

# Mark Scheme (Results)

## Summer 2010

GCSE

GCSE Design and Technology:  
Food Technology (3970)  
Paper 2F  
Higher Written Paper.

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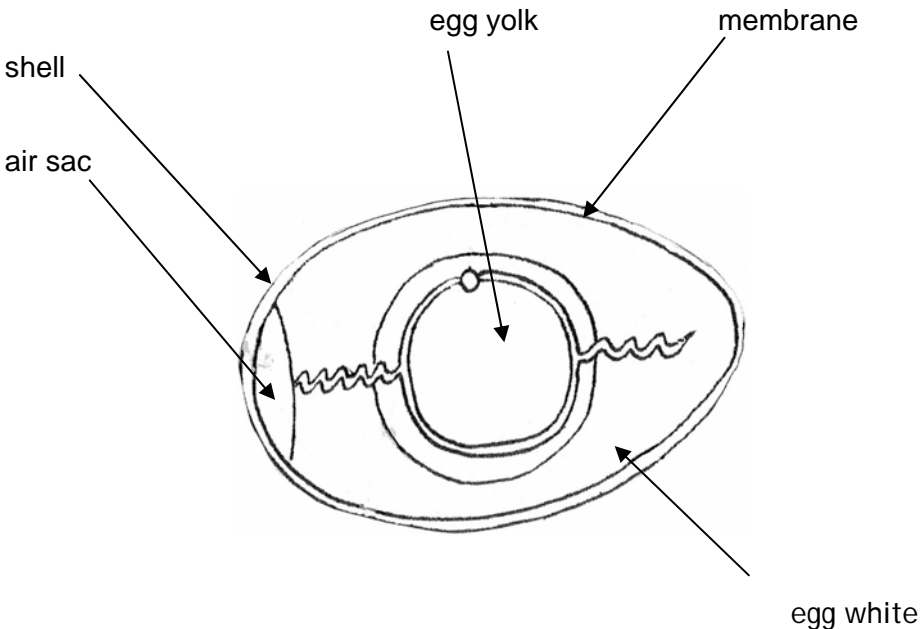
## General Marking Guidance

- 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(a)	<p>Name and use that can be carried out by using the following:</p> <p><b>Name:</b> Piping bag/nozzle (1)  <b>Use:</b> Piping potato/meringue/icing/choux pastry/cream/butter cream, decorate, pattern, extrude, piping (1)</p> <p><b>Name:</b> Pattie tin/bun tin/cake tin/Yorkshire pudding tin/tart tin/muffin tin (1)  <b>Use:</b> Mould/cook/shape/hold buns/cakes/muffins/Yorkshire pudding/pastry (1)</p> <p><b>Name:</b> Industrial/commercial food probe (1)  <i>Do not accept thermometer.</i>  <b>Use:</b> Check/measure temperature of Fish/meat/rice/egg/microwave meals (1)</p> <p><b>Name:</b> Industrial /commercial cutter/drum cutter/roller cutter (1)  <b>Use:</b> Shape/size/cut biscuit/pastry/bread dough (1)</p> <p><b>Name:</b> Industrial/commercial weighing scales(1)  <b>Use:</b> measuring ingredients</p> <p style="text-align: right;">(10x1)</p> <p><i>[process and food example must be given for the 'use' mark]</i></p>	(10)
1(b)(i)	<p>Two ways in which ingredients may be processed using an industrial food mixer.</p> <ul style="list-style-type: none"> <li>• Kneading (1)</li> <li>• Creaming (1)</li> <li>• Mixing (1)</li> <li>• Whisking (1)</li> <li>• Beating(1)</li> <li>• Liquidising/pureeing (1)</li> <li>• Crumbing(1)</li> <li>• Mincing (1)</li> <li>• Combining (1)</li> <li>• Folding (1)</li> <li>• Blending (1)</li> </ul> <p style="text-align: right;">(2x1)</p>	(2)

