

Design and Technology (Food Technology)

General Certificate of Secondary Education **A524**

Technical Aspects of Designing and Making

Mark Scheme for June 2010

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Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

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Question		Expected Answers	Rationale	Marks
1	(a)	<p>One mark for correct answer</p> <ul style="list-style-type: none"> • Peas • Beans (Runner/Broad/French) • Lettuce /rocket • Courgette • Carrots • Beetroot • Asparagus • Cucumber • Peppers • Radish • Potato • Marrow <ul style="list-style-type: none"> • Sweetcorn • Spinach •Pak choi •Tomatoes •Kohlrabi •Spring onions/shallots •Fennel • Cabbage • Watercress • Cauliflower •Aubergine • Pumpkin/ Squash 	Accept any vegetable that grows in summer in the UK	[1]
	(b)	<p>One mark for each advantage and disadvantage. Four marks.</p> <p><u>Frozen Vegetables</u></p> <p>Advantages</p> <ul style="list-style-type: none"> • Easy to store • Can buy out of season • Will keep stored for a long time/before going out of date • No preparation/Ready to eat/ready to cook /quicker to use • No waste/can use the exact amount needed • Can be cheaper than to buy out of season vegetables • Can be cheaper than buying fresh • Nutritional value maintained/sometimes higher • Wide selection available <p><u>Frozen Vegetables</u></p> <p>Disadvantages</p> <ul style="list-style-type: none"> • Loss of flavour • Loss of texture • Can be limited selection • Freezer needed • Need to be transported home at the correct temperature • If thawed they have to used straight away 	<p>The question is about the method of preserving. Do not credit the same answer twice</p> <p>Do not accept: Stays fresh Last longer Cheaper Quicker Takes less time unless qualified or further detail given</p> <p>Do not accept: Longer to cook Not fresh Different flavour/colour.</p>	

Question	Expected Answers	Rationale	Marks
	<p><u>Canned Vegetables</u> Advantages</p> <ul style="list-style-type: none"> • Long shelf life/keeps well for a very long time/before going out of date • Easy to store/no freezer needed • Quick to cook/just need reheating/ready cooked • Cheap to buy • Can buy out of season • No preparation needed/ready to eat/ready to cook • Easy to transport <p><u>Canned Vegetables</u> Disadvantages</p> <ul style="list-style-type: none"> • Processing affects the flavour/loss of flavour • Texture may not be good/softer texture/loss of texture • Some vitamin loss • May be canned in salt water • Colouring may be added/contains additives/preservatives/chemicals 	<p>Do not accept: Stays fresh Last longer Cheaper Takes less time Quick Unless qualified or further detail given</p> <p>Do not accept: Not fresh Different flavour/colour</p>	[4]
(c)	<p>One mark for correct answer.</p> <ul style="list-style-type: none"> • Steaming • Microwave • Baking • Roasting • Stir frying • Boil for a short time/in a small amount of water 	<p>Do not accept Boiling Cook</p>	[1]
(d)	(i)	<p>One mark for the correct answer</p> <ul style="list-style-type: none"> • Temperature probe/probe/digital probe/food probe 	<p>Do not accept thermometer</p> <p style="text-align: center;">[1]</p>
(d)	(ii)	<p>One mark for the correct answer</p> <p>5 – 63 °C/8–63°C</p>	<p>Accept 8–63°C or 5 – 63 °C Must be a range not a single figure</p> <p style="text-align: center;">[1]</p>

Question		Expected Answers	Rationale	Marks
	(iii)	<p>One mark for the correct answer</p> <ul style="list-style-type: none"> • Bacteria grow/thrive/multiply/develop/spread • Bacteria need warmth to grow/develop • Salmonella can grow/develop • Could lead to food poisoning 		[1]
	(e)	<p>One mark for the name of a correct vegetable</p> <ul style="list-style-type: none"> • Cucumber/lettuce/watercress/rocket/tomato <p>Reason</p> <p>Two marks for detailed explanation. One mark for brief statement</p> <ul style="list-style-type: none"> • High water content/ice crystals damage the cell walls- Changed appearance-Loss of flavour / change of colour • When ice crystals thaw the cells collapse because of the damage- Vegetables will loose texture-go soft/soggy/mushy 	<p>This is a grade A question</p> <p>Accept tomatoes although they are a fruit</p> <p>If a candidate puts incorrect vegetable or names a fruit they can still get 2 marks for a detailed explanation of the implications of the high water content.</p>	[1] [2]
			Total	[12]

