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Mark Scheme (Results)

June 2011

GCSE Design & Technology: Food Technology
(5FT02/01: Knowledge and Understanding of Food Technology)

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Question Number	Answer	Mark
1.	D	**(1)**

Question Number	Answer	Mark
2.	C	**(1)**

Question Number	Answer	Mark
3.	B	**(1)**

Question Number	Answer	Mark
4.	A	**(1)**

Question Number	Answer	Mark
5.	A	**(1)**

Question Number	Answer	Mark
6.	D	**(1)**

Question Number	Answer	Mark
7.	C	**(1)**

Question Number	Answer	Mark
8.	B	**(1)**

Question Number	Answer	Mark
9.	D	**(1)**

Question Number	Answer	Mark
10.	B	**(1)**

Question Number	Answer	Mark
11(a)	Grater — Size reduction/grating / grate cheese/ bread/ carrot/ apple/celeriac/ potato/ chocolate/ vegetables **(1)** **Do not accept slice or shred** Vegetable knife — peel/cut/slice/chop/dice fruit and vegetables **(1)** Electric balloon whisk/hand mixer/hand whisk/whisk **(1)** Sieve (Do not accept colander) **(1)** **4x1**	**(4)**

Question Number	Answer	Mark
11(b)	Any **two** from the following list: • Calcium **(1)** • Phosphorous **(1)** • Fat **(1)** • Lactose(carbohydrate) **(1)** • Vitamin D **(1)** • Vitamin A **(1)** Do not accept protein as this is in the question. **2x1**	**(2)**

Question Number	Answer	Mark
11(c)	Any **three** from the following: • Cheese **(1)** • Yoghurt **(1)** • Cream **(1)** • Crème fraiche **(1)** • Fromage frais **(1)** • Butter **(1)** • Ice cream **(1)** Do not accept any other named milk. **3x1**	**(3)**

Question Number	Answer	Mark
11(d)	**Two** other preservation treatments: • Sterilisation **(1)** • Ultra heat treatment(UHT) **(1)** • Dehydration/drying **(1)** • Condensation **(1)** • Evaporation **(1)** • Homogenisation **(1)** • Freezing **(1)** • Chilling **(1)**	**(2)**

	Do not accept any processing methods (skimmed etc) Do not accept powder/powdering. **2x1**	

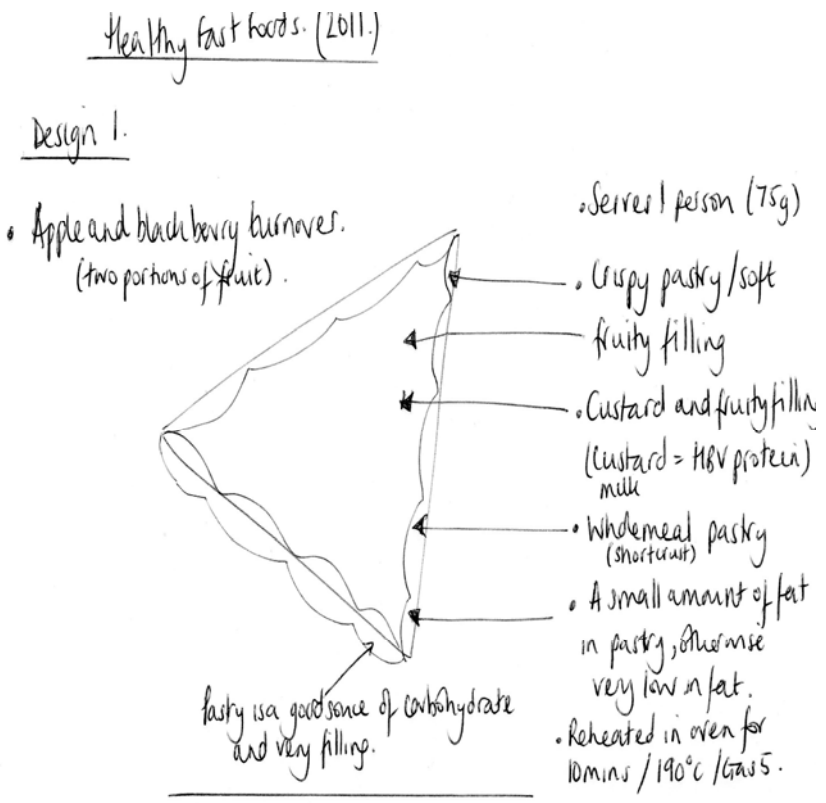
Question Number	Answer	Mark
11(e)	Any **one** of the following points, with explanation. • Milk is a highly nutritious food, therefore supports **micro organism growth (1),** which can lead to **souring**. **(1)** • Milk goes **sour due to the presence of lactic acid bacteria (1)**, which causes **curdling**. **(1)** • Milk **curdles/sours/separates due to presence of lactic acid bacteria/past best before date (1)**, which can cause an **unpleasant smell/ texture/taste/reference to lumpy**. **(1)** **1x2**	**(2)**

