

Design and Technology (Food Technology)

General Certificate of Secondary Education

Unit **A522**: Food Technology: Sustainable Design

Mark Scheme for June 2011

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All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

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SECTION A

Question	Expected Answers	Marks	Rationale
1	A	[1]	Tetra packs
2	B	[1]	Eggs
3	D	[1]	Fibre
4	B	[1]	December
5	A	[1]	Composting raw vegetables
6	<ul style="list-style-type: none"> • Gluten free. • Suitable for coeliacs • Wheat free 	[1]	1 mark Must make it clear that it is NO wheat or gluten
7	<ul style="list-style-type: none"> • In the fridge • 0-8°C. 	[1]	1 mark Accept any temperature between 0-8 °C if they have just used one figure eg 4 °C and it is in the correct zone – accept
8	<ul style="list-style-type: none"> • Freezing food products • Storing other products in – eg food, paint, liquids, lunch box • Storage of other materials – reference to childrens toys etc. • Use as 'plant pots' 	[1]	1 mark
9	<ul style="list-style-type: none"> • Alliance of companies/trade unions/voluntary organisations who work to improve the working lives of people who grow foods / fair wages. • Safe working conditions for employees • Employees have basic labour rights • Take care to protect the environment in the packaging / transporting of products 	[1]	1 mark Do not accept question re worded

Question	Expected Answers	Marks	Rationale
10	<ul style="list-style-type: none"> • Barcode • Nutritional information/traffic light / GDA label/ special claims e.g. low fat etc • No artificial colours / preservatives • Serving suggestions • Pictures of the food. • Dietary group e.g. vegetarian, coeliac, etc. • Sustainable information e.g. recycling information / food miles etc • Reference to how produced e.g. organic / free range / red tractor symbol / GM free etc. • Adverts for other product 'have you tried' • Additional contact information - email/tweet etc • Guarantee / quality assurance • Charity works/ donations/support • Price • How to open • By royal appointment crest • FSC • Batch code / product code • Number of servings • Display until • Special offers 	[1]	<p>1 mark</p> <p>Do not accept address</p>

Question			Expected Answers	Marks	Rationale
11			True	[1]	1 mark
12			True	[1]	1 mark
13			True	[1]	1 mark
14			False	[1]	1 mark
15			False	[1]	1 mark
			Total	[15]	

SECTION B

Question		Expected Answers	Marks	Rationale
16	(a)	<ul style="list-style-type: none"> • People not going out for as many meals • Cheaper than purchasing all the individual ingredients • Promotions in stores and on televisions / meal deals • Comfort foods – recession • Do not have the skills to make them • Ready to eat / only need to cook / reheat them • Quicker than making it from scratch / saves time • More variety available / many new items / eat on the go • Variety of portion sizes / single portions etc 	[2]	<p>2 x 1 mark</p> <p>Do not accept Cheaper/quicker/easier on its own – they must be qualified</p>
	(b)	<ul style="list-style-type: none"> • Identify areas for improvement / opportunity to improve nutritional content • Identify what works well / successful / quality / make profit • Look at different sensory qualities of the product / what it tastes like / looks like / smells like / reference to the texture • Identify target market / who the product is aimed at • Suitable for target group • What is the purpose of the product / fit for purpose • To look at what ingredients / components have been used in the product / what processes are used in making • How it has been made safe to eat • Compare with other products • Look at how the product has been manufactured – may link to sustainability issues e.g. comparisons of food quality – organic / Fairtrade • Learn about a product • Check it meets specification / design brief / requirements • Identify gap in the market • Check meets nutritional requirements 	[3]	<p>3 x 1 mark</p> <p>Accept reference to target group once</p>