Question	Expected Answers	Rationale	Marks
2 (a)	<p>One mark for each correct answer. Four required</p> <p><u>Ham Sandwiches</u></p> <ul style="list-style-type: none"> • Wholemeal bread or buns or pitta or wraps or pizza. (Wholemeal) • Change ham to chicken/turkey/eggs/reduced salt bread/reduced fat ham/tuna in oil or water • Use low fat spread • Add any suitable named vegetable eg tomatoes/cucumber • Salad <p><u>Crisps</u></p> <ul style="list-style-type: none"> • Change to nuts/rice cakes/popcorn/pretzels/twiglets/bread sticks. • Low fat/baked/low salt/rice varieties of crisps • Any named fruit/fruit salad • Vegetable sticks named eg carrots/any suitable vegetable • Vegetable crisps(low fat) • Yoghurt • Pasta pot <p><u>Chocolate bar</u></p> <ul style="list-style-type: none"> • Dried fruit • Cereal bar/fruit bar/flapjack • Yoghurt • Reduced sugar or fat cake or biscuit eg scone/fruit bread • Any named fruit <p><u>Fizzy drink</u></p> <ul style="list-style-type: none"> • Unsweetened/diet named drinks eg diet coke • Fruit juices • Milk/Yoghurt drink • Water/flavoured water/ flavoured juice/squash • Fruit smoothie/vegetable juice eg V8 	<p>Look for lower fat/lower salt/lower sugar/higher fibre in the answers</p> <p>Do not allow the same change twice.</p> <p>Do not accept 'brown bread'</p> <p>Do not accept organic Healthy Fruit /Fruit bag</p> <p>Do not accept juice on its own Accept a fizzy drink as long as it is sugar free/diet</p>	[4]

Question	Expected Answers	Rationale	Marks
(b)	<p>One mark for each correct answer. Two required.</p> <ul style="list-style-type: none"> • Packaging/product-attractive/colourful/appealing to children • Healthy eating claims eg low in fat/high in fibre/part of five a day • Free samples/samples in store • Posters and leaflets • Buy one get one free/special offers/price cut/offers • Loyalty points • Position of products near check out/on the end of an aisle/eye level • Media advertising/TV/magazine/newspaper/internet or any other advertising • Celebrity/sports promotion/in house promotion • Claim that it is additive free • Part of a balanced meal/eatwell plate • Complete packed lunch sold all together in a box/Meal deal 	Do not accept Healthy unless justified	[2]

Question	Expected Answers	Rationale	Marks
(c)	<p>Basic Metabolic Rate</p> <ul style="list-style-type: none"> We all need energy to keep our body warm and for all the basic processes. BMR is measured when we are asleep. It is affected by, body size, shape, weight, sex, age, rate of growth, amount of sleep, and state of nutrition. <p>Age Requirements vary throughout life.</p> <ul style="list-style-type: none"> BMR is high in times of growth. At stages in life we have high energy needs-growth spurt and sometimes are very active. Energy input should be greater than energy out put in children. Older people: tend to use less energy as metabolism slows down due to reduced physical activity. Elderly people tend to sit more especially when they become physically inactive. <p>Requirements vary according to Gender/Sex</p> <ul style="list-style-type: none"> Males tend to use more energy than females as they are bigger and have more muscle tissue. They require 10 – 20% more energy per kilogram than women. Men also tend to do more energetic jobs than women. Muscle tissues uses more energy than fat Women office workers compared to men on building sites <p>State of the body</p> <ul style="list-style-type: none"> Pregnancy needs extra energy for the growth of the baby. Energy input should be greater than energy out put. Lactation needs extra energy for the production of milk. Illness and after operations the metabolism may be raised at times during fever/or may be reduced due to less physical activity. Illness-influenza Post-Operations Thyroid condition for examples <p>Physical activity/occupation</p> <ul style="list-style-type: none"> Any movement or activity uses more energy in addition to that needed to keep us alive. People who have physically demanding jobs or take lots of exercise tend to use more energy than people who sit down all day. Particularly those who have plenty of body muscle, those taking regular exercise 	<p>Discuss why people have different energy needs.</p> <p>Level 1 (0–2 marks) Basic discussion, showing limited understanding of the factors affecting energy needs. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of grammar, punctuation and spelling may be intrusive.</p> <p>Level 2 (3–4 marks) Adequate discussion, showing some understanding of the factors affecting energy needs. There will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the most part in a structured format. There may be occasional errors in spelling, grammar and punctuation.</p> <p>Level 3 (5–6 marks) Thorough discussion, showing detailed understanding of the factors affecting energy needs. Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate can demonstrate the accurate use of spelling, punctuation and grammar.</p> <p>Do not credit reference to diabetes</p>	<p>[6]</p>
	Total		[12]

