



2007 Health and Food Technology

Higher

Finalised Marking Instructions

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**2007 Home Economics
Health & Food Technology**

Section A – Short Response Questions

Question		Response	Marking Guidelines
1	Name two sources of high biological value protein (HBV).	<ol style="list-style-type: none"> 1. Milk 2. Eggs 3. Cheese 4. Yoghurt 5. All meats 6. All fish 7. Soya 8. Any example of Soya 9. Quorn 	<p>1 mark</p> <p>2 x ½ mark for each food</p> <p>Examples are acceptable</p>
2	Identify two symptoms of food poisoning.	<ol style="list-style-type: none"> 1. Abdominal pain 2. Diarrhoea 3. Vomiting 4. Fever 5. Headache 6. Exhaustion 7. Abnormal temperatures 8. Dizziness 9. Backache 10. Shivery 11. Severe aches and pains 12. Confusion 13. Septicaemia 14. Pneumonia 15. Miscarriage/still birth/illness in new-born baby 16. Dehydration 17. Kidney failure 18. Flu-like symptoms 	<p>1 mark</p> <p>2 x ½ mark for each symptom</p>

Question		Response	Marking Guidelines
3	State two effects of heat on protein.	<ol style="list-style-type: none"> 1. Denaturation 2. Coagulation 3. Hardening/setting 4. Renders some protein more solid 5. Reduced digestibility of protein 6. Reduced nutritive value of protein 7. Any correct specific effect eg meat protein tenderises 8. Meat shrinks 9. Cheese melts 10. Egg white sets 11. Skin forms on milk 	<p style="text-align: center;">1 mark</p> <p>2 x ½ mark for each effect</p>
4	Name two food products produced by extrusion.	<ol style="list-style-type: none"> 1. Snacks with correct example eg cheese puffs 2. Croutons 3. Breakfast cereals 4. Full-fat soya flour 5. Pre-cooked noodles 6. Shaped pasta 7. Beverages 8. Dehydrated soups 9. Gravy bases 10. Confectionary-boiled sweets/fruit gums/chocolate 11. Pet food 12. Textured vegetable protein 13. Airy, hollow/pillow shaped snacks filled with fruit paste (eg Pop Tarts, Nutri-grain cereal bars) 	<p style="text-align: center;">1 mark</p> <p>2 x ½ mark for each product/example</p>
5	Name the manufacturing process that changes oil into solid fat.	<ol style="list-style-type: none"> 1. Hydrogenation 	<p style="text-align: center;">1 mark</p> <p>1 mark for correct process</p>

Question		Response	Marking Guidelines
6	What does the abbreviation TVP stand for?	Textured Vegetable Protein	1 mark for correct abbreviation
7	Name the organisation responsible for enforcing the Weights and Measures Act 1963.	Trading Standards Department	1 mark
8	State one responsibility of the Food Standards Agency.	<ol style="list-style-type: none"> 1. Protection of public health in relation to food hygiene and food safety 2. Licensing of meat-processing companies and hygiene controls on meat and meat products 3. Controlling the production of novel foods 4. Control of genetically modified food 5. Licensing and inspection of manufacturers who produce irradiated food 6. Monitoring the use of food additives 7. Monitoring the composition of food and food labelling 8. Advice about the nutrient content of foods and dietary issues 9. Promotes best practice in the kitchen 	1 mark for responsibility
9	State two advantages of breastfeeding.	<ol style="list-style-type: none"> 1. Breast milk contains the correct proportion of nutrients to meet the needs of the growing baby/baby is less likely to become overweight 2. Breast milk contains antibodies that help fight infection/prevent allergies 3. Breast milk is clean and cannot be contaminated by lack of hygiene 4. Breast milk cannot be prepared incorrectly 5. Breast milk is free 6. Breast milk is convenient/no equipment required 7. Breastfeeding helps bond the mother and child 8. Breastfeeding may help the mother to lose excess fat stores gained during pregnancy 9. Contains no chemicals 10. Always at the correct temperature 11. May help mother's womb to contract and return to natural position 12. Medical evidence suggests that women who breast-feed have a lower risk of developing breast cancer 13. Breast milk contains essential fatty acids/omega 3/omega 6 which assists in brain development of the baby 14. Less risk of the baby developing asthma 	<p>2 marks</p> <p>1 mark for each advantage given</p>

Question		Response	Marking Guidelines
10	State two areas covered by the Food Safety Act 1990.	<ol style="list-style-type: none"> 1. Food Labelling 2. Food Additives and Contaminants 3. Food Composition (or content) 4. Protect public health in relation to the food industry/Environmental Health Officers may visit food establishments. 	<p>2 marks</p> <p>1 mark for each area stated</p>
11	Identify two effects on health which may result from obesity.	<ol style="list-style-type: none"> 1. Coronary heart disease/heart attack 2. High blood pressure/Hypertension 3. Stroke 4. Certain cancers 5. Diabetes (Type 2) 6. Gallstones 7. Joint swelling 8. Depression 9. Fatigue 10. Reduced muscle tone/body shape 11. Reduced cardiovascular function 12. Varicose veins 13. Strain on joints 	<p>2 marks</p> <p>1 mark for each effect</p>

Question		Response	Marking Guidelines
12	Give one advantage and one disadvantage of functional foods.	<p>Advantages:</p> <ol style="list-style-type: none"> 1. functional foods have the potential to improve health/reduce the risks of certain diseases (when taken as part of a balanced diet/healthy lifestyle) 2. functional foods allow consumers to take greater control of their health through food choices/know that some foods will provide specific health benefits 3. some foods eg breakfast cereals will provide a reasonably inexpensive source of additional minerals/vitamins in the diet 4. functional foods are convenient for today's busy lifestyle (because they bring about health benefits quicker than eating conventionally healthy foods alone) 5. can help lower cholesterol 6. can help aid digestion. <p>Disadvantages:</p> <ol style="list-style-type: none"> 1. consumers may come to over rely on functional foods for added health benefits (instead of learning about and consuming foods that could provide the same benefits) 2. generally functional foods would have to be eaten in a fairly large quantity/on a long term basis to effect any improvement on health 3. in many cases, functional foods may be more expensive 4. it is possible to get the same beneficial ingredient more cheaply/naturally from a balanced diet. 	<p>2 marks</p> <p>1 mark for one advantage</p> <p>1 mark for one disadvantage</p>
13	<p>Explain each of the following terms.</p> <p>(i) Aerobic bacteria</p> <p>(ii) Anaerobic bacteria</p>	<p>(i) Aerobic bacteria require the presence of oxygen to enable multiplication to occur.</p> <p>(ii) Anaerobic bacteria can survive without oxygen and still allows multiplication to occur.</p>	<p>2 marks</p> <p>1 mark for each explanation</p>

Question		Response	Marking Guidelines
14	State two benefits of the Hungry for Success initiative.	<ol style="list-style-type: none"> 1. Establish a nutrient-based national standard 2. Creation of a positive ethos linked to whole child/school 3. Pupils involved in consultation process about food/health issues in school 4. Eliminating the stigma of free-meal recipients 5. Improvements to dining room to enhance atmosphere/ambience/environment 6. Improved presentation of meals to encourage general take-up 7. Consistent “Healthy Eating” messages via teaching in Home Economics/canteen provision/health professionals/whole school approach 8. Product specification leads to higher quality products in the school lunch 9. Greater promotion of appropriate choices, increasing both pupil/parents/staffs knowledge of “healthy eating” 10. Increased incentives for making healthy choices 11. Increased variety of healthier options available 12. Healthier options may reduce incidence of diet related diseases in childhood/later in adult life eg obesity/tooth decay etc 13. Helps to improve the diet of Scottish school children 14. Helps implement the Scottish dietary targets 15. Scottish dietary target linked to a food choice pupils could make and then a health benefit 16. Healthier options may aid concentration/improve behaviour of children 17. Water available will help keep the brain hydrated which improves concentration 18. Other acceptable answers which could be linked to a way of implementing HFS across the country. 	<p>2 marks</p> <p>1 mark for each benefit</p>

Section B

- 1 a) The table opposite shows a day's nutrient content of meals eaten by a sixteen year old boy who is a vegetarian.
- Using your knowledge of nutrition and the information provided, evaluate the suitability of this day's nutritional intake.

Marking Instructions:

6 x 1 mark for each point of evaluation linked to the needs of the sixteen year old/vegetarian boy.

Total: 6 marks (EV)

Nutrient Evaluation

Energy Intake

1. The total intake of energy in meals for a day is 1254 kJ/3000Kcals which is too high for the vegetarian teenager and **therefore** could lead to obesity/heart disease in later life.
2. The huge amount of energy intake must be coming from the teenager eating too much carbohydrate/saturated fat (as protein accounts for only 6% of energy), **so** this could lead to obesity/heart disease in later life.
3. Total energy intake is high, this may not be harmful if the teenager is very active **as** he will use up the excess energy.