1(b) (ii)	<p>Three safety features found on an industrial food mixer.</p> <ul style="list-style-type: none"> <li>• Warning signs about operation in place (1)</li> <li>• Instructions for preventing accidents in place (1)</li> <li>• Isolation on/off/power switch/emergency stop button (1)</li> <li>• Suction pads on underside of appliance (1)</li> <li>• Lid to prevent items falling in (1)</li> <li>• Protective guard to prevent items falling in (1)</li> <li>• Foot pedal switch for isolating power (1)</li> <li>• Cannot start until assembled correctly (1)</li> <li>• Mixing attachments lock into position (1)</li> <li>• Button to press, to lift mixer arm(1)</li> <li>• Control speed (1)</li> </ul> <p style="text-align: right;">(3x1)</p>	(3)
1(c)	<p>List two ways salad ingredients might be prepared prior to manufacture, using unit operations.</p> <ul style="list-style-type: none"> <li>• Roots/mud/stalks/stems/outer leaves removed (1)</li> <li>• Cleaned/washed (1)</li> <li>• Peeled/husks/core/skin removed (1)</li> <li>• Sorted into weight (1)</li> <li>• Graded into size (1)</li> <li>• Size reduction/sliced/chopped/shredded/dicing/cutting (1)</li> <li>• Grated(1)</li> </ul> <p style="text-align: right;">(2x1)</p>	(2)

1(d)	<p>Explain why computer controlled equipment is used in the food industry.</p> <ul style="list-style-type: none"> <li>• <b>Reliable/ Accurate/Quality control</b> (1) because it <b>reduces human error/maintains quality/ Less waste</b> (1)</li> <li>• <b>24-7/ fast/speed operation</b> (1) to meet consumer demand (1)</li> <li>• <b>Cost effective</b> (1) because <b>labour saving/ fewer paid workers</b> (1)</li> <li>• <b>Managing stock control/storage</b> (1) to ensure there is a <b>constant supply of materials</b> (1)</li> <li>• <b>Prevent contamination</b> (1)through computer controlled temperature to ensure <b>safety of food</b> (1)</li> </ul> <p style="text-align: right;">(2x1)</p> <p><i>Any one of the points listed above, with the related explanation.</i></p>	(2)
1(e)	<p>Give <b>three</b> ways ICT systems help manufacturers gather information.</p> <ul style="list-style-type: none"> <li>• Websites/internet for research (1)</li> <li>• Email (1)</li> <li>• Contact suppliers (1)</li> <li>• Analyse competition (1)</li> <li>• EPOS to monitor stock (1)</li> <li>• record sales information (1)</li> <li>• Store data for research (1)</li> <li>• analysis of data to guide new product lines(1)</li> <li>• Nutritional analysis using profiling (1)</li> <li>• Comparison costing analysis (1)</li> </ul> <p style="text-align: right;">(3x1)</p>	(3)
<b>Total for question 1</b>		<b>22 Marks</b>

Question Number	Answer	Mark
2(a)	<p>Correct labelling of diagram.</p>  <p>shell</p> <p>air sac</p> <p>egg yolk</p> <p>membrane</p> <p>egg white</p> <p>(5x1)</p>	(5)

Question Number	Answer	Mark
2(b)(i)	<p>Two nutrients found in eggs.</p> <ul style="list-style-type: none"> <li>• Protein (1)</li> <li>• Fat (1)</li> <li>• Vitamin A (1)</li> <li>• Vitamin D (1)</li> <li>• Vitamin E (1)</li> <li>• Vitamin K (1)</li> <li>• Vitamin B<sub>2</sub>(1)</li> <li>• Iron(1)</li> <li>• Sulphur (1)</li> </ul> <p style="text-align: right;">(2x1)</p>	(2)
2(b) (ii)	<p>Name two food products. Give functions of eggs in cooking. One mark for each product:</p> <ul style="list-style-type: none"> <li>• Meringue, sponges, pastries, cakes, biscuits, sauces, custard, omelettes, potato cakes, fish cakes, scotch eggs, salads, mayonnaise, salad dressing, drinks, ice cream, pie.</li> </ul> <p>Linked to correct function (one mark):</p> <ul style="list-style-type: none"> <li>• Whisking/Aeration</li> <li>• Coagulation/setting</li> <li>• Colour / texture / flavour</li> <li>• Garnishing/decorating</li> <li>• Binding/combines/holds</li> <li>• Add nutritional value to a meal</li> <li>• Coating/glaze</li> <li>• Emulsifying</li> </ul> <p>Accept correct function twice (for different food product)</p> <p style="text-align: right;">(2x1) (2x1)</p>	(4)



