

# Mark Scheme (Results)

## Summer 2015

Pearson Edexcel  
GCSE Design & Technology: Food  
Technology  
5FT02/01

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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
<b>1.</b>	D	<b>(1)</b>

Question Number	Answer	Mark
<b>2.</b>	D	<b>(1)</b>

Question Number	Answer	Mark
<b>3.</b>	B	<b>(1)</b>

Question Number	Answer	Mark
<b>4.</b>	B	<b>(1)</b>

Question Number	Answer	Mark
<b>5.</b>	C	<b>(1)</b>

Question Number	Answer	Mark
<b>6.</b>	A	<b>(1)</b>

Question Number	Answer	Mark
<b>7.</b>	A	<b>(1)</b>

Question Number	Answer	Mark
<b>8.</b>	B	<b>(1)</b>

Question Number	Answer	Mark
<b>9.</b>	B	<b>(1)</b>

Question Number	Answer	Mark
<b>10.</b>	A	<b>(1)</b>

Question Number	Answer	Mark
<b>11(a)</b>	<b>Industrial mixer (1)</b>	Mix and combine ingredients
	Fire blanket	<b>Put out fire/smother flames/restrict oxygen (1)</b>
	<b>Dough Hook(1)</b>	Mix and combine ingredients for bread making
	Apron	<b>Protect food from cross contamination/ protect clothes from spills/cover clothes/keep clothes clean (1)</b>
	<b>4 x 1</b>	<b>(4)</b>

Question Number	Answer	Mark
<b>11(b)</b>	<p>Any two from the following list:</p> <ul style="list-style-type: none"> <li>• Freezing</li> <li>• Smoking</li> <li>• Canning</li> <li>• Dehydration/drying</li> <li>• Salted/brine solution</li> <li>• Chilled</li> </ul> <p>Do NOT accept cold/dry/cooked</p>	<b>(2)</b>

Question Number	Answer	Mark
<b>11(c)</b>	Shell fish or molluscs - scallops. oysters, whelks or winkles	
	Crustaceans - prawns	
	White fish	Cod/haddock/sole/plaice/ sea bass/ halibut
	Oily fish	Mackerel/sardine/tuna/herring/mullet/trout/salmon
	Shellfish	Cockles/mussels
	Crustaceans	Lobster/shrimp/crab/crayfish
		<b>(4)</b>

Question Number	Answer	Mark
<b>11(d)</b>	<p>One description from:</p> <ul style="list-style-type: none"> <li>• <b>Buying locally/ Fair trade (1)</b> produced food supports farmers, as well as ensuring that they receive fair terms of trade and <b>better prices/ reduces pollution/carbon emissions (1).</b></li> <li>• <b>Farmers markets (1)</b> are run by farmers and food</li> </ul>	

	<p>growers from the local area, who have the chance to <b>talk/inform/guide</b> about the food to the people who have grown or produced it (1).</p> <ul style="list-style-type: none"> <li>• <b>Farmers markets are more profitable (fair trade effect) (1)</b> for the farmer, because the food is being <b>sold directly to the consumer</b> without the need to involve a shop or supermarket (1).</li> <li>• <b>Organisations promoting environmental issues within the food industry, any named scheme such as The Marine Stewardship, Farm Assured Scheme, Red Tractor and Soil Association organisations (1)</b> raise our <b>awareness and appreciation of managing our natural resources (1)</b>.</li> <li>• <b>Buy line caught fish(1) to reduce fish discard/over fishing/throw back of unlanded fish(1)</b></li> <li>• Look for <b>recycled packaging materials (1) to reduce landfill (1)</b></li> </ul>	<b>(2)</b>