Protein

1. The total intake for protein in a day is too low for a teenage vegetarian **so** he doesn't have surplus protein, which could be used, as a secondary source of energy.
2. The total intake for protein in a day is too low for a teenage vegetarian **so** he needs a greater amount of protein for teenage growth spurt/growth, repair and maintenance of teenage body tissue.
3. As the protein content is low, if he is an active teenager, he may require more protein to repair injuries to his body tissue, **therefore** as he currently lacks protein, any injuries will take longer to mend/heal.
4. Because protein content is lower than the RNI, the teenager is not able to build up muscle, **which** will result in a leaner body.
5. The protein is lower than required and as he is vegetarian will be found in LBV proteins **therefore** may not be fully available to the body.

Iron

1. The daily intake of iron is very low so the vegetarian teenager may **therefore** be suffering from anaemia/tiredness/lacking in energy.
2. This day's meal provides just over half of his daily needs of iron **so** the vegetarian teenager may be suffering from anaemia/tiredness/lacking in energy.
3. As there is a good supply of vitamin C this may enable easier absorption of iron for the teenager, **therefore** helping to prevent the anaemia/tiredness/fatigue.
4. The low content of iron from the diet may prevent the teenager's body creating enough red blood cells to cope with body growth spurts, therefore leading to anaemia.
5. The low content of iron is bad for the teenage boy because if he suffers various sporting injuries he will have lost extra red blood cells/iron.

Vitamin C

1. The daily amount of vitamin C is very high and as the teenager is vegetarian and lacking in iron this large amount of vitamin C may enable iron to be more easily absorbed into his body, **therefore** preventing anaemia/tiredness/fatigue.
2. An excess in vitamin C is not a problem for the teenager as his body cannot store this vitamin and any excess may be flushed out, **therefore** preventing possible toxin build ups.
3. There is a good supply of vitamin C which is essential for teenagers in the formation of connective tissue, **therefore** promotes quicker healing of scars/body tissue repairs/body growth spurt.
4. There is a good supply of vitamin C in this teenager's diet which is essential in prevention of infections, and **so** allows the teenager to fight off any potential illness.
5. As there is a good supply of vitamin C this is an advantage for the teenager as it forms one of the antioxidant vitamins, which may therefore prevent heart disease in later life.
6. As there is a good supply of vitamin C this is an advantage for the teenager as it forms one of the antioxidant vitamins, which may **therefore** prevent cancer in later life.

Calcium

1. The intake of calcium is high, this is important for the teenager as he is still growing, **therefore** promoting good bone formation/strong teeth.
2. The intake of calcium is high, this is important for the teenager as he requires good bone formation/density, **therefore** preventing osteoporosis in later life.
3. It is an advantage for the diet to be high in calcium as the teenager is vegetarian and may have a high NSP diet **which** will make the amount of calcium less available.

Vitamin A

1. The diet is low in vitamin A **therefore** vision of the teenager in dim light may be affected.
2. The diet is low in vitamin A **therefore** skin/mucus membranes become dry and allow the teenager to suffer from infections.
3. The diet is low in vitamin A **therefore** resistance to disease for the teenager may be reduced.
4. The diet is low in vitamin A **therefore** normal growth in the teenager may be impaired.
5. As vitamin A is an antioxidant his low intake could **therefore** lead to CHD in later life for the teenager.
6. As vitamin A is an antioxidant his low intake could **therefore** lead to cancer in later life for the teenager.

Saturated fat

1. The teenager's saturated fat intake of 25% is higher than the Scottish dietary target of only 10% for saturated fats, **which** could lead to obesity/heart disease in later life.
2. The teenager needs to change his diet to contain polyunsaturated fats and restrict it to 35% of energy, **resulting in** lowering of the teenagers blood cholesterol/prevent clots/prevent heart disease.
3. Saturated fat intake is too high, if this is sustained this could **therefore** result in poor calcium absorption for the teenager.

Overall

1. The nutrient content is based on one day's meals; the teenager and his vegetarian diet may not be as high in energy rich foods, saturated fats, vitamin C, iron or calcium **as** if looked at on a weekly/three day basis.
2. The nutrient content is based on one day's meals; the teenager and his vegetarian diet may not be as low in protein and vitamin A or D **as** if looked at on a weekly/three day basis.
3. If this is a typical nutrient intake for the teenage vegetarian boy, he could be already suffering from diet related illnesses **such as** initial stages of CHD/obesity/anaemia/stunted growth/vision in dim light/resistance to disease.

1 b) List a set of **four** practical guidelines to help reduce the risk of dental caries in a teenager.

Marking Instructions:

4 x 1 mark for each guideline.

Total: 4 marks (KU)

1. Regular teeth brushing/brushing teeth twice per day/brushing after eating.
2. Renew tooth brush regularly.
3. Visit dentist regularly/every six months.
4. Use fluoride toothpaste.
5. Use dental floss.
6. Use a mouthwash.
7. Limit intake of NME sugars in the diet (accept examples of foods high in NME sugars).
8. Avoid high sugar snacks between meals/better to eat high sugar snacks straight after meals.
9. Avoid high sugar drinks/drink water.
10. Avoid drinks with a high acid content.
11. Substitute high sugar snacks for fruit.
12. Use low sugar varieties of foods (accept examples).
13. Chew sugar free gum.
14. Ensure adequate calcium/vitamin D/phosphorous intake (accept examples of foods containing these nutrients).
15. Ensure adequate intake of vitamin C (accept examples of foods containing this nutrient).
16. Eat crunchy non sugary foods to keep gums healthy.

1 c) Evaluate the dietary suitability of the following meal for a teenager.

- Sardine pâté and wholemeal toast
- Spaghetti bolognese with broccoli

Marking Instructions:

4 x 1 mark for each nutritional point evaluated in detail and linked to the needs of a teenager.
(when reference is made to dietary targets, exact figures must be given)

Total: 4 Marks (EV)

Evaluation

Sardine Pâté

1. Contains (HBV) proteins from the sardines/(dairy products in pâté) **which** is good because it enables growth, repair and maintenance of the teenager's body cells.
2. If the teenager is active, excess protein from the sardine pâté will be good **as** it could provide the teenager's body with energy.
3. If the teenager is inactive excess protein from the sardine pâté will be a disadvantage as the excess protein energy could be converted to body fat, **therefore** causing obesity.
4. If pâté ingredients included dairy products – cream/milk/butter this would contribute to a high saturated content **which** could lead to CHD/obesity in later life for the teenager.
5. Sardines are an oily fish, **hence** contain a high amount of polyunsaturated oil, **so** reducing the risk of blood clots forming/the teenager having a heart attack in later life.
6. Sardines are a main source of the essential fatty acid – Omega 3 (or linolenic acid **which** contain a high amount of polyunsaturated oil), **so** reducing the risk of blood clots forming/the teenager having a heart attack in later life.
7. Sardines are a main source of the essential fatty acid – Omega 3 (or linolenic acid **which** contain a high amount of polyunsaturated oil), **so** aids concentration/aids brain development for the teenager.
8. The sardines contribute to the Scottish dietary target of eating 88g oily fish per week which is good, **therefore** preventing CHD in later life for the teenager.
9. Vitamin A contained within Sardine pâté is required for the teenager's growth/assists with good vision/protects surface tissues, **therefore** teenager more resistant to infection/antioxidant **so** can help protect against CHD/cancer in later life.
10. Vitamin D contained within the (sardine) pâté (margarine), enables calcium and phosphorous to strengthen the teenagers bones and teeth, **thus** preventing osteoporosis in later life.
11. Vitamin E contained within the sardine pâté is good as it helps maintain cell membranes, **thus** preventing CHD in later life for the teenager.
12. Iron contained within the sardines is good as it is required for the red blood cell formation/haemoglobin, **therefore** preventing anaemia in the teenager.
13. Calcium is contained within sardines (bones)/pâté to aid in the strengthening of the teenager's bones and teeth, **thus** preventing osteoporosis in later life.