<p>2(c)</p>	<p><b>Explain one</b> reason why people are encouraged to buy eggs produced from free range poultry.</p> <ul style="list-style-type: none"> <li>• <b>Free range poultry enjoy outdoor life/ fresh air/normal feeding regimes(1)</b>unlike factory farmed birds(1)</li> <li>• <b>Free to roam/no over crowding(1)</b>, therefore less likelihood of disease/less cruel (1)</li> <li>• <b>Free range eggs have better taste/ flavour / colour(1)</b>because better living/feeding conditions (1)</li> <li>• <b>Supermarkets and shops sell local free range eggs (1)</b> therefore this supports local farmers/consumer demand.(1)</li> <li>• <b>People find battery farming morally wrong (1)</b>because of cruelty to birds (1)</li> </ul> <p style="text-align: right;">(2x1)</p> <p>Two marks may only be awarded for the reason and related explanation</p>	<p style="text-align: center;">(2)</p>
<p>2(d)</p>	<p><b>One reason for each point</b>, to consider when designing and making food products.</p> <p><b>Social:</b> Age group of people, family size, family income, cooking skills, work patterns, lifestyle (1)</p> <p><b>Market:</b> Other competition/product lines/type of product and the need for it/where the product will be eaten/who will be buying the product/size/weight/portion/packaging/cost (1)</p> <p><b>Cultural:</b> religious groups/food restrictions/ethnic cuisine/special diets anyone mentioned/local/national/international cuisine (1)</p> <p style="text-align: right;">(3x1)</p>	<p style="text-align: center;">(3)</p>
<p>2(e)</p>	<p><b>Two reasons</b> why safety standards are needed for GM foods:</p> <ul style="list-style-type: none"> <li>• Prevent mutation (1)</li> <li>• Prevent cross breeding (1)</li> <li>• Prevent disease (1)</li> <li>• Prevent contamination (1)</li> <li>• Reassure consumers (1)</li> <li>• Maintain quality (1)</li> <li>• Unknown side effects (1)</li> </ul> <p>Do not accept to make it safe - in stem of question</p> <p style="text-align: right;">(2x1)</p>	<p style="text-align: center;">(2)</p>

Question Number	Answer	Mark
2(f)	<p>Describe <b>two</b> features of food packaging and labelling that are used to educate consumers.</p> <ul style="list-style-type: none"> <li>• <b>Image/symbols</b> used to <b>inform</b> consumers about product/packaging.</li> <li>• <b>Storage information</b> to inform consumers of recommended storage times/temperature/shelf life/avoid food poisoning</li> <li>• <b>Reheating/cooking instructions</b> to ensure food is safe to eat/allow flexibility in use of cooking equipment/served at its best.</li> <li>• <b>Ingredients</b> to inform consumers about content.</li> <li>• <b>Clear labelling</b> of potential risks to consumers e.g. nuts, fish bones, milk, gluten, wheat, eggs, soya/special diets</li> <li>• <b>Recipe information</b> to encourage consumers to use the product in a different way.</li> <li>• <b>Recycling info</b> to encourage consumers to be more eco-friendly/help the environment</li> <li>• <b>Nutritional information</b> to improve diet/ help people who want to lose weight/check what they eat.</li> </ul> <p style="text-align: right;">(2x1) (2x1)</p>	(4)
<b>Total for question</b>		<b>22 marks</b>