Question	Expected Answers	Marks	Rationale
(c)	<ul style="list-style-type: none"> • Transport – reference to the amount of transport from field to home. If a lot of imported goods are used transport costs will be higher. May suggest ingredients which are imported – apples. The more transport involved the higher the CO2 emissions / reduction of air miles / food miles / carbon footprint • Raw materials – where will they come from / could they have been sourced locally eg apples. How have they been grown – have they been grown organically / how much pesticide and fertilisers have been used. Are the packaging materials from sustainable sources • Production process – How much energy will be used in the production process, are / can energy efficient methods of manufacture be used / renewable / wind / solar / green energy sources. What happens to the waste from the apples? What method of storage is going to be used for the products – freezing or chilling / methods of production • Disposal – how can the waste products be disposed of? Will they cause harm to the environment. • Uses – how will the product be used in the home – has its shelf life been extended. Can the product be frozen – in the packet it comes in • Reused / recycled – is the packaging all produced from sustainable sources? Could it be developed so that it is – what would the effects of this be on manufacture and costs? Can the packaging materials be recycled? Or will they go to land fill sites. Use of alternative packaging materials, biodegradable/potato starch/compostable/ made from recycled materials • Give credit for an explanation of ‘life cycle analysis’ - works out the environmental impact of a product at every stage of its life – from sourcing materials to disposing of the waste produced 	[6]	<p>Level 1 (0-2 marks) Basic explanation, if candidates only write in point form a maximum of 2 marks should be awarded, showing some understanding of product life cycle. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of grammar, punctuation and spelling.</p> <p>Level 2 (3-4 marks) Adequate explanation, showing an understanding of product life cycle. 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 a clear understanding of product life cycle. 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>

Question	Expected Answers	Marks	Rationale
(d)	<p>Autumn</p> <ul style="list-style-type: none"> • Apples • Blackberries • Damsons • Elderberries • Pears • Plums • Quinces • Pumpkin <p>Winter</p> <ul style="list-style-type: none"> • Apples • Pears <p>Spring</p> <ul style="list-style-type: none"> • Rhubarb. <p>Summer</p> <ul style="list-style-type: none"> • Blueberries /bilberries • Currants black/red/white • Greengages • Loganberries • Plums • Raspberries • Strawberries • Tayberries • Gooseberries • Peaches • Nectarines • Apricots • Cherries 	[4]	<p>4 x 1 mark</p> <p>Must not repeat same fruit</p>
	Total	[15]	

Question		Expected Answers	Marks	Rationale
17	(a)	<ul style="list-style-type: none"> Cardboard Plastic if biodegradable. 	[1]	1 mark If stated cardboard box with plastic window allow
	(b)	<ul style="list-style-type: none"> Plastic window – replace with a potato starch window – still clear so you can see the product – but it is biodegradable Change plastic tray to cardboard – reference to environmental reason No window – as this plastic is difficult to / cannot be recycled / have a good picture of the product on the front to show what it is like/serving suggestions No plastic tray inner – this is not needed as the container the product is cooked in provides the necessary protection for the product Reduce amount of packaging / reduce the size of the packaging – with no plastic inner /use a sleeve instead of a box /uses less energy to produce / reducing waste Cook the product in heat – paperboard container / ovenable – this has less co2 emissions/can come from renewable sources/is recyclable/foil trays are not always suitable for recycling Sustainable sources – ensure that the cardboard packaging materials are obtained from well managed forests / sustainable forests / replacement planting Printing – minimal / less / reduce numbers of colours / use vegetable based printing Use biodegradable packaging / compostable packaging materials – reduces land fill Use recycled materials for packaging – reference to environmental impact Use a plastic which can be recycled – reference to landfill 	[6]	3 x 1 mark for each point 3 x 1 mark for the development of each point Do not credit the same point twice for any of the explanations No reference to symbols Do not accept environmentally friendly – in question
	(c)	<ul style="list-style-type: none"> Traffic light. 	[1]	1 mark