Question Number	Answer	Mark
<b>11(e)</b>	<p>One explanation from the following:</p> <ul style="list-style-type: none"> <li>• <b>Food poisoning occurs when foods spoil rapidly (1) because of a high water content and good nutritional content/HBV protein (1)</b>.</li> <li>• Because of warm, moist conditions (1) <b>food poisoning</b> would occur in any named high risk food: (1) raw and cooked meat, poultry and fish, cheese, milk and dairy products, eggs and cooked rice.</li> <li>• <b>Food deteriorates rapidly making it unsafe (1) to eat because of micro organism /enzyme/natural decay activity (1)</b></li> <li>• <b>When using highly perishable food, handlers must check date marks(1) so that safety of handled products is ensured due to their rapid deterioration (1)</b></li> <li>• <b>Cross contamination (1) will occur if high risk foods are exposed to poor hygiene or storage: any of the named following examples:</b> <ul style="list-style-type: none"> <li>○ food to food (raw/cooked)</li> <li>○ food handler to food</li> <li>○ Equipment to food</li> <li>○ Pest to food</li> <li>○ Pet to food</li> </ul> </li> </ul>	<b>(2x1)</b>

Question Number	Answer	Mark
<b>11(f)</b>	<p style="text-align: right;"><b>2 x 1</b></p> <ul style="list-style-type: none"> <li>• <b>Remove/replace the cows milk (1) and replace with kosher/goats milk as it does not contain the sugar(lactose) that causes lactose intolerance.(1)</b></li> </ul>	

	<ul style="list-style-type: none"><li>• <b>Remove/replace the cows milk (1) and replace with soya milk as it does not contain the sugar(lactose) that causes lactose intolerance.(1)</b></li><li>• <b>Replace butter with vegetable oil (1) to make all in one sauce(1)</b></li><li>• <b>Replace mashed potatoes which contain milk and butter(1) with roasted potato layer.(1)</b></li><li>• <b>Replace milk with stock/wine (1) and steam fish in alternative liquid to cook flesh(1)</b></li></ul> <p>Only accept duplicate ingredients if descriptions/uses are sufficiently different.</p>	<b>(4)</b>
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Question Number	Answer	Mark
12	<p><b>Design idea 1</b></p> <p>Candidates may answer any specification point in graphical form and by annotation. The two designs must be answered differently to secure the marks.</p> <p><b>Design idea 1</b>  [Need to insert stand text]</p> <ol style="list-style-type: none"> <li>1. Include one named pastry technique:  <b>Short crust/rich shortcrust/flaky/suet/puff/choux/hot water crust (1)</b></li> <li>2. Include a finishing technique  <b>Glaze/crimp/shape/mould/form/decorate/garnish (1)</b></li> <li>3. High in protein  <b>Meat/ fish/ cheese/ eggs/ cream/ Soya/ yogurt/ pulses/ lentils/ nuts/ Quorn/ crème fraiche/ sour cream (1)</b></li> <li>4. Suitable for batch production  <b>Reference to shape/ industrial processing/ shelf life of ingredients/stock rotation/standard components/meet consumer demand (1)</b></li> <li>5. High in fibre  <b>Wholemeal flour/ bran/ oats/ seeds/dried fruit/ vegetables/ fresh fruit/ leaving vegetable skins on (1)</b></li> <li>6. Easy to transport for a picnic  <b>Reference to form of packaging/size/slice/weight/hand held/casing of product/dimensions and weights acceptable (1)</b></li> <li>7. Value for money  <b>% content of protein to carbohydrate/ industry discounts such as BOGOF/ loyalty scheme at bakery/seasonality of fruit &amp;veg/weight or portion size compared to cost/ bulk buying ingredients (1)</b></li> <li>8. Use ICT in the food production process  <b>CAD used to design product/ spread sheets used to cost product/ sensory testing used to compare with existing products/ controls/sensors/monitoring/gathering information/temperature control/time</b></li> </ol>	[2x8]