Wholemeal Toast

1. Contains (LBV) protein from the toast, **which** is good as it contributes to growth, repair and maintenance of the teenager's body cells/tissue.
2. As there is no mention of spread on wholemeal toast this is good **as** there is no added fat which could contribute to obesity in the teenager.
3. As there is no mention of spread on wholemeal toast this is good **as** there is no added fat which could contribute to coronary heart disease in later life for the teenager.
4. Carbohydrate content of the wholemeal toast is good for energy **as** most teenagers are active.
5. Carbohydrate content of the wholemeal toast comes from the starch which is slow release energy, **so** teenager will have energy throughout the day/aids concentration in class/prevents snacking which could lead to obesity in the teenager.
6. Vitamin B1 (thiamin) contained within the wholemeal toast helps release energy from carbohydrates, **which** gives the teenager more instant energy.
7. Vitamin B1 (thiamin) contained within the wholemeal toast (cereals) helps with the growth/functioning of nervous system/muscle tone, **thus** promoting general good health for the teenager.
8. Vitamin B2 (riboflavin) contained within wholemeal toast is good **as** it helps release energy from protein/carbohydrates/fat **which** gives the teenager more instant available energy.
9. Vitamin B2 (riboflavin) contained within wholemeal toast is good **because** it is required for normal growth in teenagers.
10. Folic acid contained within wholemeal is good **as** it is required in the formation of red blood cells, **therefore** preventing anaemia in the teenager.
11. High amount of energy coming from total complex carbohydrates in toast is good **as** it will lead to slow release energy over the day/teenager can maintain energy levels/helps meet the dietary target for increase in TCC by 25%.
12. Iron contained within the wholemeal toast is good **as** it is required for the red blood cell formation /haemoglobin, **therefore** preventing anaemia in the teenager.
13. The high NSP content from wholemeal toast will bind to the iron **therefore** preventing the iron being absorbed into the body, **resulting** in possible anaemia for the teenager.
14. NSP content of wholemeal toast makes teenager feel full up **therefore** preventing snacking on high fat/sugary foods, **which** could lead to obesity/tooth decay.
15. NSP content of wholemeal toast **is good as** will help prevent constipation/bowel disorders in the teenager.

Spaghetti Bolognese

1. Contains (HBV) protein from the bolognese sauce **which** is good because it enables growth, repair and maintenance of the teenager's body cells.
2. Contains (LBV) protein from the spaghetti, **which** contributes to growth, repair and maintenance of the teenager's body cells.
3. The combination of HBV and LBV protein from the spaghetti bolognese will allow for maximum growth, repair and maintenance of the teenager's body cells, **which** is essential during teenagers growth spurt.
4. If the teenager is active, excess protein from the spaghetti bolognese will be good **as** it could provide the teenager's body with energy.
5. If the teenager is inactive excess protein from the spaghetti bolognese will be a disadvantage as the excess protein energy could be converted to body fat, **therefore** causing obesity.
6. Bolognese sauce main ingredient is normally minced beef which is high in saturated content **therefore** could lead to CHD/obesity in later life for the teenager.
7. If parmesan cheese is sprinkled over bolognese sauce, this is high in saturated content **therefore** could lead to CHD/obesity in later life for the teenager.
8. Saturated fat content of the meal is high due to the amount of animal sources used (red meat/mince); this should be reduced (to only 10% of total fat) **and so** preventing CHD in later life for the teenager.
9. Carbohydrate content of the spaghetti is good for energy **as** most teenagers are active.
10. Carbohydrate content of the spaghetti comes from the starch which is slow release energy, **so** teenager will have energy throughout the day/aids concentration in class/prevents snacking which could lead to obesity in the teenager.
11. NSP content of spaghetti if wholemeal makes teenager feel full up **therefore** preventing snacking on high fat/sugary foods, **which** could lead to obesity/tooth decay/prevent constipation/bowel disorder.
12. Vitamin A contained within tomatoes from bolognese sauce, is required for the teenager's growth/assists with good vision and protects surface tissues, **therefore** teenager more resistant to infection/antioxidant so can help protect against CHD/cancer in later life.
13. Vitamin C contained within tomatoes in bolognese sauce, required in the formation of the teenager's connective tissue/iron absorption and formation of the walls of the blood vessels, **thus** preventing anaemia/skin scars.
14. Vitamin C contained within tomatoes in bolognese sauce, helps prevent infections/antioxidant, **therefore** improving general good health of teenager/prevents CHD/cancer in later life.
15. Vitamin E contained within the red meat is good as helps maintain cell membranes/antioxidant **thus** preventing CHD in later life for the teenager.
16. Antioxidant vitamins contained within tomatoes help to ward off free radicals **thus** minimising the risk of coronary heart disease/cancers in the teenager's later life.
17. High amount of energy coming from total complex carbohydrates in pasta is good **as** it will lead to slow release energy over the day/teenager can maintain energy levels/helps to meet the dietary target to increase TCC's by 25%.
18. Iron contained within the minced beef is good as it is required for the red blood cell formation/

haemoglobin, **therefore** preventing anaemia in the teenager.

19. As the meal includes (ferrous) (haem) iron from red meat this is good as it is easily absorbed into the teenager's body, **thus** preventing anaemia.
20. The vitamin C/folic acid content within the meal from tomatoes will also enable (ferric) (non-haem) iron to be changed into ferrous **therefore** more easily absorbed into the teenager's diet, preventing anaemia.

Broccoli

1. Vitamin A contained within broccoli is required for the teenager's growth/assists with good vision/protects surface tissues, **therefore** teenager more resistant to infection/antioxidant so can help protect against CHD/cancer in later life.
2. Vitamin B2 (riboflavin) contained within broccoli is good **as** it helps release energy from protein/carbohydrates/fat which gives the teenager more instant available energy.
3. Vitamin B2 (riboflavin) contained within broccoli is good **because** is required for normal growth in teenagers.
4. Folic acid contained within broccoli is good **as** it is required in the formation of red blood cells, therefore preventing anaemia in the teenager.
5. Vitamin C contained within broccoli, required in the formation of the teenager's connective tissue/iron absorption/formation of the walls of the blood vessels, **thus** preventing anaemia/skin scars.
6. Vitamin C is an antioxidant vitamin contained within broccoli is good **as** it helps prevent infections/CHD/cancer in later life for the teenager.
7. Vitamin E contained within the broccoli is an antioxidant which is good **as** it helps maintain cell membranes/prevents CHD in later life for the teenager.
8. Antioxidant vitamins contained within broccoli help to ward off free radicals **thus** minimising the risk of coronary heart disease/cancers in the teenager's later life.
9. Broccoli is good **as** it contributes to the daily 400g fruit and vegetables Scottish dietary target in the teenager.
10. Iron contained within the broccoli is good as it is required for the red blood cell formation/haemoglobin, **therefore** preventing anaemia in the teenager.
11. The vitamin C/folic acid content within the meal from broccoli will also enable (ferric) (non-haem) iron to be changed into ferrous **therefore** more easily absorbed into the teenager's diet, preventing anaemia.
12. The high NSP content from broccoli will bind to the iron therefore preventing the iron being absorbed into the body, **resulting** in possible anaemia.
13. The high NSP content from broccoli is good **as** will help prevent constipation/bowel disorders in the teenager.

- 1 d) Explain the inter-relationship between **each** of the following.
- (i) NSP and water
 - (ii) Carbohydrates and vitamin B complex

Marking Instructions:

1 mark for each explanation about **inter-relationships**.
Minimum of 1 mark for each area.

Total: 4 Marks (KU)

NSP and Water

1. NSP soaks up the water in the food, allowing it to swell, creating a feeling of fullness which reduces desire to snack/helps prevent obesity.
2. Both water and NSP are required to create soft faeces which are capable of being flushed out, ridding the body of poisonous toxins/prevents constipation/bowel diseases.

Carbohydrates and vitamin B complex

1. The B vitamin group acts as a link in a complex chain of chemical reactions when releasing energy from carbohydrates.
2. The B vitamins release energy to the body from carbohydrates.
3. Thiamine/vitamin B1 helps release energy from glucose.
4. The B complex plays a part in the release of energy from food/utilisation of energy/oxidation of food.
5. Riboflavin and Niacin help release energy from carbohydrate.
6. Release of energy from carbohydrate requires adequate supplies of vitamin B (Krebs Cycle).

1 e) Evaluate sodium in the diet.

Marking Instructions:

2 x 1 mark for each well-explained evaluation point.

Total: 2 marks (EV)

1. Sodium is required to maintain the correct balance of body fluids, **which** prevent heat exhaustion/death.
2. Sodium is required for correct muscle and nerve activity, **therefore** preventing muscle weakness and cramps.
3. Sodium is required to help maintain normal blood pressure, **thus** maintaining a good blood flow.
4. Excess sodium in the body can lead to a rise in the blood pressure passing through narrower arteries, **which** could result in hypertension/strokes/CHD.
5. Sodium is needed by cell walls **so** that nutrients in the blood can flow into body cells and waste products can flow out.
6. Sodium is required for perspiration production **which** is essential **so** can help maintain body temperature.
7. A high sodium intake can be bad as it can lead to stomach cancer **so** should be avoided.
8. A high sodium intake in children is harmful **as** it can lead to kidney damage.

2 a) A food manufacturer plans to develop a low cost fish product aimed at the student market. Identify and explain **four** stages in the development of this product.

Marking Instructions:

4 x ½ mark for identification of stage.

Stage must be identified before mark can be awarded for explanation.

