

# **Design and Technology (Food Technology)**

General Certificate of Secondary Education  
GCSE (Short Course) **A522**

Food Technology: Sustainable Design

## **Mark Scheme for June 2010**

---

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, OCR Nationals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support which keep pace with the changing needs of today's society.

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

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.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

© OCR 2010

Any enquiries about publications should be addressed to:

OCR Publications  
PO Box 5050  
Annesley  
NOTTINGHAM  
NG15 0DL

Telephone: 0870 770 6622  
Facsimile: 01223 552610  
E-mail: [publications@ocr.org.uk](mailto:publications@ocr.org.uk)

Question	Expected Answers	Rationale	Marks
1	C.	Polystyrene packaging 1 mark	[1]
		<b>Total</b>	<b>[1]</b>
2	D.	Putting vegetables in compost bins 1 mark	[1]
		<b>Total</b>	<b>[1]</b>
3	A.	Food safety system 1 mark	[1]
		<b>Total</b>	<b>[1]</b>
4	B.	Eggs 1 mark	[1]
		<b>Total</b>	<b>[1]</b>
5	B.	Liver 1 mark	[1]
		<b>Total</b>	<b>[1]</b>
6	Do not freeze / reference to not being suitable for freezing	1 mark	[1]
		<b>Total</b>	<b>[1]</b>
7	<ul style="list-style-type: none"> <li>• Being able to be reused</li> <li>• Reused for a different purpose</li> <li>• Made into another product /something else/a different material.</li> </ul>	1 mark It must be clear that the product is being made into another product  Do not accept Plastic is melted down	[1]
		<b>Total</b>	<b>[1]</b>

Question	Expected Answers	Rationale	Marks
8	<ul style="list-style-type: none"> <li>• Date stamping / Use by date / best before date</li> <li>• Storage instructions</li> <li>• Ingredients / what the product contains</li> <li>• Name of product / description</li> <li>• Name of manufacturer</li> <li>• Address</li> <li>• Weight</li> <li>• Allergy information</li> <li>• Cooking instructions</li> <li>• GM labelled</li> <li>• Place of origin</li> <li>• If it has a nutritional claim – must include nutritional information</li> </ul>	<p>1 mark</p> <p>Do not accept sell by date or nutritional information on its own</p>	[1]
		<b>Total</b>	<b>[1]</b>
9	<ul style="list-style-type: none"> <li>• Food probe / temperature probe</li> <li>• Food thermometer.</li> </ul>	<p>1 mark</p> <p>Do not just accept thermometer/ or probe / cooking thermometer</p>	[1]
		<b>Total</b>	<b>[1]</b>
10	<ul style="list-style-type: none"> <li>• Growth</li> <li>• Repair</li> <li>• Energy</li> <li>• Enzyme / hormone formation</li> </ul>	<p>1 mark</p> <p>Do not accept growth of bones</p>	[1]
		<b>Total</b>	<b>[1]</b>
11	True.	1 mark	[1]
		<b>Total</b>	<b>[1]</b>
12	True.	1 mark	[1]
		<b>Total</b>	<b>[1]</b>
13	True.	1 mark	[1]
		<b>Total</b>	<b>[1]</b>
14	True.	1 mark	[1]

Question	Expected Answers	Rationale	Marks
15	False.	1 mark	[1]
			<b>Total</b>
<b>16 (a)</b>	<ul style="list-style-type: none"> <li>• To investigate what other manufacturers are producing / comparing against other products / identifying gap in the market</li> <li>• To evaluate the success of a product / meets specification / ready to go to market / suitable for target group</li> <li>• To identify where improvements could be made / see if it can be improved</li> <li>• To investigate how a product is assembled</li> <li>• To investigate / check the sensory properties of the product – may state – visual / flavour / aroma</li> <li>• To check if the changes / improvements are successful – when carried out in product development.</li> </ul>	3 x 1 mark  Do not accept: To see if they like / dislike it	<b>[3]</b>
<b>(b) (i)</b>	<ul style="list-style-type: none"> <li>• India.</li> </ul>	1 mark Do not accept UK	<b>[1]</b>
<b>(b) (ii)</b>	<ul style="list-style-type: none"> <li>• People travel abroad more.</li> <li>• UK is a multi-cultural society / family and friends from a different culture.</li> <li>• Wide variety of programmes on TV/chefs demonstrating/ books available.</li> <li>• Variety of specialist supermarkets / shops / supermarkets (not necessarily specialist) selling more cultural products.</li> <li>• Availability of foods from different parts of the world.</li> <li>• Wide variety of different restaurants / take-a-ways selling foods from different countries.</li> <li>• People wanting to try different foods / new foods /personal preference / variety in the diet.</li> </ul>	3 x 1 mark	<b>[3]</b>