Question Number	Answer	Mark
11(f)	Give **two** reasons why milk shakes are made in high volume. • Popular product/consumer demand **(1)** • Easy to adapt product line to alternative flavour/taste/colour **(1)** • Consistent quality/flavour/texture/consistency(**1)** • Few ingredients required**(1)** • Fast/quick**(1)** • Easy to produce. **(1)** • Short shelf life **(1)** **Do not accept sell more/ make more money** **2x1**	**(2)**

Question Number	Answer	Mark
11(g)	Two modifications described • **Remove/replace the cows milk (1)** and replace **with kosher/goats milk as it does not contain the sugar(lactose) that causes lactose intolerance.(1)** • **Remove/replace the cows milk (1)** and replace **with Soya milk as it does not contain the sugar(lactose) that causes lactose intolerance.(1)** • **Replace milk with ice/juice(1) to create smoothie. (1)** • **Replace milk and strawberries (1)** with **water and lemon** to create lemonade.**(1)** • **Replace milk with fruit with a high water content (1)** and **blend until smooth to create a smoothie.(1)** **2x2**	**(4)**

Question Number	Answer	Mark
12	**Design idea 1** Candidates may answer any specification point in either graphical form or by annotation. • **Be a single portion (1):** indication of portion size/ slice/shape/dimension/style/weight of product/ sketched against hand. • **Have a range (two named) of textures (1):** smooth/ crunchy/ crispy/ flaky/ chunky/ soft. • **Include one protein food (1):** use of eggs/ milk/ cheese/ fish/ meat/ Soya **LBV nuts, beans, lentils and pulses.** • **Be filling (1):** quantities of ingredients/ named starch ingredient pastry/bread/panini/pancakes/jacket potato/pasta/pasties. • **Include one ingredient high in fibre (1):** wholemeal flour/ bran/ oats/ seeds/dried fruit/ vegetables/ fresh fruit/ leaving potato skins on. • **Be low in saturated fat (1):** low fat ingredients/ reduced fat recipe/ sourcing low fat alternatives/low fat cooking techniques. • **Be suitable to be eaten hot or cold (1):** maybe reheated in oven/ grill/ microwave/all ingredients have been previously cooked, so may be eaten cold. • **Contain one portion of fruit or vegetables (1):** suitable fruit or vegetable portion.	**(2x8)**