**control/H&S/QC checks/Scanning/detection (1)**

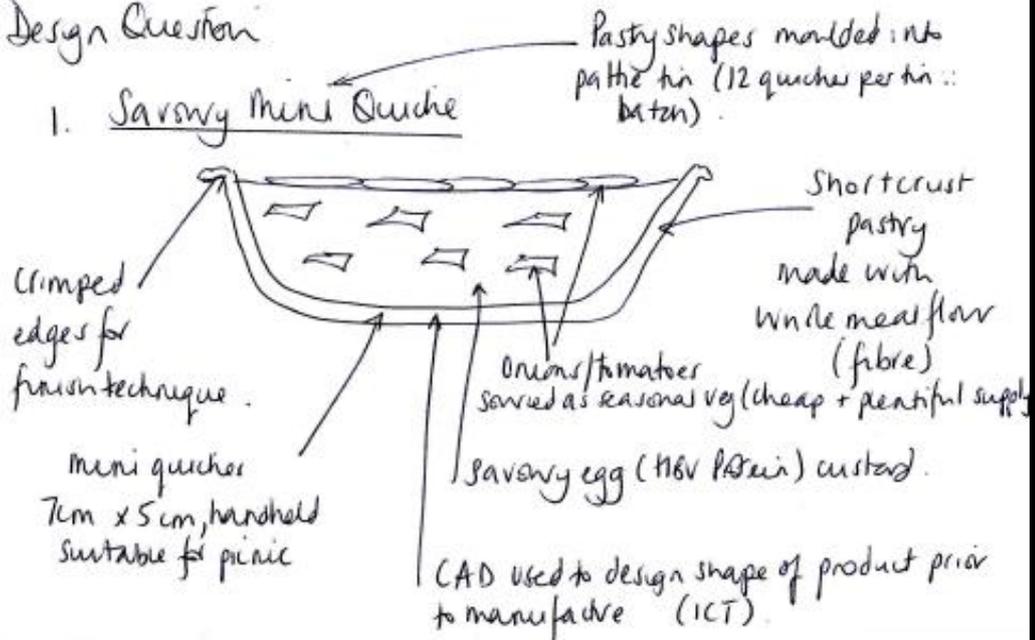
**CAM – automation/weighing/scales**

**CIM – 24/7/finishing techniques/no manual labour**

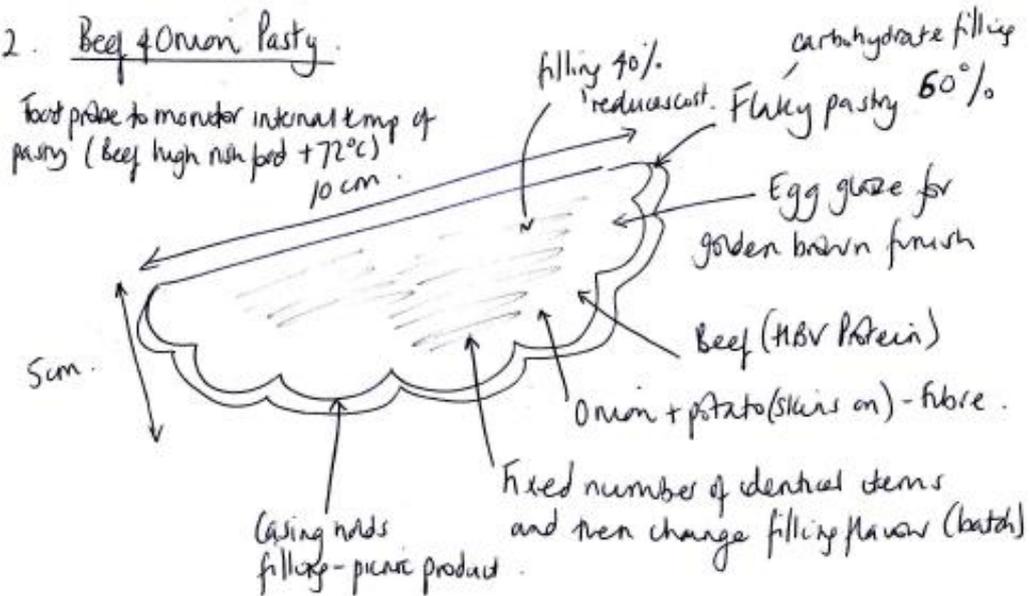
# Pastry Product.