Question	Expected Answers			Rationale	Marks
(c)	<ul style="list-style-type: none"> <li>• As a promotion</li> <li>• They know where the food comes from</li> <li>• Can see how far it has travelled / food miles</li> <li>• Supporting local economies / farmed locally / from the UK</li> <li>• Consumers can compare carbon footprint</li> <li>• Can imply that the animals are well cared for / details of how they are produced / free range / organic / may give welfare information / production methods.</li> </ul>			2 x 1 mark <b>Do not accept one word answers</b> Do not accept traceability	[2]
(d)	<b>Ingredient in Chicken Tikka Masala</b>	<b>Ingredient changed to</b>	<b>Reason</b>	2 x 1 mark for the ingredient changed to 2 x 1 mark for the reason <b>Do not accept the same reason twice</b> <b>Do not accept same alternative ingredient twice</b>  <b>Do not accept reference to obesity</b>  <b>Do not accept seasoning in the ingredients column</b>	[4]
	Double cream	<ul style="list-style-type: none"> <li>• Low fat alternative cream e.g. Elm Lea / single cream</li> <li>• Milk</li> <li>• Reduce fat crème fraiche</li> <li>• Reduced fat yoghurt</li> <li>• Coconut milk/reduced fat coconut milk</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce the fat content</li> <li>• Reduce the saturated fat content</li> <li>• Reduce the cholesterol</li> <li>• Reduces the calories</li> </ul>		
	Basmati White rice	<ul style="list-style-type: none"> <li>• Whole grain/brown rice</li> </ul>	<ul style="list-style-type: none"> <li>• Increase fibre (NSP) content</li> </ul>		
	Onions	<ul style="list-style-type: none"> <li>• Lists added extra vegetables</li> </ul>	<ul style="list-style-type: none"> <li>• To contribute to 5 portions of fruit and vegetables a day</li> <li>• To increase the fibre content</li> <li>• To increase vitamin content</li> </ul>		

Question	Expected Answers			Rationale	Marks
Full fat yoghurt		<ul style="list-style-type: none"> <li>• Low fat alternative cream</li> <li>• Milk – semi skimmed/skimmed</li> <li>• Reduce fat crème fraiche</li> <li>• Reduced fat yoghurt</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce the fat content</li> <li>• Reduce the saturated fat content</li> <li>• Reduce the cholesterol</li> <li>• Reduces the calories</li> </ul>		
E621 Monosodium Glutamate / flavour enhancer		<ul style="list-style-type: none"> <li>• Add more / different spices</li> <li>• <b>More</b> onion / garlic / coriander etc. for flavour</li> </ul>	<ul style="list-style-type: none"> <li>• Additives linked to hyperactivity in children</li> <li>• Allergies</li> <li>• Will contain less / removes chemicals / additives</li> </ul>		
Butter		<ul style="list-style-type: none"> <li>• Vegetable oil/ vegetable fat – may give specific name</li> </ul>	<ul style="list-style-type: none"> <li>• Does not contain as much saturated fat</li> </ul>		
Salt		<ul style="list-style-type: none"> <li>• Remove and replace with another seasoning/ spice</li> <li>• Lo Salt</li> </ul>	<ul style="list-style-type: none"> <li>• Linked to high blood pressure</li> <li>• Reduce the salt</li> </ul>		
Tomato Puree		<ul style="list-style-type: none"> <li>• Fresh tomatoes</li> </ul>	<ul style="list-style-type: none"> <li>• Contribute to 5 a day</li> <li>• Increase fibre</li> <li>• Reduce the salt content</li> </ul>		

