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Mark Scheme (Results)

June 2014

Pearson Edexcel GCSE
Design & Technology (5FT02/01)

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Summer 2014
Publications Code UG038504

General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

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.	D	**(1)**

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

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

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

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

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

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

Question Number	Answer	Mark
11(a)	**Measuring spoons (1)** — Measuring dry/wet ingredients Food probe — **Test / calculate / check / measure temperature of Fish / meat / rice / egg / microwave meals / monitor / check food is cooked in the middle(1)** **Wok (1)** — Frying/stir fry **Rolling pin (1)** — Flattening / rolling **4 x 1**	**(4)**

Question Number	Answer	Mark
11(b)	Any **three** from the following: • Check for a fresh smell • Check for good colour • Check for moist/soft texture • Store raw and cooked meat on different shelves in the fridge • Store raw meat on bottom shelf of fridge • Wrap meat/ cover meat • Store in a fridge • Freeze on the day of purchase • Use date marks for shelf life • Defrost only once **3 x 1**	**(3)**

Question Number	Answer	Mark
11(c)	Any **two** from the following list: • Mince • Grind • Extrude • Sausage machine • Burger press • Cutter • Mould • Cube • Dice • Fillet • Butcher • Cut • Chop [Do not accept process /mix] **2 x 1**	**(2)**

Question Number	Answer	Mark
11(d) (i)	Only **two** methods: • Conduction (1) • Convection (1) [Do not accept Radiation] **1 x 2**	**(2)**

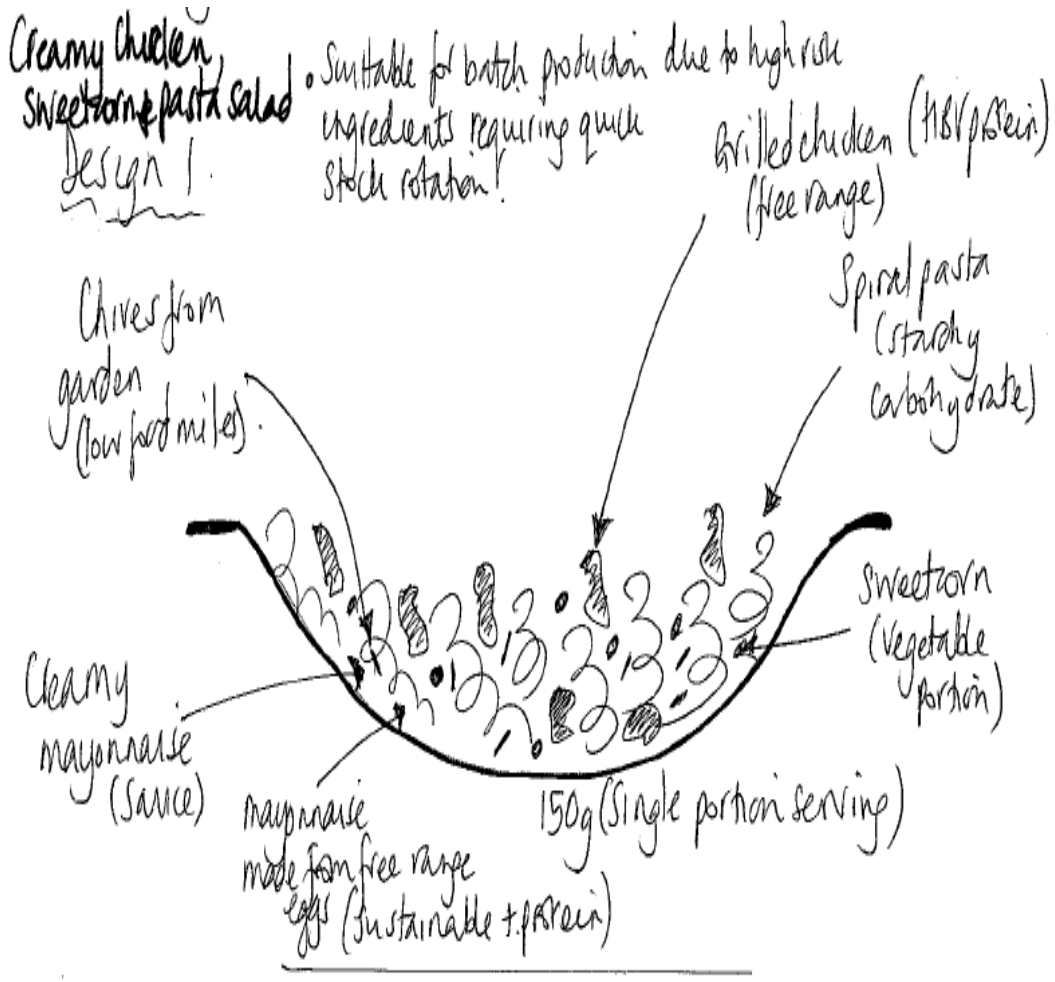
Question Number	Answer	Mark
11(d) (ii)	T**wo** from the following. • Boiling • Poaching • Steaming • Braising • Stewing • Casseroling • Pressure cooking • Slow cooking [Do not accept any reference to frying] **2 x 1**	**(2)**

