the danger zone (10°C-63°C), with body temperature 37°C being the optimum temperature for many bacteria.

Question 3(c)

Outline how the correct industrial chilled storage of food may reduce the risk of food poisoning. (4 marks).

This question was misinterpreted with many candidates focusing on chilling and its effects on bacteria/micro-organisms, rather than the correct storage in a chiller. The majority of candidates scored at least one mark by referring to the correct temperature range (1°C - 4°C) but failed to gain further marks. Use of the term 'low' temperature tells the examiner nothing. What does the candidate mean by 'low'? However, there were a number of candidates who did refer to correct storage and gained additional marks. Answers such as: store raw and cooked foods separately; store in air tight containers to avoid drip; good stock rotation system; regular cleaning and checking/monitoring temperatures were credited.

Question 4(a)

Name the setting used in (i) dessert jelly (ii) jam. (2 marks).

This question had made an appearance in previous papers and yet it was badly answered by many candidates. There is only one setting agent used in dessert jelly and that is gelatine. As for jam, pectin is the only setting agent used. The majority of candidates did know that pectin was the setting agent in jam and scored at least one mark. But far too many gave xanthan gum as the setting agent in dessert jelly.

Maybe because xanthan gum has been a popular topic in previous papers candidates assumed that it must be in this paper as well. However, there were still a large number of candidates that scored the full two marks.

Question 4(b)

Explain three food uses of alginates. (6 marks).

Reasonable answers to this question with many candidates scoring at least half marks. Most candidates could give a food that required an alginate and scored one mark. However, they failed to explain/give the function of the alginate in that food and therefore failed to gain the second mark available. There are many uses of alginates such as: thickening; moisture absorption; delayed thickening; stabiliser; prevention of large ice crystal growth and gelling agent and these responses were credited. It is not an emulsifier, colouring agent, flavouring or anti-oxidant. Weaker candidates failed to even provide a product and scored no marks.

Question 4(c)

Describe how alginates form a gel. (2 marks).

Questions are starting to get slightly harder and the level of responses clearly showed this. Many candidates did not know how alginates formed a gel and failed to score any marks. Far too many candidates referred to gelatinisation of starch. A correct response would be eg alginate molecules have the ability to hold large quantities of water, forming a 3D network, which traps/holds large quantities of water. Additional information such as: must be in a solution, does not require heat or requires calcium was credited. Very good candidates scored the full two marks.

Question 5(a)

Name two physical forms of starch and outline one functional property of each. (4 marks).

This question was badly answered. The words 'physical forms' lead to confusion for many candidates. Many candidates referred to starchy food products such as flour, rice and potatoes. But the question refers to starch, not starch based foods. The two physical forms of starch are amylose and amylopectin. A large number of candidates scored no marks for this question. Some candidates were able to give the forms of starch but not their function. Very good candidates did score the full four marks.

Question 5(b)

Discuss the relative sweetness levels of sugars compared with sucrose. (6 marks).

Generally a reasonably answered question, most candidates scored at least half marks. The main problem was not comparing sugars with sucrose or not clearly indicating each sugar's sweetness level. Candidates were not required to give the relative sweetness level number. In fact a good number of candidates scored the full six marks by giving a clear comparison and good understanding of relative sweetness levels. Eg Fructose is sweeter than sucrose/fructose is the sweetest of all the sugars/fructose is 170 will score one mark. Many candidates compared sugars to

glucose and fructose. There was also references to artificial sugars and other polysaccharides eg starch. There was also confusion about sucrose being an artificial sweetener and not natural.

Question 6(a)

Explain three major differences between chilling and freezing as methods of preservation. (6 marks).

An easy question yet in too many responses, it was badly answered. The main problems were: candidates did not refer to both chilling and freezing; their focus was on the effects of processing but it should have been on preservation, reference to last years paper (A.F.D.) and using generalisations such as low temperature, can freeze forever showed a lack of understanding. The focus here was preservation and how both chilling and freezing preserve. Therefore temperature and its effects on micro-organisms would be the angle to focus on. The examiner expects candidates to be able to give the correct range of temperatures at AS level, yet many candidates stated low or very low temperatures. Also reference to the effects of processing eg softens the texture, were not accepted. However, many candidates scored at least half marks and there were a reasonable number of candidates who scored the full six marks.

Question 6(b)

Describe the use of three different chemical methods of food preservation. (6 marks).

This question drew a complete blank from many candidates and a large number of responses were completely irrelevant. Maybe because a previously unexamined part of the specification was being examined that centres possibly did not cover it. Again, reference to last year's paper was evident. No marks were awarded for naming a chemical eg vinegar (acetic acid). However marks were awarded for showing how the chemical preserved. Again too many generalisations were used, eg micro-organisms/bacteria do not like acidic conditions. Why? What is it about acidic conditions that bacteria do not like? At this stage in the examination candidates should be able to fully explain their answers. A lack of understanding about chemical methods of preservation was evident with many candidates referring to anti-oxidants, MAP, drying, canning, freezing. A reasonable number of candidates scored at least two marks and a few very good candidates scored four marks plus.

Question 7

Discuss the importance of good manufacturing practice (GMP) in the food industry. (10 marks).

A reasonable response to this question, many candidates showed a good understanding of GMP. The main problem for many candidates was that they focused on only one, possibly two aspects of GMP, mainly hygiene/HACCP/training. The focus was on the whole of the GMP process and therefore **all** aspects had to be considered. Weaker candidates simply did not know what the term meant. However, most candidates scored at least four to five marks by providing responses that hit on GMP areas. The examiners used a holistic approach when marking this question. Eg showing an understanding of a particular area of GMP was awarded.

Statistics

			Grade Boundaries				
			A	B	C	D	E
Unit 6FT01	Raw Marks	90	73	64	56	48	40
	UMS	120	96	84	72	60	48

			Grade Boundaries				
			A	B	C	D	E
Unit 6FT02	Raw Marks	70	38	34	30	26	23
	UMS	80	64	56	48	40	32

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