Question	Expected Answers	Rationale	Marks
(e)	<ul style="list-style-type: none"> <li>• <b>Cook chill products have a short shelf life</b> – 5 days including the day they were manufactured</li> <li>• <b>Needs to be stored at less than 5°C</b> – so that bacterial growth is slowed down / so the product is safe to eat</li> <li>• <b>It will have a short / shorter shelf life than other products which are</b> frozen / dried / UHT / canned</li> <li>• <b>Has a short shelf life</b> – has to be eaten within 5 days / reference to safer to eat</li> </ul>	<p>2 x 1 mark 1 mark for brief statement 2 marks for detailed explanation</p> <p>Marks can be awarded for the explanation without the statement</p> <p>Temperature is key in this question do not accept stored in the fridge</p> <p><b>Do not accept:</b> going off</p> <p>Example of 2 marks Cook chill products have a short shelf life (1 mark) as after 5 days it would be unsafe to eat (1 mark)</p>	<p><b>[2]</b></p>
		<b>Total</b>	<b>[15]</b>



Question	Expected Answers	Rationale	Marks
17 (a)	<ul style="list-style-type: none"> <li>• <b>Whole meal can be cooked in one pan</b> – rather than using separate burners</li> <li>• <b>Only uses one burner / hotplate</b> - for cooking several foods</li> <li>• <b>Different foods can be cooked in different tiers</b> - gives a relevant example e.g. potatoes in bottom vegetables / fish on top</li> <li>• <b>Foods requiring different cooking times can be added to additional tiers</b> – not using another pan</li> </ul>	2 x 1 mark 1 mark for brief statement 2 marks for detailed explanation Do not accept reference to the cooking of vegetables and loss of vitamin C	<b>[2]</b>
(b)	<ul style="list-style-type: none"> <li>• Use a microwave</li> <li>• Do not put the oven on for just one dish / fill oven</li> <li>• Cook in bulk and then freeze foods</li> <li>• Use of a pressure cooker</li> <li>• When boiling foods keep a lid on the pan</li> <li>• Use as little liquid as possible for boiling with</li> <li>• Use a kettle to boil water for vegetables / rice / pasta</li> <li>• Use the correct size pan for the size of the hob / control level of heat under pan</li> <li>• Use of slow cookers / or slow cooker setting on cookers</li> <li>• Use of stir frying as a very quick method of cooking.</li> <li>• Family eats together so cooker is only put on once</li> <li>• Cook some vegetables together in same pan rather than separately / one pot meals</li> <li>• Cut food into smaller pieces</li> </ul>	3 x 1 mark <b>Do not accept:</b> <b>buy ready made meals</b> <b>don't preheat oven</b>	<b>[3]</b>
(c)	<ul style="list-style-type: none"> <li>• Shows the power level of the microwave / amount of watts</li> <li>• The higher the power level / wattage the quicker it cooks</li> <li>• Heating category of the microwave</li> <li>• Match the symbol and cooking instructions / safe reheating of food</li> </ul>	2 x 1 mark  Candidates must give a full reason e.g. It gives consumers information about the power level = 1 mark  <b>It gives the consumer information = 0 marks</b>  <b>Do not credit:</b> <b>reference to the 3 lines for the microwave symbol</b> <b>strength / strong</b>	<b>[2]</b>