Question		Expected Answers	Rationale	Marks												
3	(a)	One mark for the correct answer. Italy		[1]												
	(b)	<p>One mark for each correct nutrient. Two marks for nutrient and function. Four marks required</p> <table border="1"> <thead> <tr> <th>Nutrient</th> <th>Function in the body</th> </tr> </thead> <tbody> <tr> <td>Protein</td> <td>Growth of cells/repair of cells/builds muscles/hormones/enzymes/transportation in the blood supply/energy</td> </tr> <tr> <td>Iron</td> <td>Formation of red blood cells/transportation of oxygen/formation of haemoglobin/prevents anaemia</td> </tr> <tr> <td>Fat</td> <td>Energy/insulation/body warmth/protection of organs/essential fatty acids/fat soluble vitamins</td> </tr> <tr> <td>Vitamin B Group</td> <td>Metabolic processes/nerves/healthy nervous system/energy release from carbohydrate, fat and protein/mucous membranes/blood formation/prevents spina bifida/cell division/transport of nutrients</td> </tr> <tr> <td>Vitamin A</td> <td>Increases sight in dim light Respiratory tract/mucous membrane/healthy skin/immune system</td> </tr> </tbody> </table>	Nutrient	Function in the body	Protein	Growth of cells/repair of cells/builds muscles/hormones/enzymes/transportation in the blood supply/energy	Iron	Formation of red blood cells/transportation of oxygen/formation of haemoglobin/prevents anaemia	Fat	Energy/insulation/body warmth/protection of organs/essential fatty acids/fat soluble vitamins	Vitamin B Group	Metabolic processes/nerves/healthy nervous system/energy release from carbohydrate, fat and protein/mucous membranes/blood formation/prevents spina bifida/cell division/transport of nutrients	Vitamin A	Increases sight in dim light Respiratory tract/mucous membrane/healthy skin/immune system	The function must relate to the named nutrient .	[4]
Nutrient	Function in the body															
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Question	Expected Answers	Rationale	Marks
(c)	<p>One mark for correct answer. Two required</p> <ul style="list-style-type: none"> • Religion/ • Dietary reasons/lower fat intake/CHD/slimming/reduce obesity • Reduce animal fat/cholesterol • Health reasons eg hormones in meat • Animal welfare/moral reasons/cruelty/becoming a vegetarian • Environmental issues/use of land • Dislike of taste/texture • Due to media pressure eg BSE/food scares • Cost/meat is expensive • Peer/family pressure 	<p>Do not accept Allergy Meat contains bacteria On a diet Heart attack Heart problems</p> <p>The accepted response for Heart attack is Coronary Heart disease/CHD</p>	[2]
(d)	<p>One mark for correct answer.</p> <ul style="list-style-type: none"> • Quorn • Soya/TVP • Any suitable named vegetable eg mushrooms/courgettes/aubergine/spinach • Tofu • Nuts • Pulse vegetables 		[1]