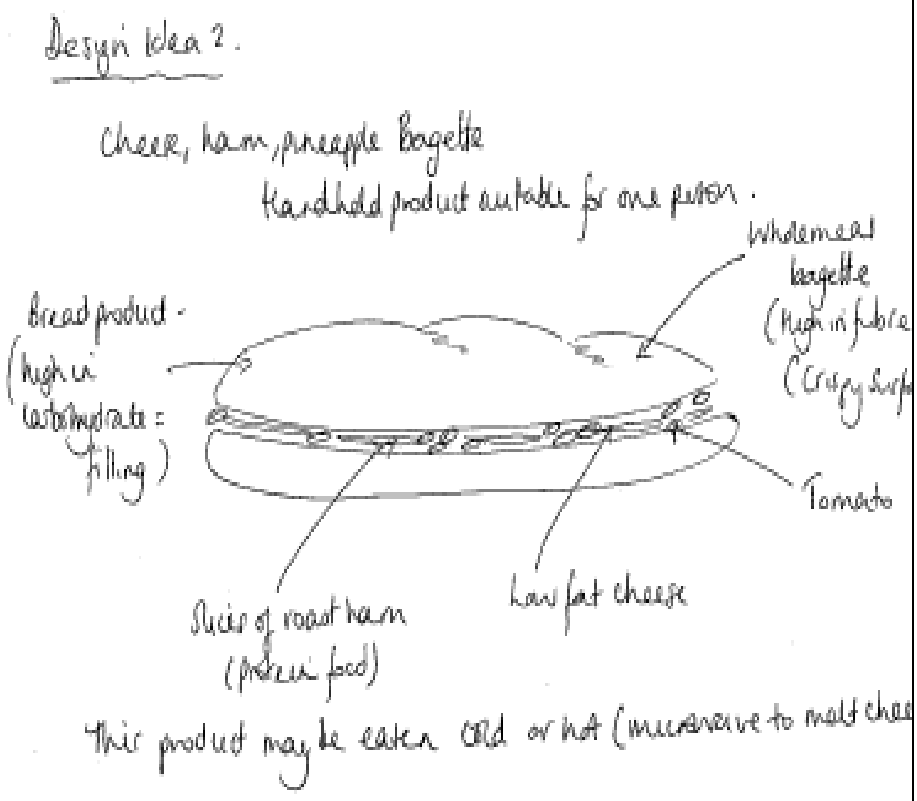
Example of candidate response:



Design idea 2

Marks for design idea 2 can only be awarded where specification points are resolved differently than in design idea 1.

Example of candidate response:



The two named textures in this exemplar should have read crunchy lettuce, chewy ham. Each design must have two different named textures to get the mark.

13(a)	Name **one** high risk ingredient. (Do not accept protein food as the named ingredient) • **Ingredient:** rice **(1)** **Reason:** a highly nutritious food that supports the growth of micro-organisms(bacillus cereus) when reheated/ high moisture content/causes food poisoning **(1)** • **Ingredient:** meat/chicken/lamb/fish/beef/turkey/pork **(1)** **Reason:** a highly nutritious protein food/high moisture content that supports the growth of micro-organisms/causes food poisoning, when not reheated sufficiently. **(1)** No marks awarded for cooking, must be reheating. **1x2**	**(2)**
13(b)	One food product explained: • **Quick/ saves preparation time/staff skill and time/ equipment costs** because **ingredients are pre-weighed/ washed/ mixed/ blended/prepared prior to production/more products produced/scale of production.** • **Cheap (1)** because **can be bought in bulk/ reduces equipment /fuel costs on the production line(1).** • **The quality is guaranteed** because **the same ingredients are produced to the same standard/ consistent/identical every time, so the manufacturers can guarantee the quality of the end product.** • It can make **food preparation safer** because the **high risk processes** (removal of soil on vegetables) are carried out in another place. • **Standard components help produce a product that looks and tastes the same/identical/consistent every time** because it has been **brought into the factory ready prepared/made.** **1x2**	**(2)**
13(c)	Two reasons given: • 24/7, fast, quick process **(1)** • Simple product**(1)** • Fixed numbers of identical/consistent or similar products can be manufactured/same recipe **(1)** • Many items (a batch) can be produced in one production line **(1)** • Product line can be changed easily**(1)** • Variety of products can be made **(1)** • Cost of production can be reduced/cheaper with batch production **(1)** • The same machinery can be used to make other similar products **(1)**	**(2)**

	• The batch production process can be managed easily, with effective QC checks **(1)** • Consumer demand/popular product **(1)** • Bulk buying of ingredients **(1)** **1x2**	
13(d)	Explanation from: **(i) Suitable for reheating.** • Oven reheating (**1)** because the packaging is either thermoplastic or tin foil. **(1)** • Microwave reheating **(1)** if packaging is plastic or if curry product is removed from packaging. **(1)** • The sauce would aid the reheating process **(1)** because heat conducts effectively through moisture content (**1)** • Everything has been cooked **(1)** prior to packaging; therefore risk of contamination/food poisoning is reduced. **(1)** • Flavours and textures remain the same after reheating **(1)** because they are not affected by high temperatures and storage. **(1)** **(ii) Provide a range of textures.** • **Curry**: chunky vegetables/meat/fish/ tender/soft/chewy meat **(1)** • **Sauce**: smooth/velvety sauce,. **(1)** • **Rice**: grainy/soft/fluffy/nutty/chewy. **(1)** Accept two named textures for the food product **2x2**	**(2)** **(2)**