4 x 1 mark for each explanation linked to the development of the fish product.

Total: 6 marks (KU)

Stage	Explanation
Concept Generation	<ol style="list-style-type: none"> 1. This is the thinking stage/thinking up new ideas for the new low-cost fish product. 2. During this stage, the company would develop their ideas for the new fish product from ideas received during the market research stage. 3. Brainstorm possible new ideas (which could be based on something entirely new and innovative or a development of something already existing) based on market research/ingredients available from suppliers/bearing in mind the fact that it must be a low-cost fish product.
Concept Screening	<ol style="list-style-type: none"> 1. All ideas for low cost fish product are considered – some are kept and some are disregarded. 2. A design specification is compiled for the low cost fish product. 3. Previous ideas for the low cost fish product that do not meet the specification are disregarded.
Prototype Production	<ol style="list-style-type: none"> 1. The prototype/example/sample low cost fish product is developed. 2. The prototype/example/sample low cost fish product is measured against the specification. 3. The prototype/example/sample low cost fish product is tested for appeal and may be further modified/rejected.
Product Testing	<ol style="list-style-type: none"> 1. A range of low-cost fish products are tested by students/target market to gain opinions. 2. Sensory testing of various low-cost fish products by student market allows for refining/improvements/modification of the recipe. 3. A final prototype of the low-cost fish products is trialled.

Stage	Explanation
Information and advertising materials designed for packaging	<ol style="list-style-type: none"> 1. Food labels in compliance with food labelling regulations will be designed and produced for the low cost fish product. 2. Suitable packaging will be developed/investigated/costed and produced for the low-cost fish product.
First Production Run	<ol style="list-style-type: none"> 1. The new low-cost fish product will be produced in bulk in a factory and quality assurance will be carried out to ensure it is produced to an acceptable standard.
Marketing Plan	<ol style="list-style-type: none"> 1. The marketing team meet to decide about the pricing of the low-cost product/where it should be sold. 2. An advertising plan is created to help launch the new low-cost fish product.
Launch	<ol style="list-style-type: none"> 1. Sales of the low-cost fish products will be monitored in a variety of stores/retail outlets. 2. If successful, the new low-cost fish product will continue to be sold. 3. If sales are low, the low-cost fish product may be withdrawn and the product modified/rejected.

2	b)	Name and explain two sensory tests that could be used to evaluate the suitability of this fish product.
<p>Marking Instructions: 2 x ½ mark for identification of test. 2 x 1 mark for each explanation linked to the fish product. Test must be identified before mark can be awarded for explanation.</p> <p style="text-align: right;">Total: 3 marks (KU)</p>		
Sensory test		Explanation
Preference Test/Ranking		<ol style="list-style-type: none"> 1. Tasters are asked to rank in order of preference the range of fish products. 2. Tasters rank samples of the fish products in order for specific characteristics.
Rating Test		<ol style="list-style-type: none"> 1. Fish products are scored on a 5/7/9-point scale according to the products palatability appeal. 2. Samples of the fish products can be scored to evaluate specific characteristics (taste/colour/aroma/quality/overall acceptability).
Difference Test/Paired Comparison Test		<ol style="list-style-type: none"> 1. Tasters are asked to compare 2 samples of the fish products for a specific food characteristic (taste/aroma/colour etc) and state which of the two samples they prefer.
Duo – Trio Test		<ol style="list-style-type: none"> 1. Out of 3 samples of the fish products, tasters are told which the control is and are asked to identify the sample that differs from the control.
Triangle		<ol style="list-style-type: none"> 1. Tasters are presented with 3 samples of a fish product, 2 of which are identical, and are asked to identify the odd one out.
Star Profile Test/ Profiling		<ol style="list-style-type: none"> 1. Characteristics of the fish product are profiled and compared with other samples/competitor samples.
Discrimination Test		<ol style="list-style-type: none"> 1. Samples of the fish product are compared to establish if there are any detectable differences between them.

2 c) Identify and explain **two** types of market research which would be used by a food manufacturer.

Marking Instructions:

2 x ½ mark for identification of market research.

Market research type must be identified before mark can be awarded for explanation.

2 x 1 mark for each explanation.

Total: 3 Marks (KU)

Type of market research	Explanation
Direct	<ol style="list-style-type: none"> 1. From the public using the telephone/personal/group interviews/tasting/testing sessions/questionnaires. 2. Involves a face-to-face interview between consumer and interviewer – (useful) to obtain individual opinions/habits/preferences. 3. Personal interviews often take part in shopping areas so interviewers are getting out to where the consumers are. 4. Postal surveys involve mailing/distributing written questionnaires (door-to-door) to a sample of consumers/possible buyers for completion at their own leisure. 5. Postal surveys are a (useful) method for obtaining personal/family opinions/habits (however there is often a low response rate and surveys may take a long time to be returned). 6. Telephone surveys involve the interviewer contacting the consumer via telephone, asking them questions, and recording their results. 7. Telephone surveys are a (useful) method for obtaining consumer opinion quickly (however there is often a high non-response rate because of engaged tones/no answers/plain refusals). 8. Focus Groups involve a discussion between 6 – 8 individual consumers to produce qualitative data/opinions/attitudes on the topic being discussed (eg eating habits). 9. Focus Groups are a (useful) type of research for new food product development/testing of existing products/opinions on matters such as brand image (however there may be bias from the ‘moderator’ and information/data collected may be flawed). 10. E-mail/Web techniques are a (useful) method of collecting quantitative data on a variety of consumer perceptions via a questionnaire type format. 11. E-mail/Web techniques useful for identifying consumer likes/dislikes/consumer perceptions on pricing/effectiveness of advertising/sales promotion (however not everyone has access to the Internet so any data collected may not be representative of the target market). 12. Test marketing a food product is launched on a small scale to determine the likely acceptance of the product when it is introduced into the wider market.

	<p>13. Market tasting a particular product and recording their results.</p> <p>14. In sensory analysis this type of research enables the manufacturer to judge the success of a food product/decide on consumer acceptability of a new food product.</p> <p>15. Personal observation/Market research observation which involves the observation of a respondent in their 'natural' environment by a trained observer to observe consumer responses and behaviour towards a particular product.</p> <p>16. In sensory analysis this involves a number of consumers from the food products target.</p>
Indirect	<p>1. Existing information is used, including reports such as <i>Social Trends</i> (HMSO publication)/computer databases/CD – ROMs/collecting sales information.</p>
Quantitative	<p>1. Using large numbers of people by questionnaires/interviews.</p>
Qualitative	<p>1. Asking small groups of people for their opinions on food products.</p> <p>2. A group usually is made up of ten people or less who are then asked about their likes /dislikes for certain food products/how to make the product more appealing.</p> <p>3. Qualitative research is obtained by asking small groups of people for their opinion on the food products.</p> <p>4. The information gained is descriptive and may involve valued judgements/opinions.</p> <p>5. The type of information gained is subjective.</p> <p>6. This type of information is more useful when analysing people's views on food products as each individual is likely to have different opinions as to what is 'good' and 'bad' and what could be done to improve a food product.</p>

2 d) Evaluate the impact of **statutory** food labelling for consumers when choosing food.

Marking Instructions:

4 x 1 mark for each evaluation linked to choice of food.

Headings are provided for ease of use of the marking instructions and do not need to be supplied by the candidate.

Total: 4 marks (EV)

Country of origin/Place of origin

1. **Country of origin/place of origin** is important to determine the level of risk that consumers find acceptable when there is a food scare **therefore** enabling them to make informed choices about the food products they purchase.
2. Consumers can therefore reject products from countries whose political beliefs conflict with their own.

Name and address of food manufacturer

1. In the event of a food poisoning outbreak, it is vital that consumers and the authorities are able to trace manufacturers by their name and address on the food product **therefore** providing consumers with reassurance that in the unfortunate event of an outbreak, they have the necessary details to take action.
2. Consumers may wish to contact manufacturer for more information **therefore** more accessible to consumer.

Storage Instructions

1. It is important that consumers have concise instructions on the storage of food products (eg at ambient or refrigerator temperatures) because bacteria may multiply if these instructions are not followed **therefore** increasing the risk to the consumer.
2. Storage instructions should provide information on how the product should be stored once it has been opened/reconstituted as this can affect the shelf life of the product **therefore** increasing the risk of food poisoning to the consumer.

Instructions for use

1. Instructions for use ensure that foods are correctly defrosted/prepared/cooked/re-heated **therefore** ensuring food safety and minimising the risk of food poisoning to consumers.
2. Instructions for use are good **as** ensures product is served at its best for consumers' palate.