Question	Expected Answers	Rationale	Marks
(d)	<ul style="list-style-type: none"> <li>• <b>Affects the final cost of the food product</b> – consumers make choices based on prices / foods cost more / more used higher cost of the food / affects profits</li> <li>• <b>Co2 emissions / global warming</b> – which can <b>damage</b> the environment / reference to ozone layer</li> <li>• <b>Discussion of food miles</b> – transport / Co2 production</li> <li>• <b>If using non renewable energy</b> – this will eventually run out / need to consider alternatives</li> <li>• <b>Carbon footprint</b> – linked to consumer choice</li> </ul>	<p>4 x 1 mark  2 marks for 2 brief points  2 marks for each detailed explanation</p> <p><b>Do not accept the same explanation twice</b></p>	[4]
(e)	<ul style="list-style-type: none"> <li>• <b>Air miles - increased</b> carbon footprint / Co2 emissions / greenhouse gases</li> <li>• <b>To support local / UK farmers / producers</b> - many foods imported can be produced in the UK / putting money into the local economy</li> <li>• <b>Fair Trade Issues</b> – has the farmer been paid a fair price for the product</li> <li>• <b>Products are often over packaged</b> – materials may not be able to be put in recycle bins</li> <li>• <b>Are sometimes more expensive</b> – due to the distance travelled / amount of packaging</li> <li>• <b>Methods of production used</b> - not always done in a humane way / factory farmed / not monitored in the same ways as in the UK / use of child labour</li> <li>• <b>Flavour / taste may not be as good as British products</b> – e.g. strawberries from Spain / when grown in green houses</li> </ul>	<p>4 x 1 mark  2 marks for 2 brief points  2 marks for detailed explanation</p> <p><b>Do not accept:  Global warming or  polluting the atmosphere – must be qualified  e.g. air pollution</b></p>	[4]
<b>Total</b>			<b>[15]</b>

Question	Expected Answers	Rationale	Marks
18 (a)	<ul style="list-style-type: none"> <li>• Consumers can make informed choices / compare products</li> <li>• Which nutrients are in the product / check for specific nutrients / check daily guidelines</li> <li>• Can be used to help plan a balanced diet</li> <li>• To be able to relate the product to their nutritional / dietary requirements.</li> </ul>	1 mark Do not accept people might be on a diet unless the type of diet is qualified	[1]
(b)	<ul style="list-style-type: none"> <li>• <b>Contains fresh / real fruit</b> – therefore contributes to the 5 a day / vitamin C / vitamins / fibre</li> <li>• <b>Contains fat</b> - young children should not have skimmed milk / removed essential fatty acids and fat soluble vitamins / energy</li> <li>• <b>Does not contain artificial sweeteners</b> – parents not wanting children to have these</li> <li>• <b>Does not contain artificial colourings / flavourings</b> - linked to hyperactivity / behaviour / allergies in some young children.</li> <li>• <b>Vitamin C – formation of connective tissue / helps wound healing / calcium absorption / blood vessel formation / helps absorb iron / prevents scurvy</b></li> <li>• <b>Fibre</b> – aids digestion / prevents constipation / bowel cancer / diverticular disease / haemorrhoids</li> </ul>	4 x 1 mark For full marks need to see 2 well explained answers 2 marks maximum for 2 statements  Accept additives once instead of artificial sweeteners or colourings  <b>Do not accept:</b> <b>'hyper'</b> <b>reference to less / reduced fat</b> <b>reason / statement twice</b>	[4]
(c) (i)	<b>Fat</b> <ul style="list-style-type: none"> <li>• <b>To reduce / prevent CHD / heart disease / angina</b> – which can be fatal / affects quality of life / restricts blood flow / narrows arteries</li> <li>• <b>To reduce / prevent obesity / overweight</b> – linked to strain on organs of the body / heart disease / high blood pressure / diabetes / osteoarthritis / varicose veins / breathlessness and chest infections / low self esteem</li> <li>• <b>To reduce cholesterol levels</b> - . restricts blood flow / narrows arteries</li> </ul>	4 x 1 mark 2 – marks for fats (1 mark for statement and one mark for explaining) 2 – marks for sugar (1 mark for statement and one mark for explaining) <b>Do not accept the same answers/reasons for both parts</b>  <b>Do not accept ...heart attacks / problems / failure</b> <b>Rotting / bad teeth</b>	