Question Number	Answer	Mark
11(d)(iii)	Explain **one** rule from the following: • Never put a tin foil/ metal container into the microwave oven (1) because this can cause sparks/fire hazard (1) • Read the instructions before use (1) to ensure correct operation of appliance (1) • Follow instructions on food label for reheating/ cooking/ defrosting (1) to ensure the food remains edible/ safe to eat (1) • Use the timer /temperature control/ weight control correctly (1) to ensure the food remains edible/safe to eat (1) • Follow food manufacturers guidelines for defrosting/ cooking/ reheating/ standing time (1) to ensure the food is cooked thoroughly (1) • Use a food probe (1) to ensure that there are no cold spots present in food (1) to ensure food is above 72'C (out of the danger zone) (1) • Keep water away from plug/socket (1) to prevent electrocution hazard (1) **(1x2)**	**(2)**
Question Number	Answer	Mark
11(d)(iv)	Describe **one** change from the following. • Proteins sets coagulate (1) between 40'C and 60'C/ causing the meat to shrink.(1) • Fat melts (1) and causes shrinkage (1)/ meat dries out (1) • Texture change (1) from soft to firm (1)/ crackling on surface of pork (1)/ crispy skin on duck/chicken (1) • The colour changes from red/pink (1) to brown/white (1) • Some vitamin B is lost (1) because this is a water soluble vitamin (1) **(1x2)**	**(2)**

Question Number	Answer	Mark
11(e)	**Two** modifications described from. • **Remove the meat HBV protein** and replace **with LBV vegetable / nut / beans / lentil / TVP / tofu (1) because vegans do not eat any animal products – Do not accept quorn as it contains egg white as a binding agent.** • **Replace butter / lard (1)** with **oil or vegetable margarine as this is a plant based fat product suitable for pastry making (1)** • **Remove egg / milk glaze (1) and finish pasty with crimped edges for pleasing appearance (1)** • **Remove egg / milk used for sealing edges (1) and replace with water** • **Replace meat stock with vegetable stock / gravy(1) to add moisture to product but without the ingredients originating from animals** [Do not accept the same description twice.] **2 x 2**	**(2)**

Question Number	Answer	Mark
12	**Design idea 1** Candidates may answer any specification point in graphical form and by annotation. 1. Include one named starchy carbohydrate product **Pasta/cous cous/ rice/ bulgar wheat/ potato/ bread/ croutons (1)** 2. Include a good source of protein **Meat/ fish/ cheese/ eggs/ cream/ soya/ yogurt/ pulses/ lentils/ nuts/ quorn/ crème fraiche/ sour cream (1)** 3. Contain one suitable sauce **Mayonnaise / salad dressing/ tomato sauce/ passata/ crème fraiche/ sour cream/ emulsion/ pesto/ yogurt/ ragu (1)** 4. Contain one portion as part of 'five a day' recommendation **Any named fruit or vegetable (1)** 5. Single portion **Indication of accurate weight/ size/ shape/ hand held/ pot/container (1) Two separate weights acceptable if 25g difference or more. For single portion, two difference accurate size dimensions acceptable.** 6. Include a sensory quality linked to texture **Crunchy/ moist/ chewy/ smooth/ soft/ crumbly/ nutty/ firm (1)** 7. Suitable for batch production **Reference to shape/ industrial processing/ shelf life of ingredients/ divided into smaller portions/ changing flavour to suit seasonal demand (1)** 8. Be sustainable **Seasonal ingredients/ local ingredients/ home grown ingredients/ minimum wastage/ food miles/ recycled packaging/ organic ingredients/ free range ingredients/ fair trade named ingredients (1)**	**(2x8)**