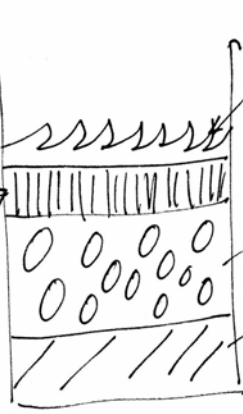
Question Number	Answer	Mark
3	<p>Each point of specification has two marking points.</p> <p>1 mark should be awarded for evidence of each point of specification resolved in the design</p> <p>For each point with both elements viably satisfied 2 marks  For each point with only one element viably satisfied 1 mark  Where the answer does not viably answer a specification point 0 marks</p> <p>Candidates may answer any specification point in either graphical form or by annotation.</p> <p>No marks are awarded for quality of communication.</p>	
3 (a)	<p>Design Idea 1:</p> <p>Specification point 1: <b>be ready to eat and have a five day shelf life.</b></p> <ul style="list-style-type: none"> <li>• Evidence that it is ready to eat e.g. no preparation required/served and eaten in container (trifle/cheesecake/pie/tart/crème Brule/choc pot) (1)</li> <li>• Evidence that it has a five day shelf life e.g. suitable for chilling/refrigeration/freezing, contains additives or suitable packaging to prolong shelf life. (1)</li> </ul> <p>Specification point 2: <b>contain two component parts, each with a different texture.</b></p> <ul style="list-style-type: none"> <li>• Evidence that it has two different component parts e.g. biscuit base, sponge base, pastry base, sauces, glazes, jelly, fruit layer/filling, cream topping. (1) icing/caramelised sugar/fruit coulli</li> <li>• Evidence that each component part has a different texture e.g. crunchy/smooth/crispy/slimy/dry/moist/lumpy. (1)</li> </ul> <p>Specification point 3: <b>contain a fruit with high vitamin C content.</b></p> <ul style="list-style-type: none"> <li>• Evidence that it contains a fruit. (1)</li> <li>• Evidence that the fruit is high in Vitamin C e.g. juice/citrus fruits/fresh fruits/seasonal fruit. (1)</li> </ul> <p>Specification point 4: <b>contain an edible decoration that is shaped by processing.</b></p> <ul style="list-style-type: none"> <li>• Evidence that it has an edible decoration (sliced fruit/piped cream/grated or moulded chocolate/sugar craft/caramelised fruit/spun sugar/pastry crimped or shaped) (1)</li> <li>• Evidence that the decoration is shaped by processing e.g. cutting/slicing/piping/shredding/chocolate pieces. (1)</li> </ul>	(8)

### Dessert Design 1.

Chilled fruit trifle.  
One portion, served  
in container.

Custard layer  
Smooth texture.

Store in fridge 0-4°C  
up to 5 days.



Piped whipping cream shaped  
by processing

Fruit juice jelly with oranges.  
High in Vitamin C

Victoria sponge base. Soft texture

Three component parts:-

- 1 Custard (smooth)
- 2 Sponge (soft)
- 3 Jelly (fruity/jumpy)

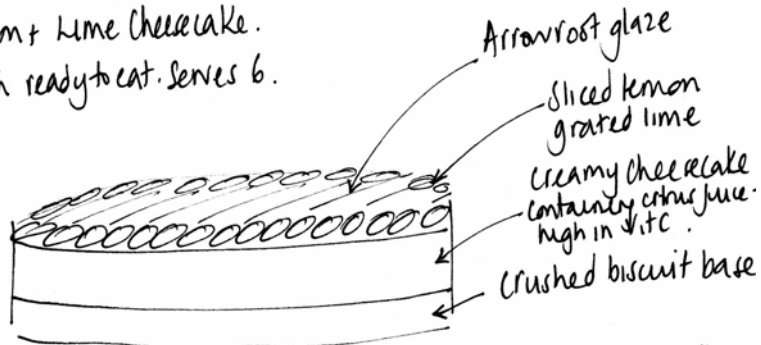
### Design Idea 2:

Different applies to design idea

- Different reason that it is ready to eat (1)
- Different reason for having five day shelf life (1)
- Two different component parts, each with a different texture (1)
- Different fruit (1)
- Different fruit high in vitamin C (1)
- Different edible decoration (1)
- Different processing method (1)

### Dessert Design 2.

Tangy lemon + lime Cheesecake.  
Family portion ready to eat. Serves 6.



Three component parts:-

- 1 Biscuit base (crunchy)
- 2 Creamy cheesecake (creamy)
- 3 Glaze-arrowroot. (palatable)

• Five day shelf life :- Serve chilled  
from either freezer or fridge.  
Ensure it is fully defrosted before  
eating, after home freezing.

• Edible decoration - glaze + grated  
lime + sliced lemon.