Question	Expected Answers	Marks	Rationale																								
(d)	<table border="1"> <thead> <tr> <th>Ingredient in savoury flan</th> <th>Ingredient changed to</th> <th>Reason</th> </tr> </thead> <tbody> <tr> <td>Butter</td> <td> <ul style="list-style-type: none"> • Vegetable margarine. • Vegetable spread • Veg oil </td> <td> <ul style="list-style-type: none"> • Lower in saturated fat. • Lower in cholesterol • Lower in fat • Reduces calories </td> </tr> <tr> <td></td> <td> <ul style="list-style-type: none"> • Margarine </td> <td> <ul style="list-style-type: none"> • Reduce fat • Reduces calories </td> </tr> <tr> <td>White flour</td> <td> <ul style="list-style-type: none"> • Wholemeal flour. </td> <td> <ul style="list-style-type: none"> • Increase the fibre content. </td> </tr> <tr> <td>Salt</td> <td> <ul style="list-style-type: none"> • Other herbs/seasonings • Lo salt </td> <td> <ul style="list-style-type: none"> • Linked to high blood pressure/strokes/ heart disease </td> </tr> <tr> <td>Double cream</td> <td> <ul style="list-style-type: none"> • Single cream • Whipping cream • Milk – any type • Cream alternative eg Elmlea • Yoghurt • Crème fraiche • Fromage fraise </td> <td> <ul style="list-style-type: none"> • Lower fat content • Reduce the saturated fat content • Reduce the cholesterol. • Reduces calories </td> </tr> <tr> <td>Full fat milk</td> <td> <ul style="list-style-type: none"> • Skimmed or semi skimmed. </td> <td> <ul style="list-style-type: none"> • Lower fat content • Reduce the saturated fat content • Reduce the cholesterol. • Reduces calories </td> </tr> <tr> <td>Cheeses</td> <td> <ul style="list-style-type: none"> • Reduce the amount • Use stronger flavour cheese • Use reduced fat/light varieties. </td> <td> <ul style="list-style-type: none"> • Lower fat content • Reduce the saturated fat content • Reduce the cholesterol. </td> </tr> </tbody> </table>	Ingredient in savoury flan	Ingredient changed to	Reason	Butter	<ul style="list-style-type: none"> • Vegetable margarine. • Vegetable spread • Veg oil 	<ul style="list-style-type: none"> • Lower in saturated fat. • Lower in cholesterol • Lower in fat • Reduces calories 		<ul style="list-style-type: none"> • Margarine 	<ul style="list-style-type: none"> • Reduce fat • Reduces calories 	White flour	<ul style="list-style-type: none"> • Wholemeal flour. 	<ul style="list-style-type: none"> • Increase the fibre content. 	Salt	<ul style="list-style-type: none"> • Other herbs/seasonings • Lo salt 	<ul style="list-style-type: none"> • Linked to high blood pressure/strokes/ heart disease 	Double cream	<ul style="list-style-type: none"> • Single cream • Whipping cream • Milk – any type • Cream alternative eg Elmlea • Yoghurt • Crème fraiche • Fromage fraise 	<ul style="list-style-type: none"> • Lower fat content • Reduce the saturated fat content • Reduce the cholesterol. • Reduces calories 	Full fat milk	<ul style="list-style-type: none"> • Skimmed or semi skimmed. 	<ul style="list-style-type: none"> • Lower fat content • Reduce the saturated fat content • Reduce the cholesterol. • Reduces calories 	Cheeses	<ul style="list-style-type: none"> • Reduce the amount • Use stronger flavour cheese • Use reduced fat/light varieties. 	<ul style="list-style-type: none"> • Lower fat content • Reduce the saturated fat content • Reduce the cholesterol. 	[4]	<p>Do not give marks for listing the ingredients in first column 2 x 1 mark for the ingredient changed to 2 x 1 mark for the reason Do not accept the same reason twice Do not accept same alternative ingredient twice</p> <p>Credit If name a type of vegetable margarine eg sunflower / olive / soya</p> <p>Do not accept Reference to heart attacks Low fat cheese Low fat margarine/butter</p>
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Question		Expected Answers	Marks	Rationale
	(e)	<ul style="list-style-type: none"> • Cares about welfare of animals • Can use this as part of the promotional aspect of the product / attracts consumers. 	[1]	1 mark
	(f)	<ul style="list-style-type: none"> • Nuts • Milk • Eggs • Wheat / flour / gluten 	[2]	2 x 1 mark
Total			[15]	