Date marks/use by date/best before date

1. Use by information used on highly perishable foods (eg chicken) is vital as these foods constitute a greater food poisoning risk if eaten after the stated date as bacteria may have started to grow and reproduce **therefore** increasing the risk of food poisoning to the consumer.
2. Best before information used on longer life foods (eg baked beans) are not likely to have 'gone off' when they reach their deadline however they will have gone by their best and they are **therefore** not likely to cause food poisoning. (Although their flavour/appearance/quality may have deteriorated) (However most foods will start to deteriorate eventually in the longer term and pose a food poisoning risk to consumers).

Weight/Volume of product

1. This is important **as** it allows the consumer to make comparisons between products **so** that they can get the best value for money.
2. The average weight mark/e symbol is important **as** it means that the average weight must be accurate **so** that the consumer will not be misled/misinformed.

Ingredients list/additives list

1. This is important **as** the consumer may avoid ingredients **which** they may be allergic to/are unsuitable for vegetarians/take account of likes, dislikes.
2. This is important **as** the ingredients are listed in descending order of weight **so** the consumer can easily see what the main ingredients are/compare similar products for value for money.
3. If GM ingredients are in the food product/dish these must be stated on the food product/restaurant menu, this is important so that consumers could choose to avoid selecting this food if they object to GM foods/ingredients.
4. The list of ingredients is good as it allows the consumer to compare different products in terms of ingredients which could be good if a consumer wishes to avoid certain ingredients for reasons of health/beliefs etc.

Name of the product

1. This is important **as** the consumer can have a better understanding of the product **therefore** make a more informed choice.
2. This is important **as** the consumer can take account of their likes and dislikes **before** opting to buy the food product.

Overall

1. Statutory food labelling has to compete for space with that of voluntary labelling information, **therefore** the consumer may be overwhelmed by the amount of information given on a food product.
2. Often there is too much information on a food product **therefore** some consumers may find it difficult to interpret/chooses unwisely.
3. Often the statutory information is in very small print **therefore** some consumers may find it difficult to read and choose unwisely.

2 e) Evaluate the use of genetically modified (GM) food.

Marking Instructions:

4 x 1 mark for each evaluation.

Headings are to help the marker access the marking instructions and are not required from the candidate.

Total: 4 marks (EV)

Can Improve Nutritive Value

1. Vegetarian cheese can be produced with the aid of genetic modification **therefore** increasing important nutrient intake for vegetarians and making such foods more appealing.
2. Some fruits and vegetables could be modified to contain higher levels of the ACE vitamins **thereby** providing extra protection against CHD/certain cancers making the product appear more appealing to the consumer.
3. Rice/maize can be modified to increase the protein intake **therefore** helping malnutrition in many poorer countries of the world and benefiting consumers.
4. Genetically modified foods can be modified to produce additional health benefits to help meet dietary targets and **therefore** be more appealing to the consumer eg HBV protein/low in saturated fat/low in calories/useful source of NSP.

Preservation of Foods

1. Genetic modification can assist in the preservation of foods by preventing the ripening of fruits and vegetables enabling a longer shelf life **so** this will help consumers by reducing the amount of time they spend shopping.
2. Genetic modification can increase the shelf-life of fresh foods without the use of preservatives/additives **therefore** nutritional benefits can be gained without any possible additive allergies therefore benefiting consumers who suffer from such allergies.

Cost

1. Genetic modification can give higher yields/produce foods in greater quantities and so ensure a good supply **therefore** meaning a lower/more stable price of food items and benefiting consumer's pockets/allowing the increased volume of food to feed the world's growing population.
2. Crop diseases can be controlled/reduced losses in the supply of certain foods such as crops/lower food prices due to efficiencies of production results in a constant supply of food **therefore** less waste for the farmer/more stable food prices/cheaper prices the consumers.
3. Due to high cost of research for genetically modified foods, higher food prices result **therefore** making such foods accessible only to those who can afford it.

Consumer Choice

1. Genetic modification can increase the variety/texture/appearance of foods **therefore** making it more appealing to the consumer/increase consumer choice.
2. Genetic modification can improve the quality/flavour/textures of a wide range of foods therefore increasing consumer choice/making it more appealing to the consumer.

Consumer Concerns

1. Food may be wasted, **as** consumers who are concerned about the ethical aspects/long-term health effects of genetically modified foods may not purchase it.
2. Food may be wasted as consumers may be concerned about the environmental aspects of genetic modification/genetically engineered plants and animals could affect wildlife and **therefore** consumers may not purchase genetically modified products.
3. Some consumers may have moral/religious/cultural problems (tampering with nature/playing God) with using genetically modified foods and **therefore** boycott such foods therefore reducing consumer demand.
4. Lack of information on labels may concern people, **as** they are unsure of the source/origin of the gene.
5. If animal genes are used in a product it would not be acceptable to certain religions (Muslims, Sikhs, Hindus) **as** making food products containing such genes unavailable to a portion of the population/resulting in decreased sales.

- 3 a) Explain how **each** of the following factors influences a consumer's choice of food.
- (i) Available income
 - (ii) Peer pressure
 - (iii) Environmental issues
 - (iv) Geographical location

Marking Instructions:

4 x 1 mark for each well explained reason linked to choice of food.

Total: 4 marks (KU)

Available income

1. Amount of money available can restrict/improve the options of quantity/quality/variety/brand of food which can be purchased.
2. High fat/sugar foods tend to be cheaper therefore may be purchased if there is a limited income.
3. Fresh fruit/vegetables/previously untried foods may not be purchased for fear of waste if income/money is limited.
4. Ready meals may increase in popularity, as it may be cheaper to purchase these rather than cook a meal for one from scratch if income/money is limited.
5. High disposable income/two household wages may result in more money being available for ready meals/convenience foods/better brand foods/exotic fruits/functional foods/organic foods.

Peer Pressure

1. Influences from peer groups due to the need for social acceptance/the need to fit in with your friends influences food choice.
2. Due to peer pressure, teenagers may go through food fads/spells of vegetarianism/special diets so they are made to feel more of a group/if their friends are also going through the same change in diet.

Environmental issues

1. Increased interest in environmental issues has led to more rejection of genetically modified foods being produced, as people are unaware of the effects such crops may have on the environment.
2. Current trend towards vegetarianism due to increased fear of animal related illnesses (eg Mad cow disease and CJD).
3. Consumers are purchasing more natural/organic/unprocessed foods because of the concerns that man-made chemicals could be carcinogenic/contain cancer causing agents.
4. Consumers wishing to help protect the environment/help conserve energy are increasingly using microwave ovens therefore increasing the demand for microwave foods/meals.
5. Consumers wishing to be more environmentally friendly are putting increasing pressure on food manufacturers to produce food packaging (eg refillable containers, goods packaged in biodegradable material, recyclable containers)/food products as these are the only food products they may now purchase/use less food packaging.

Geographical location

1. Choice of food could be either vast (in a city) or minimal (in a small town/village) therefore impacting on the range of foods the consumer is able to purchase/frequency of shopping.
2. For those living in the countryside, farmers may offer 'pick your own' facilities/fresh fruit and vegetables often at lower costs (as there is no middle man/low overheads) therefore providing the consumer with affordable fresh produce/saving money on transport.
3. Corner shops are vital in small towns/villages/communities however choice in these is often restricted due to limited space and the cost is often higher therefore limiting choice of food to the consumers.
4. Throughout the UK, transport/delivery of food products is now very advanced so it is now possible for consumers to obtain a wide variety of fresh produce from around the world regardless of their geographical location.
5. In rural areas people may have access to foods eg wild game/fishing/wild berries/mushrooms whereas city dwellers would not.

3	b) Identify and explain four ways in which food manufacturers are helping consumers to meet Scottish Dietary Targets.
<p>Marking Instructions: 4 x ½ mark for identification of ways. 4 x 1 mark for each explanation linked to dietary targets. Way must be identified before mark can be awarded for explanation.</p> <p style="text-align: right;">Total: 6 marks (KU)</p>	
Way	Explanation
Production of low fat products	<ol style="list-style-type: none"> 1. In response to consumer demands for ‘slimming products’, manufacturers have developed fat replacers/substitutes which may help to meet dietary target for reduction in fat to no more than 35% of energy/saturated fat to be reduced to no more than 11% of energy intake. 2. Manufacturers can reduce the amount of oils/fats which have a high percentage of saturated fats and replace them with fats/oils with a higher proportion of unsaturated fats to help meet the dietary target for reduction in saturated fat to no more than 11% of energy intake. 3. Increase in the range of products using quorn/tofu/soya which are low in fat and therefore help meet the dietary target for reduction in fat to no more than 35% of energy/saturated fat to be reduced to no more than 11% of energy intake. 4. Manufacturers have produced low fat dairy products (eg low fat yoghurt) and help contribute to the dietary target to reduce consumption of fat to no more than 35% of energy/saturated fat to be reduced to no more than 11% of energy intake. 5. A wide range of low fat spreads have been produced by food manufacturers as a substitute for butter/margarine and help contribute to the dietary target to reduce consumption of fat to no more than 35% of energy/saturated fat to be reduced to no more than 11% of energy intake. 6. A wide range of ‘reduced fat’ meals have been produced by food manufacturers and these help contribute to the dietary target to reduce consumption fat to no more than 35% of energy/saturated fat to be reduced to no more than 11% of energy intake.
Production of reduced sugar products	<ol style="list-style-type: none"> 1. Artificial sweeteners/sugar substitutes are being used in ready meals to reduce sugar content in line with target for reduction in NME sugars. 2. Manufacturers are increasingly adding natural sweeteners, such as dried fruit to food products, to help reduce NME sugars in line with dietary target. 3. Manufacturers are increasing the amount of reduced sugar products available, such as jam, in line with target for reduction in NME sugar. 4. Many drinks now have reduced sugar content/contain sugar substitutes and help contribute to the dietary target to reduce consumption of sugar.