• No preparation required - ready to eat

(8)

3(b)	Marks may be awarded for two justifications of one specification point.	
3(b) (i)	<p>Evaluation of: <b>Must be ready to eat and have a five day shelf life.</b></p> <p>Positive and negative reasons relating to:</p> <ul style="list-style-type: none"> <li>• Being ready to eat (1)</li> <li>• Five day shelf life (1)</li> </ul> <p style="text-align: right;">(2x1)</p>	(2)
3 (b) (ii)	<p>Evaluation of: <b>Must contain a fruit with high vitamin C content.</b></p> <p>Positive and negative reasons relating to:</p> <ul style="list-style-type: none"> <li>• Fruit content (1)</li> <li>• High Vitamin C content (1)</li> </ul> <p style="text-align: right;">(2x1)</p>	(2)
3(b) (iii)	<p>Evaluation of: <b>Must contain an edible decoration that is shaped by processing.</b></p> <p>Positive and negative reasons relating to:</p> <ul style="list-style-type: none"> <li>• Edible decoration (1)</li> <li>• Shaped by processing (1)</li> </ul> <p style="text-align: right;">(2x1)</p>	(2)
<b>Total for question 3</b>		<b>22 marks</b>

Question Number	Answer	Mark
	It is important that the point and reason both fully relate to form, function or user requirements.	
4(a)(i)	<p><b>Quality</b>  <b>Point:</b> Adheres to designated tolerances: weight/filling/topping/crumb/no bones  <b>Reason:</b> Even distribution of ingredients/safe to eat.</p> <p><b>Point:</b> Smooth sauce/creamy potato/crunchy crumb/flaked fish  <b>Reason:</b> Desired textured/flavour/colour achieved</p> <p><b>Point:</b> Even straight layers/identical/consistent  <b>Reason:</b> To improve look of product/sell more.</p> <p><b>Point:</b> Even piping  <b>Reason:</b> To make it look attractive/cover top/seal filling</p> <p><b>Point:</b> Even spread of crumb topping  <b>Reason:</b> To make it consistent/improve appearance/high quality finish.</p> <p><b>Point:</b> To be a traditional main meal  <b>Reason:</b> To meet consumer expectations</p> <p><b>Point:</b> fish is sourced from sustainable sources  <b>Reason:</b> Manage fish stock</p> <p><b>Point:</b> Attractive/appealing/Tasty(any sensory quality)  <b>Reason:</b> Make more people buy it</p> <p style="text-align: right;">(2x1)</p>	(2)

<p>4(a) (ii)</p>	<p><b>Environment</b>  <b>Point:</b> Organic  <b>Reason:</b> Free from contamination/protects wildlife</p> <p><b>Point:</b> No GM Foods  <b>Reason:</b> No mutation/cross breeding</p> <p><b>Point:</b> Packaging suitable for recycling/biodegradable  <b>Reason:</b> Prevent litter/waste/preserve resources/reduce pollution/reduce landfill.</p> <p><b>Point:</b> Fish from sustainable sources/line caught  <b>Reason:</b> Managing fish stocks/reducing over fishing</p> <p style="text-align: right;">(2x1)</p>	<p style="text-align: center;">(2)</p>
<p>4(a) (iii)</p>	<p><b>Safety</b>  <b>Point:</b> No bones/nuts warning  <b>Reason:</b> Risk of choking/allergies/harmful to consumer.</p> <p><b>Point:</b> Clear instructions for storage/cooking  <b>Reason:</b> High Risk food/perishable, susceptible to food poisoning/perishable</p> <p><b>Point:</b> Tamper evident packaging  <b>Reason:</b> No contamination.</p> <p><b>Point:</b> No artificial additives/ingredients  <b>Reason:</b> Potentially dangerous/harmful to the consumer.</p> <p style="text-align: right;">(2x1)</p>	<p style="text-align: center;">(2)</p>