13(e) QWC	Evaluation to address the following issues: • Recipe B uses standard components/ready made ingredients which saves time/labour/ensures consistent quality. Recipe A does not save time as it does not contain any standard components. • Recipe B is fully automated on a production line. This ensures 24/7 working, thus reducing labour costs and speeding up the production process. Recipe A is from a domestic kitchen, which is not automated. • Recipe A has limited QC checks: time/weight controls, unlike Recipe B which has a quality assurance system in place to manage and assess the quality of food products throughout the production process. • Recipe A ingredients are prepared in the kitchen prior to use for manufacture. However, Recipe B ingredients have under gone initial unit operations (weighing/washing/juice extraction) to reduce the number of processes in the production line. • Recipe B has a conveyor belt system that transports the food product around the production process, unlike the one off production of the curry that would occur in a domestic kitchen. • Recipe B would use blast chilling to increase the shelf life of the product, through low temperature storage. Whilst recipe A would be stored in a domestic fridge, the product is likely to take a much longer period of time to reach 0-4'C due to chilling process. • Recipes A and B would be able to be adapted quickly and easily to meet consumer demand, seasonal availability of ingredients and new product development. This is likely to increase the life cycle of the product for recipe B as it is a commercial product. • Recipes A and B could be adapted to recreate new portion size products (family/ individual portion/) • Recipe A would be produced using one off production, which allows for intricate design, decoration and an individual product. This is likely to be more expensive to make owing to the handmade nature of the product. • Recipe B is likely to be cheaper to produce than Recipe A as manufacturers can purchase ingredients in bulk and save money.		**(6)**
		No rewardable material	
Level 1	1-2	Candidate identifies the areas of comparison with no development OR identifies and develops one area. Shows limited understanding of the comparison. Writing communicates ideas using everyday language but the response lacks clarity and organisation. The student spells, punctuates and uses the rules of grammar with limited accuracy.	

Level 2	3-4	Candidate identifies some areas of comparison with associated developments showing some understanding of the comparison. Writing communicates ideas using D&T terms accurately and showing some direction and control in organising of material. The student uses some of the rules of grammar appropriately and spells and punctuates with some accuracy, although some spelling errors may still be found.
Level 3	5-6	Candidate identifies a range of areas of comparison with associated developments showing a detailed understanding of the comparison. Writing communicates ideas effectively, using a range of appropriately selected D&T terms and organising information clearly and coherently. The student spells, punctuates and uses the grammar with considerable accuracy.

Question Number	Answer	Mark
14 (a)(i)	**Two** given from: • Reduce/reuse/recycle/respect/refuse/renewable packaging and waste **(1)** • Food miles • Source of food/local food products/ farmers markets**(1)** • Grow your own fruit and veg **(1)** • Organic farming **(1)** • Sustainable fish farming **(1)** • reducing the need for pesticides/fertilisers**(1)** • Sustainability of food products **(1)** • GM Foods - contamination **(1)** • Reducing CO2 emissions **(1)** • Using up natural resources**(1)** • Energy inefficiency**(1)** • Wasting water during food preparation/ processing(**1)** • Reducing landfill **(1)** • Litter pollution**(1)** • Reducing the use of fossil fuels/energy pollution**(1)** • Reducing greenhouse gases**(1)** • Reference to ozone layer **(1)** • Waste disposal (1) • Deforestation(1) • Global warming (1) • Factory pollution (1) • Transport CO2 emissions(1) **1x2**	**(2)**
14(a)(ii)	**Two** given from: • GM ingredients **(1)** • Biotechnology (1) • Sustainability of food products **(1)** • Factory/battery **(1)** • Fair trade **(1)** • Irradiation **(1)** • Food miles/source of food **(1)** • Animal welfare/ living conditions/ treatment of animals **(1)** • Reducing pesticides/herbicides in farming **(1)** • Organic farming **(1)** • Free range ingredients **(1)** • Sustainable fish farming **(1)** • Vegetarianism (1) *Do not accept food miles more than once* **1x2**	**(2)**
14(b)	**Two** ways described: • Value/basic/market/own brand ranges of ingredients **(1)** which are slightly lower grade/standard than other similar products/purchasing food from a quality branded supermarket.**(1)** • Price comparison websites/BOGOF offers/ vouchers/	