	<ol style="list-style-type: none"> 5. Production of reduced sugar products eg fruit canned in natural fruit juice/jam/spreads/yoghurts etc help contribute to the dietary target to reduce consumption of sugar. 6. Breakfast cereals/biscuits which have reduced sugar claims help contribute to the dietary target to reduce consumption of sugar. 7. A range of reduced sugar desserts help contribute to the dietary target to reduce consumption of sugar.
<p>Increasing food products containing fruit /vegetables</p>	<ol style="list-style-type: none"> 1. Manufacturers have increased the range of pre-washed salad leaves/prepared salads available to help meet the dietary target to double intake/increase consumption of fruit and vegetables to 400g per day. 2. Prepared vegetables/fruits (eg carrot batons) now available in chilled areas to help meet the dietary target to double intake/increase consumption of fruit and vegetables to 400g per day. 3. Manufacturers have increased the amount of dried fruit added to baked products/breakfast cereals to help the consumer meet the dietary target to double intake/increase consumption of fruit and vegetables to 400g per day. 4. Manufacturers have increased the range of vegetarian dishes/ready meals available which contain a good proportion of vegetables to help the consumer meet the dietary target to double intake/increase consumption of fruit and vegetables to 400g per day. 5. Manufacturers have increased the use of fruit/vegetables to add bulk in healthy option ranges to help meet the dietary target to double intake/increase consumption of fruit and vegetables to 400g per day. 6. A wide range of innovative soups/sauces have been produced by manufacturers using various vegetable combinations to help meet the dietary target to double intake/increase consumption of fruit and vegetables to 400g per day.
<p>Increase in range of total complex carbohydrates products</p>	<ol style="list-style-type: none"> 1. Manufacturers are incorporating more wholegrain ingredients into ready meals to help increase intake of total complex carbohydrates by 25%. 2. Manufacturers are incorporating more fruit and vegetables into ready meals to increase fruit and vegetable intake in line with dietary target to increase intake of total complex carbohydrates by 25%. 3. Manufacturers have increased the range of prepared rice/pasta products available in supermarkets to increase fruit and vegetable intake in line with dietary target to increase intake of total complex carbohydrates by 25%. 4. Manufacturers have increased the range of breakfast cereals which have added fibre in order to increase consumption of total complex carbohydrates in line with dietary target. 5. Increased range of bread products in line with dietary targets to increase intake of total complex carbohydrates by 25%.

Way	Explanation
Introduction of low salt products	<ol style="list-style-type: none"> 1. Manufacturers are reducing salt intake by the use of natural flavourings/herbs/spices in line with the dietary target to reduce consumption of salt from 163mmol to 100mmol per day. 2. Manufacturers have increased the use of salt alternatives such as ‘lo-salt’ in line with the dietary target to reduce consumption of salt from 163mmol to 100mmol per day. 3. Manufacturers have started the packing of some foods in substances other than brine (eg tuna in sunflower oil) in line with the dietary target to reduce consumption of salt from 163mmol to 100mmol per day. 4. Manufacturers are responding to this target by introducing lo-salt/snacks/soups/pre prepared meals/breakfast cereals/bread etc in line with the dietary target to reduce consumption of salt from 163mmol to 100mmol per day. 5. Use of ‘lo-salt’ in products helps to reduce the sodium content of the food in line with the dietary target to reduce consumption of salt from 163mmol to 100mmol per day.
Increased range of breakfast cereal products	<ol style="list-style-type: none"> 1. Manufacturers have increased the range of breakfast cereal products available such as individual portion size/cereal bars/yoghurt with cereal bits/breakfast bars, in an attempt to double increase breakfast cereal consumption/in line with dietary target to increase intake of total complex carbohydrates by 25%.
Increasing range bread	<ol style="list-style-type: none"> 1. Manufacturers have increased the range of speciality breads in line with dietary target to increase bread consumption by 45%/or increase total complex carbohydrates by 25%. 2. More speciality breads are now baked in supermarkets thus providing consumers in line with dietary target to increase bread consumption by 45%/or increase total complex carbohydrates by 25%. 3. Manufacturers now produce a range of bread with added grains/fibre but that will still appeal to children because they are white and therefore encourage consumption in line with dietary target to increase bread consumption by 45%/or increase total complex carbohydrates by 25%.
Wider range of fish products now available	<ol style="list-style-type: none"> 1. Manufacturers have increased the variety of fish dishes/oily fish dishes in their ready-made meals in line with the dietary target to maintain white fish consumption/double oily fish consumption from 44 to 88g per week. 2. Manufacturers have increased the range of oily fish snack products making them convenient for consumers, as they are ready to be incorporated in sandwiches/baked potatoes in line with the dietary target to double oily fish consumption from 44 to 88g per week.

Way	Explanation
Improve labelling/Traffic light system	<ol style="list-style-type: none"> 1. Manufacturers are responding to consumer demands by incorporating nutritional information on ready meals to help consumers meet the dietary targets. 2. Manufacturers use labelling schemes/traffic light system which make it easier for consumers to make informed choices about the types of food they wish to eat eg low in salt/fat/saturated fat/sugar etc in line with dietary targets.
Introduction of healthy eating ranges	<ol style="list-style-type: none"> 1. Manufacturers have separate product ranges and have been developed to take account of dietary targets.

3 c) Evaluate the use of Hazard Analysis Critical Control Point (HACCP) in food manufacture.

Marking Instructions:

4 x 1 mark for each well explained evaluation linked to food manufacture.

Total: 4 marks (EV)

1. Hazards are identified before production right through to the sale of the product **therefore** ensuring that food is safe for consumers and that they are not being put at risk.
2. Hazards are identified at each stage where potential problems might occur **therefore** allowing controls to be put into place which help to prevent bacterial growth/contamination/food poisoning. (Examples accepted eg temperature control/arrival of ingredients check).
3. Can help identify process improvements **therefore** ensuring that the best methods/approaches are used throughout manufacturing, ensuring value for money for the company/reduced risks of food contamination for the consumer.
4. The consistency of quality/taste/appearance achieved by using HACCP provides consumers with an expected same quality every time they purchase a particular product **therefore** making a happy consumer/more likely to repurchase/enhances customer satisfaction/reduces dissatisfaction.
5. Reduces the need for end product testing **therefore** helping the company to save money.
6. Reduces the likelihood of product recall and adverse publicity **therefore** giving the company a good name/allowing companies to compete more effectively in the global/world market.
7. Facilitates better understanding of food safety issues throughout the company **therefore** helping to improve staff morale and motivation through a cleaner working environment.
8. Provides evidence of due diligence/record keeping **therefore** allowing investigators to examine how well a company is complying with food safety laws/ensuring that food companies do not break the law.
9. Time consuming and **therefore** adds additional costs to the manufacture of the food product.

3 d) Evaluate the use of artificial sweeteners in food products.

Marking Instructions:

3 x 1 mark for each well explained evaluation linked to the use of artificial sweeteners.

Total: 3 marks (EV)

Positive

1. Intense sweeteners are weight for weight sweeter than normal sugar and **therefore** economical to use by food manufacturers.
2. For consumers interested in weight control/reduction, sugar substitutes are marketed as a way of allowing sugar consumption/calorie intake to be reduced **therefore** the product may be more attractive to the consumer.
3. Developments in some bulk sweeteners show no side effects when ingested **making** them suitable for diabetics/allow people who suffer from diabetes to satisfy sweet cravings without affecting blood glucose levels.
4. Bulk sweeteners weight for weight have a similar level of sweetness to standard sugars but are more popular because of the lower energy levels and **therefore** more attractive to some consumers.
5. Bulk sweeteners can be used in sugar free confectionery and can help **reduce** the risk of tooth decay and obesity.
6. Sugar substitutes sweeten a product without adding excessive calories, **therefore** the product may be more attractive to the consumer/they allow people the sweet taste of food without the extra calories.