4(b)	<p>Two reasons given:</p> <ul style="list-style-type: none"> <li>• Compliments fish flavour (1)</li> <li>• Fish absorbs other flavours easily (1)</li> <li>• Cheese is a popular food product (1)</li> <li>• Flavour (1)</li> <li>• Fish is dry and sauce is moist/contrast with textures (1)</li> <li>• Sauce is a good medium to cook fish in(1)</li> <li>• Sauce adds yellow colour/stronger flavour/smooth different texture to pie (1)</li> <li>• Sauce heats up quickly upon cooking (1)</li> <li>• Increase nutritional value - protein, calcium</li> </ul> <p style="text-align: right;">(2x1)</p>	(2)
4(c)	<p>Give <b>two</b> reasons why grating is a suitable process to manufacture the cheddar cheese and breadcrumb topping.</p> <ul style="list-style-type: none"> <li>• Lightweight (1)</li> <li>• Even sized particles (1)</li> <li>• Combines well with grated cheese (1)</li> <li>• Small particles cook better (1)</li> <li>• Consistent texture (1)</li> <li>• Increasing surface area/create more volume (1)</li> <li>• Decorative (1)</li> <li>• Improve taste (1)</li> <li>• Increases working/melting time (1)</li> </ul> <p style="text-align: right;">(2x1)</p>	(2)
4(d)	<p>Two properties of cornflour.</p> <p>Property: Alters texture of sauce (1) Reason: Gelatinises/thickens upon heating with a liquid (1)</p> <p>Property: Tasteless/colourless/opaque upon heating (1) Reason: Allows other flavourings/colours to be absorbed (1)</p> <p>Property: No syneresis/separation upon heating and cooling (1) Reason: Modified starch/ starch are used to bind all the ingredients together/thickens/gels (1)</p> <p>Property: Suitable for coeliacs (1) Reason: Cornflour does not contain the protein gluten (1)</p> <p>Property: Thickens on heating (1) Reason: Starch swells/absorbs liquid (1)</p> <p>Where property is incorrect, do not accept reason.</p> <p style="text-align: right;">(2x1) (2x1)</p>	(4)



<p>4(e)</p>	<p>Explain one reason for sampling during manufacture of the fish pie.          To ensure <b>taste/safety</b> of consumers by <b>removing bones</b> (2)          To ensure <b>taste/uniformity</b> by <b>checking weight of product/layers</b> (2)          To ensure <b>taste/even distribution</b> of components by <b>checking consistency of layers/sauces/topping/crumb</b> (2)  <b>Check micro-org (m/o) activity to prevent cross contamination</b> (2)  <b>Ensure safety of consumers by checking storage/cooking temperatures to prevent cross contamination</b>(2)  <b>To check consistency of sauce to produce a quality product/meet specification</b> (2)  <b>Even distribution of potato because this makes it look attractive/appealing improve taste To taste sample product to check - alter/change/improve/flavour/consistency/texture of product/check nothing is wrong with product.</b>          (2)</p> <p style="text-align: right;">(2x1)</p>	<p>(2)</p>
<p>4(f)</p>	<p>Explain one reason why piping is used for finishing the potato topping.   <b>Even distribution of potato to improve appearance/control to improve appearance</b> (2)  <b>To make browning of topping an even colour on top</b> (2)  <b>To ensure a pleasant texture, with no lumps</b> (2)  <b>Consistent finish as a machine is used</b> (2)  <b>Even/decorative finish leads to quality/consistent/attractive appearance</b>(2)</p> <p style="text-align: right;">(2x1)</p>	<p>(2)</p>

4(gi)	<p>One explanation given.</p> <p>Appeals to elderly people/families(1) - traditional main meal/interesting range of flavours/textures/taste (1)</p> <p>Easy to cook(1) - appeals to busy people/elderly/people unable to cook (1)</p> <p>Soft/hides fish (1) attracts children/adults</p> <p>Smooth creamy texture(1) - appeals to young children/older people(1)</p> <p>Contains HBV protein(1) - needed for growth and repair by all age groups(1)</p> <p>Convenience food(1) - minimal food waste (bones/skin) (1)</p> <p>Easy to eat (1) - already prepared (1)</p> <p style="text-align: right;">2x1</p>	(2)
4(gi)	<p><b>Contains a variety of tastes and textures.</b></p> <p>Sauce has a smooth and creamy texture/taste(1) to compliment the other textures.(1)</p> <p>Crumb - crunchy(1) and provides a contrast in textures and flavours (1)</p> <p>Potato topping(1) - crispy to add texture (1)</p> <p>Fish filling - chunky/lumpy/soft texture/solid (1)which is easy to eat and provides contrast to other flavours(1)</p> <p>Cheddar cheese - compliments fish/sauce(1)/strong flavour/good taste/mouth feel (1)</p> <p>Allow any two relevant related points</p> <p style="text-align: right;">2x1</p>	(2)
<b>Total for question 4</b>		<b>22 marks</b>
<b>Total for paper</b>		<b>88 marks</b>

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