## Design Question

### 1. Savory Mini Quiche



### 2. Beef & Onion Pastry



<b>13(a)</b>	<p>One from the following:</p> <ul style="list-style-type: none"> <li>• Air whisked into eggs</li> <li>• Sieved flour</li> <li>• Self raising flour</li> <li>• Air to create egg foam</li> <li>• Baking powder</li> <li>• Carbon dioxide</li> </ul> <p style="text-align: right;"><b>1 x 1</b></p>	<b>(1)</b>
<b>13(b)</b>	<p>One from the following:</p> <p>Whisking method All in one method Creaming method</p> <p style="text-align: right;"><b>(1x1)</b></p>	<b>(1)</b>
<b>13(c)</b>	<p>Describe one reason:</p> <ul style="list-style-type: none"> <li>• Prevent browning/discolouration of fruit <b>(1)</b> due to high acidity/sugar levels in glaze <b>(1)</b></li> <li>• Shiny/Glossy appearance <b>(1)</b> due to smooth gel applied to fruit <b>(1)</b></li> <li>• Enhance appearance <b>(1)</b> by adding texture and colour to fruit <b>(1)</b></li> <li>• Improve appearance <b>(1)</b> to increase sales/profit <b>(1)</b></li> </ul> <p style="text-align: right;"><b>1x2</b></p>	<b>(2)</b>
<b>13(d)</b>	<p>Explain one reason:</p> <ul style="list-style-type: none"> <li>• Reduces waste (1) because the manufacturer can order in the number of components required (1).</li> <li>• Reduces unit cost(1) because a large quantity is being made to order/increases profit(1)</li> <li>• Ensures consistency/reliability/quality (1), therefore each product is the same (1).</li> <li>• Time saving (1)because it reduces the number of processes in the manufacturing/assembly production line/quick/easy(1)</li> <li>• The components are pre-made (1) and so need less preparation (1)</li> </ul> <p style="text-align: right;"><b>1x2</b></p>	<b>(2)</b>
<b>13 (e)</b>	<p>Two ways :</p> <ul style="list-style-type: none"> <li>• Cutters</li> <li>• Extrusion</li> <li>• Injection</li> <li>• Sliced/diced</li> <li>• Grinding</li> <li>• Mincing</li> <li>• Rolled</li> <li>• Press</li> <li>• Crimp</li> <li>• Pipe</li> <li>• Filler/Stuffer (sausages)</li> <li>• Mould</li> </ul>	<b>(2)</b>