Question	Expected Answers	Rationale	Marks
(e)	<p>One mark for each explained point. Four required.</p> <p>Candidates need to state the nutrient and its source for 1 mark.</p> <ul style="list-style-type: none"> • High Biological Value (HBV) protein/Lacto vegetarian gets protein from milk/cheese/eggs. • Plants provide a combination of Low Biological Value (LBV) proteins so a mixture is needed eg quorn/beans/lentils/peas/tofu/soya beans/cereals/nuts • Carbohydrates from starch eg bread/potatoes/cereals/rice • Fat from vegetable oils/nuts/seeds/dairy produce • Iron from egg yolk/cereal foods/fortified cereals/green leafy vegetables/nuts • Calcium from dairy foods/green leafy vegetables/bread/dried fruit/tofu/cheese/nuts/cereals • Vitamin B12 only found in animal foods/cereals/yeast extract/soya milk/and diary produce • Vitamin D – egg yolk/margarine/sunlight • Vitamin C from fruits/vegetables • Danger of too much saturated fats form diary foods particularly cheese therefore need a mixed diet • Following the principles of the eatwell plate • Seek advice from a professional/vegetarian society/dietician 	<p>Do not accept vitamin/mineral supplements</p> <p>Accept up to 2 marks for the candidate who states the correct nutrients that a vegetarian needs to consider and then provides a general list of the foods to supply these nutrients.</p> <p>Do not accept using internet</p>	<p>[4]</p>
	Total		[12]

Question			Expected Answers	Rationale	Marks										
4	(a)	(i)	One answer 18.10.2010		[1]										
		(ii)	One mark for one correct answer. Bananas/spices/tea/coffee/cocoa/hot chocolate/pineapple/sweets/chocolate/dried fruit/cakes/breakfast cereals/olive oil/rice/sugar/jam/honey/chocolate spread/nuts/pasta/chutney	Do not accept Fruit	[1]										
		(iii)	One mark for each correct answer. Two required. <ul style="list-style-type: none"> • Guarantees producers a fair deal • Secure sustainable livelihoods • Provides schooling and healthcare • Funds community projects • Fair wages are paid to workers • Workers treated better • Helps people in poorer parts of the world/prevents exploitation of Third World countries • Reduces poverty in Third World countries 		[2]										
	(b)		One mark for each correct function. Four required <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Ingredient</th> <th style="width: 50%;">Function</th> </tr> </thead> <tbody> <tr> <td>Wheat Flour</td> <td>Structure/Bulk/crumby texture/contain raising agent/adds flavour/increases fibre/colour</td> </tr> <tr> <td>Vegetable margarine</td> <td>Shortening/tenderises/makes a crumbly texture /adds flavour/enriches/makes them last longer/binds/adds colour/adds flavour/adds moisture/extends shelf life</td> </tr> <tr> <td>Bicarbonate of Soda</td> <td>Raising agent/ expands/adds flavour</td> </tr> <tr> <td>Sugar</td> <td>Sweetens/creates crisp texture/gives colour/caramelises</td> </tr> </tbody> </table>	Ingredient	Function	Wheat Flour	Structure/Bulk/crumby texture/contain raising agent/adds flavour/increases fibre/colour	Vegetable margarine	Shortening/tenderises/makes a crumbly texture /adds flavour/enriches/makes them last longer/binds/adds colour/adds flavour/adds moisture/extends shelf life	Bicarbonate of Soda	Raising agent/ expands/adds flavour	Sugar	Sweetens/creates crisp texture/gives colour/caramelises	Do not accept repeats of functions Accept improves texture/better texture Makes it stick/hold together is too vague Do not accept Taste /flavour	[4]
Ingredient	Function														
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Question	Expected Answers	Rationale	Marks
(c)	<p>One mark for each quality control check given. Four marks required</p> <ul style="list-style-type: none"> • Checking the quality of the ingredients/date marks • Freshness of ingredients • Hygiene checking of staff/equipment/environment • Temperature correct/ conditions - for storage of ingredients • Weighing ingredients accurate • Mixing thoroughly • Size of biscuits/control of portions deposited/cutters/moulds/ • Shape of biscuits/Moulds to cook them in • Temperature of the oven/correct temperature/right temperature • Timing of cooking • Cooling quickly • Finished colour • Sensory testing /flavour checking • Metal detector • Packaging- correct number of biscuits/not damaged/ is sealed/batch number/date marked 	<p>Look for 4 different checks Do not accept ;</p> <ul style="list-style-type: none"> • Cooked properly • Cooked right through • Check packaging (too vague) 	<p>[4]</p>
Total			[12]