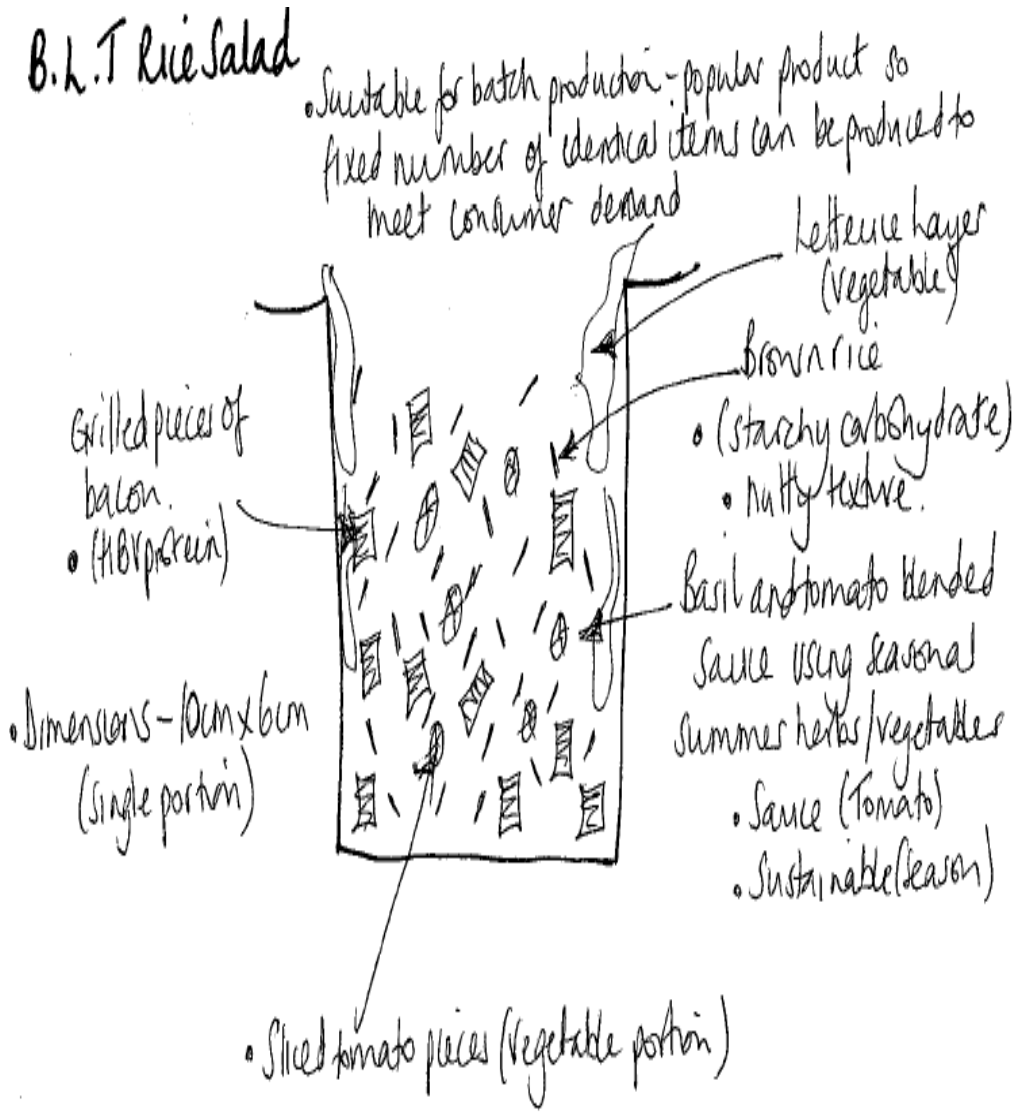
Design idea 1



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:



2

Question Number	Answer	Mark
13(a)	Give **one** from the following. • Fish is dry and sauce is moist/contrast with textures (1) • Sauce is a good medium to cook fish in (1) • Sauce adds yellow colour (1) • Contributes a smooth texture to pie filling(1) • Sauce heats up quickly upon cooking (1) • Holds fish together (1) • Firm base for topping(1) **(1 x 1)**	**(1)**
13(b)	**One** explanation from: • To check/ test the flavour/taste/texture of the pie and adjust/change for target audience (1) • To ensure safety of consumers (1) by removing bones (1) • To ensure uniformity (1) by checking weight of product/layers (1) • To ensure even distribution of components (1) by checking consistency of layers/sauces/topping/crumb (1) • Check m/o activity (1) to prevent cross contamination (1) • Ensure safety of consumers (1) by checking storage/cooking temperatures to prevent cross contamination (1) • To check consistency of sauce (1) to produce a quality product/meet specification (1) • Even distribution of potato (1) because this makes it look attractive/appealing (1) • Fish not over/undercooked (1) therefore contributes to quality/safety/reputation of manufacturer (1) • To check datemarks to ensure food is safe to eat for purpose (1) • To check for bones to prevent choke hazard (1) **(1x2)**	**(2)**
13(c)	Give **one** reason from: • Aid portion control • Decorative finish/ looks nice • Improve appearance • Luxury • Even distribution of potato • Even texture • Adds to consumer appeal **(1 x 1)**	**(1)**

Question Number	Answer	Mark
13(d)	**One** explanation from: • HBV protein (1) for growth and repair (1) • Monounsaturated fat (1) for energy (1) • Low in saturated fat (1) for healthy eating (1) • Omega fatty acids (1) for brain development/good skin/shiny eyes/general good health (1) • Vitamin A (1) for improved night vision (1) • Vitamin D (1) for formation of strong teeth and bones (1) • Fluoride (1) for formation of strong teeth (1) • Vitamin B Complex (1) for use of energy/nervous system development (1) • Calcium (1)available where tuna/salmon bones are softened /mashed into fish component(1) **(1x2)**	**(2)**

Question Number	Answer	Mark
13 (e)	Explanation from: (i) Suitable for batch production • Popular demand (1) to produce a fixed number of identical items (1) • Ingredients can be bought in bulk (1) to reduce price (1) Take advantage of special offers (1) • Quality/identical product (1) due to consistency/uniformity (1) • Recipe can be adapted (1) to create a different product line (1) • Fixed production costs (1) are spread over a larger product range (1) • Cheaper (1) than one off production (1) • Perishable ingredients (1) can be rotated quickly to aid production (1) (ii) Appeal to wide range of age groups. • Appeals to any named group of people (1) because it's a traditional main meal (1) • Easy to cook (1) so it appeals to busy people/elderly/people unable to cook (1) • Smooth creamy texture (1) which is easy to digest/children/elderly (1) • Contains HBV protein (1) needed for growth and repair by all age groups (1) • Convenience food (1) so minimal food waste for consumer (bones/skin) (1) • Mild flavour (1) so suitable for children + elderly.(1) • Any named accurate nutrient (1)linked to specific age group + function(1)	**(2x1)** **(2x1)**

Question Number	Answer	Mark
***13f QWC**	Evaluation to address the following issues: • Both tests would be set up to ensure fair and accurate testing, within a sensory booth/ independent testers/ chart to record results/ lighting to aid sensory testing. • Test A ranks the products in order of preference but Test B rates the products against sensory descriptors. • Both tests use codes for each sample of pie to ensure fair testing. • Both tests use a 1-5 key scale to ensure that the range of descriptors offer valid results. • Test A (ranking) is used to screen one or two 'best samples' from a group rather than thoroughly testing each sample. • Test B (rating) plots attributes of food to compare them to other products or another taster's results. • Test B (rating) helps to create a detailed, descriptive evaluation of a range of differences between similar products. • Sensory descriptors for Test B can be chosen for different products. • Both tests would be useful to a food manufacturer to aid product development. • Test A would be used to rank a product against its' competitors in the market before and during development. • Test B rates a food product according to sensory qualities/attributes predetermined by the food manufacturer. • Both tests would be very useful to a food manufacturer during product development to gain user group feedback and check a product against design criteria or a product specification.	