Negative

1. Sugar substitutes do not educate the palate **therefore** may not reform eating habits to encourage weight loss/reduction in sugar intake.
2. Acesulfame – does not provide bulk like standard sugar does **so** it may not work in some recipes.
3. Some health experts are concerned about the amount of sugar substitutes consumed by children and young people **as** they may have an adverse effect on health.
4. Aspartame contains phenylalanine and some people (with PKU (phenylketonuria)) are unable to break this down in the body which can be toxic **therefore** (people with PKU) must be careful about eating foods which contain aspartame.
5. Some countries have banned certain sweeteners **as** research suggests they have an adverse effect on health (eg saccharin was banned in 1977 as it was found to cause cancer in animals).
6. Intense sweeteners (eg saccharin) have an aftertaste **which** can make them unpleasant to the consumer.
7. Some sugar substitutes do not have the same functional properties as standard sugar **therefore** are less suitable for food preparation in the home.

3 e) Explain the use of **each** of the following in food preservation.

- (i) Salt
- (ii) pH
- (iii) Freeze-drying

Marking Instructions:

3 x 1 mark for each explanation.

Total: 3 marks (KU)

Salt

1. Dissolved in fluids, salt forms a concentrated solution in which spoilage micro-organisms cannot flourish, as the dissolved salt ‘captures’ some of the water molecules making them unavailable to micro-organisms.
2. Salt draws out moisture through a process of osmosis therefore preventing their growth and enabling the food to last longer.
3. If salted in cold conditions, meats can last for years because the meat does not have time to spoil while the salt has time to take effect by drawing out the moisture.
4. Salt prevents food from decaying due to the removal of moisture.

pH

1. The degree of pH used to preserve food will depend on the type of micro-organisms linked to the food.
2. pH below 7/acidic pH will inhibit microbial growth and increase shelf life of food product.
3. pH below 7/acidic pH is used in food preservation of pickled vegetables/chutneys to increase the shelf life by preventing microbial growth.
4. Most micro-organisms cannot survive in acidic pH so food is preserved.

Freeze-Drying

1. Freeze drying removes moisture from food product making it unavailable to micro-organisms which increases the shelf life/preserves the food.
2. Freeze drying in food preservation of products such as coffee/herbs so increase the shelf life with minimal effect on flavour.
3. Once moisture is added back into the food micro organisms can grow and shelf life is reduced.
4. Freeze drying is used for heat sensitive foods as ice is driven off as water vapour causing little damage to food (eg coffee granules).

- 4 a) Evaluate how **each** of the following ingredients used in bread making affect the finished product.
- (i) Strong wholemeal flour
 - (ii) Sugar
 - (iii) Salt
 - (iv) Yeast

Marking Instructions:

4 x 1 mark for each point of evaluation linked to bread making.

Total: 4 marks (EV)

Strong wholemeal flour

1. Strong flour is most suitable for bread making as it contains a high gluten content which produces a strong elastic dough **therefore** enabling the yeast dough to stretch and hold the carbon dioxide which enables the bread to rise.
2. Wholemeal flour adds a nutty flavour/crunchy texture to the loaf **therefore** making it more appealing to consumers.
3. As the bran and germ of the whole-wheat grain are included in wholemeal flour, it contains more B vitamins/higher fibre/NSP content **therefore** making the bread more nutritious/suitable for people with bowel problems/prevents bowel diseases.
4. Wholemeal bread may not have the same keeping qualities as white bread as it contains fats which may become rancid **therefore** may result in more waste for the consumer.

Sugar

1. Sugar provides food for the yeast so that it can grow and begin its work in the dough **therefore** ensuring the bread rises/kick-starts the yeast and will help ensure a quick rise.
2. Too much sugar retards/delays the effectiveness/growth of the yeast **therefore** resulting in a small/dense loaf which may cave in.

Salt

1. Salt helps to improve the flavour of the final product **therefore** ensuring the loaf is appetising to the consumer.
2. Salt helps ensure that the yeast does not grow out of control/controls fermentation/influences the rate of fermentation **therefore** slowing down the action of yeast/giving more time for the flavour to develop.
3. If there is too little salt added, the dough will rise too quickly **resulting in** a loaf which is uneven in shape.
4. Too much salt kills the yeast/dough **therefore** producing a loaf which has uneven texture/close texture/poor volume/poor shape/not risen well.

Yeast

1. Yeast ferments the sugar and produces carbon dioxide gas **therefore** helping to ensure the bread rises.
2. If the yeast is inactive/does not produce enough carbon dioxide gas, this will **result in** a loaf that is small/dense.
3. If the yeast is killed before the loaf is baked (temperatures exceeding 55°C) this will **result in** a loaf that has not risen well/is hard/is coarse in texture.

4	b)	Identify and explain four factors, other than those relating to diet, which could contribute to coronary heart disease (CHD).
<p>Marking Instructions: 4 x ½ mark for identification. 4 x 1 mark for each explanation linked to coronary heart disease. Factor must be identified before mark can be awarded for explanation.</p> <p style="text-align: right;">Total: 6 marks (KU)</p>		
Factor	Explanation	
High blood pressure/ Hypertension	<ol style="list-style-type: none"> 1. High blood pressure/hypertension causes damage to the lining of the arteries (and accelerates the build up of fatty plaque in the arteries) causing a blockage. 2. Causes extra stress on the heart by forcing it to work harder to pump the blood around the body. 	
Blood clot/ Thrombosis	<ol style="list-style-type: none"> 1. If artery walls are already damaged, a blood clot can form on the lining of the artery causing it to become completely blocked. If blood clots occur in the coronary arteries, a heart attack could result. 	
Stress	<ol style="list-style-type: none"> 1. People who are impatient/stressed/tense/anxious seem more likely to suffer from CHD than those who are calmer/less worried/more relaxed. 2. Stress produces hormones in the blood stream that constrict/narrow/tighten the arteries. This causes stress on the heart by making it work harder to pump the blood around the body. 	
Lack of physical exercise	<ol style="list-style-type: none"> 1. Regular exercise strengthens the heart muscles and makes it work more efficiently therefore reducing the risk of CHD. 2. Regular exercise will enable the body to metabolise fats more efficiently therefore lowering blood cholesterol/blood pressure/relieving stress/controlling weight which will decrease your risk of CHD. 	
Obesity	<ol style="list-style-type: none"> 1. Lack of nutrient balance and excess layers of fat in the body can cause high blood pressure/hypertension, causing damage to the lining of the arteries (and accelerating the build up of fatty plaque in the arteries) causing a blockage. 2. Large body size leads to the heart and lungs having to work much harder to maintain oxygen supply/heart has to beat more vigorously to supply oxygen (and nutrients needed by tissues under strain) therefore increasing the risk of CHD. 	
Smoking	<ol style="list-style-type: none"> 1. Nicotine and other poisonous chemicals in tobacco enter the blood stream and damage the artery wall. 2. Smoking damages the artery wall and fatty layers begin to build up and lead to blockages in the coronary arteries leading to CHD. 3. Smoking can cause blood to become sticky and more likely to form a clot on the lining of the artery causing it to become blocked resulting in a heart attack. 	

Factor	Explanation
Diabetes	1. Diabetes can worsen/irritate the problem of high blood cholesterol/high blood pressure/hypertension therefore speeding up the build up of fatty deposits in the arteries causing a blockage.
Hereditary/Family history	1. Clear evidence suggests that people are more likely to suffer/develop CHD if there is a history of the disease in the family.
Gender	<p>1. More men than women tend to suffer from heart disease (although the amount of women suffering is also on the increase).</p> <p>2. Women under the age of 40 may be protected from CHD by the hormone oestrogen however after the menopause when oestrogen levels are reduced, cholesterol levels rise and so the risk of CHD increases.</p>
Drugs	1. Drugs such as amphetamines cause an increase in breathing/heart rate and high repeated doses could place a serious strain on the heart causing CHD.
Solvent abuse	1. Long term solvent abuse can lead to heart damage as sniffing of gases can cause the heart to beat irregularly which can cause a heart attack.
Age	1. When people age their blood pressure rises which can then lead to coronary heart disease

4 c) Explain the effects of **storage, preparation and cooking** on Vitamin C.

Marking Instructions:

3 x 1 mark for each explanation.

1 x storage, 1 x preparation, 1 x cooking

Total: 3 marks (KU)

Vitamin C/Ascorbic acid

Storage

1. Exposure to air leads to oxidation of vitamin C (and must therefore be stored in a fridge).
2. Long-term storage causes deterioration of vitamin C in fruits and vegetables.
3. Storage in light leads to loss of vitamin C.
4. Storage in dark conditions leads to less loss of vitamin C.