Question			Expected Answers	Rationale	Marks
5	(a)	(i)	<p>Two marks One mark for each method</p> <ul style="list-style-type: none"> • Questionnaire /survey/internet survey • Interviews with teenagers /with experts • Existing products • Books/recipe books • Sales analysis • Taste testing • Use government research data 	<p>Question asks for <u>method</u> Do not accept ask teenagers internet</p>	[2]
		(ii)	<p>Four marks for clearly describing how they have met the specification</p> <p>Be hand held</p> <ul style="list-style-type: none"> • Show a single portion /Size given • Give weight/label dimensions • Show how a larger product could be cut into portions • Shape of the product <p>Be nutritious</p> <ul style="list-style-type: none"> • Includes named ingredient with nutrient stated eg chicken - protein <p>Contain a savoury filling The filling must be new and different, an original mix of flavours.</p> <ul style="list-style-type: none"> • Have a savoury filling eg cheese, meat, fish, egg eg cheese and celery • Vegetable filling/fruit/eg cheese and apple <p>Appeal to a teenager</p> <ul style="list-style-type: none"> • Have an attractive finish/shape • Be easy to eat • Exciting flavour • Justified ingredient that teenagers will like eg use of filo pastry/wrap 	<p>Must be a savoury product</p> <p>Must work as a product.</p> <p>Do not accept the same ingredient for two specification points</p> <p>Carefully check the specification points.</p> <p>Do not accept a sweet ingredient as the appeal to teenagers mark</p>	[4]

Question	Expected Answers	Rationale	Marks
(b)	<p>Discuss why people have different energy needs. Discussion could include:</p> <ul style="list-style-type: none"> • PE Lessons/after school sports clubs/teams. Efforts to promote sport. Move away from computer games etc. Football leagues at weekends • Water fountains/water bottles in lessons. Recent introduction to encourage pupils to drink more water. • Food Technology lessons. Government U turn on approach to teaching food technology in school. • PSE/Food Tech lessons on healthy eating. Changes in the curriculum. Eatwell plate. Licence to cook/Cooking clubs/Get Active kids award Lets get cooking all introduced. • Healthy school awards. School meals/improved. More fresh fruit available. Award systems for a healthier lunch choice. Higher proportion of Carbohydrates in meals . Traffic light coding on meals • Jamie Oliver's influence/media influence/celebrity influence. Much more publicity. Local authorities are now putting funding into schemes. Schemes such as 'Ministry of Food' • No Fizzy drinks machines/vending machines. Healthy Schools award scheme taking a whole school approach • 5 a day campaign • Breakfast clubs. Encouraging pupils to eat breakfast. • Growing vegetables. Using in food lessons • Free Fruit/Vegetables in primary schools. Encouraging children to taste a wide range. • Change for life campaigns. • Cycling /walking to schools. Safer Bike storage 	<p>Level 1 (0–2 marks) Basic discussion, showing limited understanding of the strategies that have been implemented to encourage teenagers to adopt a more healthy life style. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of grammar, punctuation and spelling may be intrusive.</p> <p>Level 2 (3–4 marks) Adequate discussion, showing some understanding of the strategies that have been implemented to encourage teenagers to adopt a more healthy life style. There will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the most part in a structured format. There may be occasional errors in spelling, grammar and punctuation</p> <p>Level 3 (5–6 marks) Thorough discussion, showing detailed understanding of the strategies that have been implemented to encourage teenagers to adopt a more healthy life style Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate can demonstrate the accurate use of spelling, punctuation and grammar</p>	<p>[6]</p>
	Total		[12]
	Paper Total	[60]	

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