Level	Mark	Descriptor
	0	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)	**Two** descriptions from the following: • Dry cleaning/sieving/aspiration (1) without water, food is sieved or screened to remove contamination/ insects/bacteria (1) • Wet cleaning / washing/ rinsing (1) with clean water to free food from contamination/ chemicals/ insects (1) • Aspiration (1) uses blasts of air to remove lighter particles/dust from food (1) • Spray washing (1) with clean water under pressure (1) • Rotation washing (1) used to push food through a number of different compartments/weirs, forcing food under the water with slowly rotating paddles (1) • Peeling plates for bulky vegetables/ (1) removes the outer skin (1) and some contamination (1) • Spinning salad leaves (1) removed contamination (1) • Scrubbing/ brushing bulky veg (1) to remove soil **2 x 2**	**(4)**
14(b)	One explanation from the following: • A short heat treatment (1) to prepare vegetables before canning/drying/freezing (1) • Short heat treatment/heated temperature of 100'C (1) inactivates enzymes / partially cleans and removes surface bacteria/ shrinks product by removing air and moisture from the product prior to preservation treatments (1) • Short heat treatment (1) to retain colour/ improve taste and texture of some food products (1) [do not accept cooking] • Shrinks the food product so it fits in the packaging (1) [Do not accept making food safe to eat – It is not a method of preservation] **(1x2)**	**(2)**

Question Number	Answer	Mark
14(c)	One suitable food from: • Vegetables: named group or named vegetable acceptable, including fruiting vegetable (tomatoes): • beans/broccoli/cauliflower/carrots/peas/turnip/parsnip/ spinach/tomatoes	**(1)**
14(d)	**Two** descriptions from: • Make food safe to eat (1) by creating unfavourable conditions of micro-organism growth (1) • Extend the storage life of food (1) to increase the variety of foods throughout the year (1) /So food can be transported/distributed globally. • Increase the range of foods (1) so that they may be eaten out of season or as a different composite food (1) • Make use of foods when they are cheap and in plentiful supply (1) to store for later use (1) • Retain the nutritional characteristics of food (1) beyond their normal storage life as fresh ingredients (1) • Retain the sensory characteristics of food (1) beyond their normal storage life as fresh ingredients (1) (2x2)	**(4)**

Question Number	Answer	Mark
14(e)	Discussion focussing on the following topics, but to include at least two topics for full marks. **Manmade:** **Smart food materials** are raw ingredients that have one or more properties that can be significantly changed in a controlled fashion by external stimuli, such as agitation, temperature, moisture or pH. • Modified starch • Pre-gelatinized **Functional foods:** have specific health promoting or disease preventing properties/ lowering cholesterol beyond the basic function of supplying nutrients. These foods are also known as nutraceuticals. • Plant sterols & stanols • Prebiotic • Probiotic • Nutritional modelling using CAD to create food products (ie low in fat/cholesterol) **Novel function:** • Use of additives to function in food in a particular way: sweeteners, stabilisers, emulsifiers, gelling agents **Specially developed:** A **meat analogue** is a meat substitute or extender that is similar in texture, flavour and appearance to meat. They offer the consumer a variety of plant based protein foods that can complement a range of different dietary requirements. • Meat analogues: Soya, Quorn and TVP uses in the diet and as new foods. **Biotechnology:** This technology is based on science, biology, medicine, agriculture and food to genetically engineer biological systems or living organisms to make or modify products or processes for specific uses. **Genetic modification:** This is a branch of biotechnology, with the potential to create change in the quality, variety and quantity of food available world wide. **Genetically modified (GM) foods** are modified or engineered to alter specific characteristics. **Nano technology:** • **Nano-capsule protection** which can bind flavours or fortifying nutrients, and allow controlled release	**(6)**

	into a food product. E.g. drinks. • **Nano- food synthesisers** which can create or alter food molecules. • **Nano- sensors** that can detect the presence of pathogens, changes in pH or temperature. • **Nano-bots** are minute robots used to destroy bacteria, making food safe to eat. • **Nano-emulsions** to create double/triple emulsions to improve the texture of sauces. Named examples appropriate	

Level	Mark	Descriptor
	0	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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