<p><b>13f</b></p>	<p>Explanation from the following:</p> <p><b>ENVIRONMENT</b></p> <ul style="list-style-type: none"> <li>• <b>Fruit free from pesticides / organic to prevent contamination/protect wildlife</b></li> <li>• <b>No GM ingredients to prevent mutation of crops / cross breeding</b></li> <li>• <b>Able to be recycled/biodegradable to prevent litter / preserve resources / reduce pollution/stop overuse of landfill sites/reduce waste</b></li> <li>• <b>Seasonal fruit to reduce air miles/ used in plentiful supply/support local trade/ free if homegrown to reduce air miles/cost to environment.</b></li> <li>• <b>Free range/organic/barn eggs used to ensure ethical farming</b></li> </ul> <p><b>QUALITY:</b></p> <ul style="list-style-type: none"> <li>• <b>Even crumb to sponge flan/ well risen/holds shape/straight layers to improve look of product</b></li> <li>• <b>Even slicing/glazing/shaping/ to make it attractive/cover the top</b></li> <li>• <b>Even spread of fruit /layers / colours to make it consistent / improve appearance</b></li> <li>• <b>Use of ICT (CAD/CAM) (1) ensures accuracy/uniform/consistent shape/layers (1)</b></li> <li>• <b>Batch production (1) allows fixed number of identical items (1)</b></li> </ul> <p style="text-align: right;"><b>2x2</b></p>	<p><b>(2x2)</b></p>
<p><b>13g</b></p>	<p>Food ingredients originate from different sources, but they may be classified into two groups:</p> <ol style="list-style-type: none"> <li>1. <b>Natural</b> – substances found naturally in plant or animal foods.</li> <li>2. <b>Artificial</b> – substances that are created in a laboratory that are either artificial copies of natural ingredients or completely new chemical substances that can also give some additional quality to processed foods.</li> </ol> <p><b>Recipe B:</b> For manufacturers these additives are good to use because:</p> <ul style="list-style-type: none"> <li>• they are easy to control due to their purity</li> <li>• Consistency in products.</li> <li>• Greater use of chemicals in foods</li> <li>• Restore flavours/ colours lost during processing</li> <li>• Improve the nutritional value of foods</li> <li>• To make them have a longer storage life.</li> <li>• Additives accepted as safe are placed on the '<b>permitted additives list</b>' and reviewed by the European Food Safety Authority.</li> <li>• E in front of a number means that the additive has been passed as safe by the EC. Some may appear with their chemical name.</li> </ul> <p><b>Recipe A:</b> For manufacturers these ingredients are used because:</p> <ul style="list-style-type: none"> <li>• An increasing demand for foods without additives, particularly</li> </ul>	<p><b>(6)</b></p>

- those considered to cause allergic and intolerant reactions.
- Manufacturers are working towards '**clean labels**' as a result of the concerns about the use of artificial chemicals in food.
  - Reduce the use of artificial additives by using natural substances to restore, enhance or improve the functional characteristics of food.
  - Natural additives are often hard to control due to their instability once extracted from their plant or animal origin.
  - Cost is likely to be lower as less artificial ingredients/more natural ingredients/shorter ingredient list

		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
<b>14 (a)</b>	Nutrient	Source	Function	Effect of Nutrient Deficiency	<b>(7)</b>
Fluoride	<b>Fish/water/tea (1)</b>	Strengthens teeth against tooth decay	Gum disease Tooth decay		
Iron	<b>Liver/ kidney/ red meat/ bread/ potatoes/ egg yolk/ green vegetables</b>  <b>Accept meat (1)</b>	To form haemoglobin and helps transport oxygen around the body	<b>Anaemia (1)</b>		
Vitamin A	Red meat, oily fish, apricots	<b>Maintenance and health of the skin</b>  <b>/Produces a substance called 'visual purple' which helps night vision and healthy eyes.</b>  (1)	<b>Night blindness/ Skin infections</b>  (1)		
Sodium	<b>Salt/cheese, bacon/fish/processed foods</b>  (1)	Maintains water balance in the body	<b>Cramps</b>  (1)		
<b>14(b)</b>	<p>Give two reasons:</p> <ul style="list-style-type: none"> <li>• Long term affects are unknown</li> <li>• Health risks/ food safety/ safe to eat</li> <li>• Eliminates some wildlife species</li> <li>• Possible mutations to crops from cross contamination and pollination of other crops.</li> <li>• Loss of biodiversity and effects on the environment</li> <li>• Permanent, irreversible changes to plants and animals</li> <li>• Confusion regarding labelling of GM ingredients</li> </ul>				