Question		Expected Answers	Marks	Rationale
18	(a)	<ul style="list-style-type: none"> • Store – in covered tubs / bowls / airtight containers • Refrigerate / store between 0-8°C • Reheat – only once • Most foods need to be used within 24hours / use within 24 hours • Take particular care with high risk foods – accept listed high risk food e.g. dairy foods, meat, fish, rice • Reheat food to 70°C plus / thoroughly hot • Date leftover food • Avoid cross contamination between raw and cooked food 	[3]	3 x 1 mark Accept fridge temp between 0-8°C
	(b)	<ul style="list-style-type: none"> • Use a shopping list when shopping / internet shopping / • Plan the meals / plan meals in advance • Check date marks on food and ensure used by date marks / rotate products FIFO • Measure portions when cooking so that more food is not cooked than needed • Store cooked food correctly / freeze / refrigerate / keep refrigerator at the correct temperature • Store raw / baked products correctly – cool / dark for veg / fruit / airtight baked goods etc • Make into another dish / eat leftovers later • Compost – raw vegetables / fruit / teabags etc • Only buy as much as needed / buy loose rather than prepacked / shop more frequently, smaller amounts more often / avoid BOGOF 	[3]	3 x 1 mark

Question	Expected Answers	Marks	Rationale
(c)	<ul style="list-style-type: none"> • Cost – cheaper than buying in a supermarket / ref to cost of seeds / cheap to produce • Quality – seen as being better for you – reference to flavour / taste / nutrition • Freshness – picked and used straight away / not stored for a long time • Variety – different types of vegetables / varieties of vegetables – supermarkets cater for the masses • Seasons – using vegetables in season • Reducing carbon footprint – as products do not need to be transported • Health benefits – can be counted as exercise • Organic – production – cheaper than buying in shops • Enjoyment – personal satisfaction for own achievements / being able to give to friends / family / neighbours / social interaction on an allotment • Media / advertising influences – effect of programmes on TV showing use of own ingredients / Morrison’s ‘lets grow’ campaigns / free vegetable seeds for schools / 5 a-day campaigns / fashionable. • Seeds readily available in supermarkets 	[3]	<p>3 x 1 mark 2 x 1 mark for 2 points 1 mark for explanation of one point</p> <p>Do not accept cheaper on its own must be qualified</p>
(d)	<ul style="list-style-type: none"> • Preserving – eg freezing, pickling, chutneys, bottling, dried etc • Sauces – making tomatoes into tomato sauce / vegetable sauce so can be used to make other dishes eg bolognaise • Making into vegetable dishes – examples – vegetable curry / pies / soups • Give away – friends / neighbours • Exchange / swap for other products people have. • Sell • Allow to grow on and harvest seed. 	[3]	<p>3 x 1 mark</p> <p>Accept up to 3 different methods of preservation or dishes which could be made from the ingredients shown</p>

Question		Expected Answers	Marks	Rationale
	(e)	<ul style="list-style-type: none"> • Part of a balanced diet – ref to Eatwell plate/ 5 a day • Contains fibre – prevents constipation / reduce bowel cancer / diverticular disease • Naturally low in fat – reference to reducing fat intake / reducing heart disease / obesity • Filling – but are low in calories • Vitamin C – green vegetables – formation of connective tissue / helps absorption of calcium / healing wounds / absorption of iron / scurvy • Vitamin A (carotene) – carrots / keeps eyes healthy / improves night vision / helps maintain skin / mucous membranes • Minerals potassium – bananas / help muscles and nerve function / helps to reduce blood pressure • Iron – from dark green vegetables and pulses / prevents anaemia / formation of haemoglobin / red blood cells / transporting of oxygen / maintains cell functions • High in antioxidants – cancer fighting benefits / lycopene 	[3]	<p>3 x 1 mark 2 x 1 mark for 2 points 1 mark for explanation of one point</p> <p>If candidates refer to a healthy diet it must be qualified to get one mark</p> <p>Obesity needs to be linked to low in fat</p>
Total			[15]	

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