Question	Expected Answers	Rationale	Marks
(ii)	<p><b>Sugar</b></p> <ul style="list-style-type: none"> <li>• <b>To reduce / prevent diabetes</b> - reference to <b>blood</b> sugar levels / poor circulation / blindness</li> <li>• <b>To reduce / prevent obesity / overweight</b> – linked to strain on organs of the body / heart disease / high blood pressure / diabetes / osteoarthritis / varicose veins / breathlessness and chest infections / low self esteem /</li> <li>• <b>Tooth decay</b> – Bacteria / plaque feed on the sugar to produce acid = tooth decay</li> </ul> <p><b>Recommended that sugars should not provide more than 10% energy intake</b> - stored as fat if not used for energy</p>		<b>[4]</b>
(d)	<p><b>Possible points for discussion</b></p> <p><b><u>Choice of foods</u></b></p> <ul style="list-style-type: none"> <li>• Choose lean cuts of meat – e.g. chicken or use low fat alternatives e.g. Quorn</li> <li>• White meat instead of red meat lower in fat / consume more white fish</li> <li>• If tempted to snack in between meals – snack on raw fruit and vegetables/dried fruits/do not buy high fat snacks e.g. crisps etc</li> <li>• Reduce the amount of crisps/pies/biscuits/cakes etc eaten</li> <li>• Reduce the use of convenience/ready meals/sauces which tend to be high in fat</li> <li>• Choose reduced fat / calorie foods / low sugar drinks</li> <li>• Reference to lowering sugar content</li> </ul> <p><b><u>Preparation and cooking</u></b></p> <ul style="list-style-type: none"> <li>• Alternative methods of cooking e.g. grill foods instead of frying – fat drains away</li> <li>• Preparation of foods – removal of fat e.g. trim excess fat off food / changing type of fat.</li> <li>• Measure portion sizes</li> <li>• Plan meals in advance so only food required is purchased – not tempted to eat extra</li> <li>• Cook from scratch / reduce the amount of takeaways etc.</li> </ul>	<p><b>Level 1 (0-2 marks)</b> Basic discussion, if candidates only write in <b>point form a maximum of 2 marks</b> should be awarded, showing some understanding of how calorie intake can be reduced. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of grammar, punctuation and spelling</p> <p><b>Level 2 (3-4 marks)</b> Adequate discussion, showing an understanding of how calorie intake can be reduced. 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>	

Question	Expected Answers	Rationale	Marks
	<p><b><u>Dietary guidance and advice</u></b></p> <ul style="list-style-type: none"> <li>• Using the <b>Eatwell plate as a model</b> – based on sound <b>nutritional principles</b> and is a recognised model by <b>health professionals</b></li> <li>• <b>5 a day</b> campaign</li> <li>• Follows <b>government guidelines</b> e.g. 8 guidelines for a healthy diet</li> </ul> <p><b><u>Food labelling</u></b></p> <ul style="list-style-type: none"> <li>• Understand <b>food labelling</b> – reference looking at the different ways manufacturers present information – so can make <b>informed choices</b> about food products they are going to cook</li> <li>• Reading the ingredients labels and <b>nutritional information</b> carefully – low fat or sugar does not necessarily mean low in calorie – reference to the ingredients they contain e.g. may be low in fat but contain a high amount of sugar</li> </ul>	<p><b>Level 3 (5-6 marks)</b></p> <p>Thorough discussion, showing a clear understanding of how calorie intake can be reduced. 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>Words in <b>bold</b> are the specialist terms to be looked for in response</p>	<p><b>[6]</b></p>
		<b>Total</b>	<b>[15]</b>

**OCR (Oxford Cambridge and RSA Examinations)**  
**1 Hills Road**  
**Cambridge**  
**CB1 2EU**

**OCR Customer Contact Centre**

**14 – 19 Qualifications (General)**

Telephone: 01223 553998

Facsimile: 01223 552627

Email: [general.qualifications@ocr.org.uk](mailto:general.qualifications@ocr.org.uk)

**[www.ocr.org.uk](http://www.ocr.org.uk)**

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

**Oxford Cambridge and RSA Examinations**  
**is a Company Limited by Guarantee**  
**Registered in England**  
**Registered Office; 1 Hills Road, Cambridge, CB1 2EU**  
**Registered Company Number: 3484466**  
**OCR is an exempt Charity**



**OCR (Oxford Cambridge and RSA Examinations)**  
**Head office**  
**Telephone: 01223 552552**  
**Facsimile: 01223 552553**

© OCR 2010