	<ul style="list-style-type: none"> <li>• Possible production of toxic substances</li> <li>• Allergic properties of crops transferred to others</li> <li>• May transfer genes to bacteria, turning them into pathogenic bacteria</li> </ul> <p style="text-align: right;">(2x1)</p>	<b>(2)</b>								
<b>14(c)</b>	<p>Explanation:</p> <ul style="list-style-type: none"> <li>• <b>Improve/enhance/restore nutritional content (1) of common food products for the benefit of the UK population.(1)</b></li> </ul>	<b>(2)</b>								
<b>14(d)</b>	<p>Definition:</p> <ul style="list-style-type: none"> <li>• Have <b>specific health promoting or disease preventing properties</b> beyond the basic function of supplying nutrients.</li> </ul>	<b>(1)</b>								
<b>14(e)</b>	<p>Discussion:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Food</th> <th>Effects of heat on food</th> </tr> </thead> <tbody> <tr> <td>Meat</td> <td> <ul style="list-style-type: none"> <li>• Protein coagulates between 40°C and 60°C.</li> <li>• Meat muscle shrinks and fat melts.</li> <li>• Colour changes depending on method of cooking. Red to brown/pink to white</li> <li>• Tougher cuts of meat require slow, moist methods of cooking to tenderise meat.</li> <li>• Vitamin B loss in moist methods of cooking.</li> <li>• Develops flavour</li> <li>• Cooked above 72oC kills most bacteria/prevents food poisoning</li> </ul> </td> </tr> <tr> <td>Eggs</td> <td> <ul style="list-style-type: none"> <li>• Egg white coagulates at 60°C, changing from transparent to opaque.</li> <li>• Yolk becomes firm/change of texture</li> <li>• Egg yolk coagulates at 70°C.</li> <li>• Rapid cooking will cause syneresis where the egg separates and proteins become tough. Weeping of liquid from egg</li> <li>• Colour change e.g. glazes</li> <li>• Cooking methods will alter properties</li> <li>• Food safety – awareness linked to killing bacteria with high temperatures</li> </ul> </td> </tr> <tr> <td>Vegetables</td> <td> <ul style="list-style-type: none"> <li>• Soften.</li> <li>• Flavour change linked to method of cooking(roasting</li> </ul> </td> </tr> </tbody> </table>	Food	Effects of heat on food	Meat	<ul style="list-style-type: none"> <li>• Protein coagulates between 40°C and 60°C.</li> <li>• Meat muscle shrinks and fat melts.</li> <li>• Colour changes depending on method of cooking. Red to brown/pink to white</li> <li>• Tougher cuts of meat require slow, moist methods of cooking to tenderise meat.</li> <li>• Vitamin B loss in moist methods of cooking.</li> <li>• Develops flavour</li> <li>• Cooked above 72oC kills most bacteria/prevents food poisoning</li> </ul>	Eggs	<ul style="list-style-type: none"> <li>• Egg white coagulates at 60°C, changing from transparent to opaque.</li> <li>• Yolk becomes firm/change of texture</li> <li>• Egg yolk coagulates at 70°C.</li> <li>• Rapid cooking will cause syneresis where the egg separates and proteins become tough. Weeping of liquid from egg</li> <li>• Colour change e.g. glazes</li> <li>• Cooking methods will alter properties</li> <li>• Food safety – awareness linked to killing bacteria with high temperatures</li> </ul>	Vegetables	<ul style="list-style-type: none"> <li>• Soften.</li> <li>• Flavour change linked to method of cooking(roasting</li> </ul>	<b>(6)</b>
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		<ul style="list-style-type: none"> <li>caramelising)</li> <li>• Colour change.</li> <li>• Water soluble vitamins B and C are easily destroyed by heat. Therefore, it is important to: <ul style="list-style-type: none"> <li>• Add vegetables to boiling water to destroy enzymes and retain vitamins.</li> <li>• Steam vegetables.</li> <li>• Reduce cooking time.</li> <li>• using microwave in order to reduce cooking time/liquid and therefore loss of Vitamin C</li> <li>• Reuse cooking water for soups, sauces, gravies or stock for flavour and colour.</li> <li>• Serve vegetables immediately once cooked.</li> </ul> </li> </ul>		
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		Level descriptor	
		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.	