Preparation

1. The enzyme oxidase is activated by chopping leading to vitamin C loss.
2. Peeling fruits/vegetables would expose more surfaces to the air and cause oxidation.
3. Blunt knives cause more cells to rupture/be disrupted causing more of the enzyme oxidase to be released which kills/destroys vitamin C.
4. Soaking in water causes loss of vitamin C by leaching into the water.
5. Use acids such as lemon juice/vinegar which can prevent the loss of vitamin C by oxidation.
6. Preparation in advance leads to destruction/loss of vitamin C by oxidation.

Cooking

1. Vitamin C is lost in water through leaching so use minimal water.
2. Heat destroys vitamin C so cook for as short a time as possible.
3. Alkaline cooking water (eg bicarbonate of soda) destroys vitamin C.
4. Cooking vitamin C rich foods in copper or copper alloy pots causes vitamin C to quickly oxidise in the presence of large amounts of copper.
5. Vitamin C oxidises if kept hot.

4 d) Explain **three** areas of responsibility for the Department for Environment, Food and Rural Affairs (DEFRA).

Marking Instructions:

3 x 1 mark for each well explained area of responsibility

Total: 3 marks (KU)

1. Protection/conservation of the environment eg preservation of air quality/healthy marine environment/water quality.
2. Protection of public health in relation to food and animal diseases which can be transmitted to humans.
3. Promotion of the food supply chain to meet consumer requirements eg encourage the development of local, speciality and other value added products.
4. Promotion of modern farming techniques at home and throughout the EU.
5. Promotion of better management and use of natural resources such as energy/water/fisheries/forests (eg trying to increase household waste recycling and composting).
6. Development of the economy in rural areas eg make an attempt to reduce rural poverty.
7. Improvement of enjoyment of the countryside for all maintaining strong rural communities (eg allowing public access to mountains).
8. Contribute to reforming of the Common Agricultural Policy (CAP) eg find ways of preventing future animal/plant/fish disease outbreaks.
9. Protecting public health in relation to diseases which can be transmitted through food water and animals and ensuring high standards of animal health and welfare eg reduce the incidence of animal diseases and ensure that farm animals and fish are protected from unnecessary pain or distress.
10. Within the food industry, DEFRA is responsible for providing specific guidance on a range of foods/guidance and information for egg and poultry producers/guidance and information for EU beef labelling system/guidance and information on EU regulations for the protection of food names on a geographical or traditional basis eg Scottish shortbread or Danish pastries.
11. Providing information on the speciality food and drink sector eg hand made chocolates/small scale cheese production.

4 e) Evaluate the role of **each** of the following.

(i) Colourings

(ii) Emulsifiers

Marking Instructions:

4 x 1 mark for each well explained evaluation.

Total: 4 marks (EV)

Colourings

1. Colourings improve the original product by enhancing colour **therefore** making it more attractive to the consumer.
2. Colourings replace the colour to foods which has been lost during processing **therefore** making the product more acceptable to the consumer.
3. Some colourings (eg tartrazine – e102) may cause allergic reactions/irritate sufferers of asthma/eczema **therefore** these may have to be avoided by some consumers/reducing the products popularity.
4. Some colourings can cause hyperactivity/behavioural problems in children **therefore** parents may avoid products with such colourings (and look for alternatives) reducing the popularity of such products.

Emulsifiers

1. Emulsifiers are good as they help to mix ingredients together **which** would normally separate causing production problems.
2. Emulsifiers are good as they allow fats and oils to mix with water which helps to make low-fat spreads/salad dressings **which** are good for people on a weight reducing diet.
3. Emulsifiers are good for the consumer **as** they give food a smooth/creamy texture.
4. Emulsifiers are good **as** they help improve shelf-life of baked goods.
5. Lecithin, found in eggs, is a natural emulsifier which is used for mayonnaise/low-fat spreads **which** may appeal to consumers who wish to avoid artificial ingredients.
6. Emulsifiers are good as they allow fats and oils to mix with water which improves the appearance of low fat spreads/salad dressings/mayonnaise.

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Section A

Question	<u>Resource Management Unit</u>		<u>Consumer Studies Unit</u>		<u>Course Skills</u>		<u>Totals</u>
	<u>Course content</u>	<u>Mark</u>	<u>Course content</u>	<u>Mark</u>	<u>Knowledge</u>	<u>Evaluation</u>	
1	Function and sources of nutrients	1			1		
2	Causes of food poisoning	1			1		
3	Functional properties	1			1		
4			Technological development	1	1		
5	Functional properties			1	1		
6			Technological development	1	1		
7			Role & Responsibility of Trading Standards	1	1		
Totals		<u>3</u>		<u>4</u>	<u>7</u>	<u>0</u>	

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Section A (continued)

Question	<u>Resource Management Unit</u>		<u>Consumer Studies Unit</u>		<u>Course Skills</u>		<u>Totals</u>
	<u>Course content</u>	<u>Mark</u>	<u>Course content</u>	<u>Mark</u>	<u>Knowledge</u>	<u>Evaluation</u>	
8	Current dietary advice	2	Role and responsibility of the Food Standards Agency	1	1		
9			Food Safety Act 1990	2	2		
10	Prevention of dietary diseases	2	Technological development	2	2	2	
11							
12	Causes of food poisoning	2					
13	Current dietary Advice	2					
14							
Carried forward		<u>3</u>		<u>4</u>	<u>7</u>	<u>0</u>	
Totals		<u>11</u>		<u>9</u>	<u>18</u>	<u>2</u>	20

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Section B Question 1

Question	<u>Resource Management Unit</u>		<u>Consumer Studies Unit</u>		<u>Course Skills</u>		<u>Totals</u>
	<u>Course content</u>	<u>Mark</u>	<u>Course content</u>	<u>Mark</u>	<u>Knowledge</u>	<u>Evaluation</u>	
(a)	The use of (DRV's)	6				6	
(b)	Prevention of dietary disease	4			4		
(c)	Current dietary advice	4				4	
(d)	Inter-relationship	4			4		
(e)	Function & Sources of nutrients	2				2	
Totals		<u>20</u>			<u>8</u>	<u>12</u>	

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Section B Question 2

Question	<u>Resource Management Unit</u>		<u>Consumer Studies Unit</u>		<u>Course Skills</u>		<u>Totals</u>
	<u>Course content</u>	<u>Mark</u>	<u>Course content</u>	<u>Mark</u>	<u>Knowledge</u>	<u>Evaluation</u>	
(a)	Product Development Strategy	6			6		
(b)	Sensory Testing	3			3		
(c)	Market research	3			3		
(d)			Statutory labelling	4		4	
(e)			Food politics	4		4	
Totals		<u>12</u>		<u>8</u>	<u>12</u>	<u>8</u>	

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Section B Question 3

Question	<u>Resource Management Unit</u>		<u>Consumer Studies Unit</u>		<u>Course Skills</u>		<u>Totals</u>	
	<u>Course content</u>	<u>Mark</u>	<u>Course content</u>	<u>Mark</u>	<u>Knowledge</u>	<u>Evaluation</u>		
(a)	Current Dietary Advice	6	Factors which influence consumer choice of food	4	4			
(b)						6		
(c)			HACCP	4				4
(d)			Technological developments	3				3
(e)			Functional properties of food	3				3
Totals		<u>9</u>		<u>11</u>	<u>13</u>	<u>7</u>		

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Section B Question 4

Question	<u>Resource Management Unit</u>		<u>Consumer Studies Unit</u>		<u>Course Skills</u>		<u>Totals</u>
	<u>Course content</u>	<u>Mark</u>	<u>Course content</u>	<u>Mark</u>	<u>Knowledge</u>	<u>Evaluation</u>	
(a)	Factors affecting finished products	4				4	
(b)	Prevention of dietary diseases	6			6		
(c)	Effects of storage, Preparation and cooking on nutrients	3			3		
(d)			Roles and responsibilities of DEFRA	3	3		
(e)			Food Politics	4		4	
Totals		<u>13</u>		<u>7</u>	<u>12</u>	<u>8</u>	

Higher Home Economics. Analysis of the 2007 Question Paper

Question Paper Summary: Mark Allocation

Question	<u>Unit title</u>		<u>Course Skills</u>		<u>Totals</u>
	<u>Resource Management</u>	<u>Consumer Studies</u>	<u>Knowledge</u>	<u>Evaluation</u>	
Section A	11	9	18	2	20
Section B					
1	20		8	12	20
2	12	8	12	8	20
3	9	11	13	7	20
4	13	7	12	8	20
Totals	<u>53 – 57</u>	<u>23 – 27</u>	<u>50 – 51</u>	<u>29 – 30</u>	
Target Range	<u>50 – 60 marks</u>	<u>20 – 30 marks</u>	<u>50 – 55 marks</u>	<u>25 – 30 marks</u>	80

[END OF MARKING INSTRUCTIONS]