	loyalty points/ special offers/ meal deals **(1)** to encourage consumers to save money using the special offers (including petrol vouchers).**(1)** • Bulk buy special offers **(1)** to reward consumers who can store greater quantities of basic ingredients.**(1)** • Supermarket/club stamp cards/loyalty schemes **(1)** for budgeting throughout the year.**(1)** • Promoting cheaper cuts of meat **(1)** and offering menu ideas.**(1)** • Promoting seasonal fruit and vegetables available throughout the year in the UK **(1)**, thus reducing the cost of transportation.**(1)** • Celebrity chef endorsement of recipes/ingredients **(1)** to encourage consumers to try new, low cost dishes **(1)** • Using local produce/local supermarkets/producers/farmers **(1)** and reducing the cost of transporting food around the world – passing these savings onto consumers.**(1)** • Reducing packaging materials(1) to reduce final cost of product (1) • Reducing pack sizes/weights **(1)** to reduce final cost. • Substitute/extend meals /encourage consumers to make food stretch further by substituting high cost ingredients for low cost ingredients (meat/potato/beans/rice) **(1)** Any two of the above points with good description. **2x2**	**(4)**
14(c)(i)	One check from: • **Raw materials**: washing/visual check for bruising and rotting/ sampling/ traceability or any named temperature control checks/date marks/check condition/bacterial tests **(1)** • **Weighing/measuring:** calibration of scales/ electronic scales to weigh minute quantities/visual check of recipe/ratios/proportions of ingredients/tolerances. **(1)** • **Packaging of foods:** tamper proof/ seal/ metal detector/visual check/no damage/check codes/traceability code. **(1)** **1x3** **A visual check will only be accepted once, as question asks for different checks.**	**(3)**
14(c)(ii)	**One** explanation from: • Food labels carry the date codes **(1)** to show how much shelf life is left/safe to eat/shelf life.**(1)** • The product is no longer at its best after the use by date **(1)**, and should be thrown away. **(1)** • Use by date is for high risk foods(**1)** with a short shelf life **(1).** • Best before date codes appear on foods **(1)** because they have a short to medium shelf life/ should not be eaten after this date **(1)**	

	• Display until date codes are used by the store **(1)** to tell them when to remove the chilled product from the shelf. **(1)** • Sell by dates are for the store **(1)** to tell them when to remove the preserved product from the shelf. **(1)** All these points are related to each other, therefore any two points from the list above. **1x2**	**(2)**

14(d)	Discussion points from: • **CAD** • Adding pictures to text: clipart, scanned images, photos in packaging • Using CAD packages: packaging nets, product profiles, food labels, design ideas. • Research: using internet, databases, email/construct questionnaire, surveys, using word, analyse results. • Databases: recipes • Modelling: nutritional databases. • Spreadsheets: scaling, costing, stock control. • **CAM** • Monitors and controls the automatic production of food products based on set specifications and tolerances: sensors and QC. • Microwave ovens, timers, bread makers, edible icing printer, depositor, injectors. • **CIM** • All stages in a food production process are integrated and controlled by computer systems. • Computers are linked in a network and control both the machinery and the flow of information during the process. At least one reference for designing and making to award the full six marks.	**(6)**

Level	Mark	Descriptor
		No rewardable material
Level 1	1-2	Candidate identifies the ways with no development OR identifies and develops one way. Shows limited understanding of the ways. The student uses basic language and the response lacks clarity and organisation. The student spells, punctuates and uses the rules of grammar with limited accuracy.
Level 2	3-4	Candidate identifies some ways with associated developments showing some understanding of the ways. Writing communicates ideas using D&T terms accurately and shows some focus and organisation. The student uses some of the rules of grammar appropriately and spells and punctuates with some accuracy, although some spelling errors may still be found.
Level 3	5-6	Candidate identifies a range of ways with associated developments showing a detailed understanding. Writing communicates ideas effectively, using a range of appropriately selected D&T terms and organising information clearly and coherently. The student spells, punctuates and uses the grammar with considerable accuracy.

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