

2006 Health & Food Technology

Higher

Finalised Marking Instructions

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**2006 Home Economics
Health & Food Technology**

Section A – Short Response Questions

Question		Response	Marking Guidelines
1	Name two perishable foods.	<p>Dairy</p> <ul style="list-style-type: none"> • Milk • Eggs • Butter • Margarine • Cream • Cheese • Yoghurt <p>Meat</p> <ul style="list-style-type: none"> • All meats – both cooked and uncooked <p>All fresh fruit</p> <p>All fresh vegetables</p> <p>Fish</p> <ul style="list-style-type: none"> • All fresh fish/shellfish/cooked fish/shellfish <p>Cereals</p> <ul style="list-style-type: none"> • Fresh pasta / cooked pasta/cooked rice/bread 	<p>1 mark</p> <p>2 x ½ mark for each food</p>
2	State two ways in which vitamin C is lost during food preparation.	<ul style="list-style-type: none"> • Oxidation • Leaching/soaking in water • Blunt knives • Use of alkali • Soaking • Cutting/chopping of fruit/vegetables • Keeping food warm • The use of iron knives and graters (this increases the rate of oxidation) • Peeling fruit/vegetables • Advanced preparation of fruit/vegetables 	<p>1 mark</p> <p>2 x ½ mark for each way</p>

Question		Response	Marking Guidelines
3	List two ways that food can become physically contaminated.	<ul style="list-style-type: none"> • Glass • Bolts • Nuts • Wire • Staples • Hair • Buttons • Finger nails/nail polish • Jewellery or example • Plasters • Rodents • Insects • Droppings • String • Wood splinters 	<p>1 mark</p> <p>2 x ½ mark for each way</p>
4	State two factors that may hinder the absorption of iron.	<ul style="list-style-type: none"> • Lack of vitamin C (ascorbic acid) • Non Starch Polysaccharides (NSP)/fibre (dietary) • Phytic acid • Tannin (found in tea) • Phosphates (found in some plant foods) • Oxalates • Food preservative EDTA 	<p>1 mark</p> <p>2 x ½ mark for each factor</p>

Question		Response	Marking Guidelines
5	Name two sensory tests.	<ul style="list-style-type: none"> • Rating test • Ranking test • Paired comparison test • Duo-trio test • Triangle test • Task threshold test • Profiling test • Discrimination test • Preference test 	<p>1 mark</p> <p>2 x ½ mark for each test</p>
6	State the minimum temperature required for safe re-heating of food.	<ul style="list-style-type: none"> • 82°C 	1 mark for correct temperature
7	What does the abbreviation NMES stand for?	<ul style="list-style-type: none"> • Non Milk Extrinsic Sugars 	1 mark for correct definition
8	Explain the term “coagulation”.	<ul style="list-style-type: none"> • Setting of protein when heated (eg albumin in egg white sets) 	1 mark for explanation
9	<p>Explain the following terms related to market research.</p> <p>(a) Qualitative</p> <p>(b) Quantitative</p>	<p>Qualitative</p> <ul style="list-style-type: none"> • The gathering of information from a small number of people (typically under 100 – eg focus group) • Used to increase understanding by using more focused market research • Asking small groups of people for their opinions on products • Asking small groups of people how to make the product more appealing • Involves investigating the features of a market as a whole through in depth research <p>Quantitative</p> <ul style="list-style-type: none"> • The gathering of information from a large number of people (normally at least 200 – eg telephone survey) • Research conducted using large numbers of people by questionnaires/interviews 	<p>2 marks</p> <p>1 mark for each explanation</p>

Question		Response	Marking Guidelines
10	State two advantages of Modified Atmospheric Packaging (MAP).	<p>Advantages</p> <ul style="list-style-type: none"> • Modified atmosphere inside pack lengthens the product shelf life • Reduces the need for preservatives (this addresses the preference for ‘natural’ products making it more attractive to the consumer) • Colour deterioration to the pack is inhibited (making the product look attractive) • Ease of use for the consumer (eg prevents sliced products from sticking together) • Mechanical protection of products against crushing • Uses less energy than freezing/drying/irradiation • Improved customer appeal/product presentation • Cheaper for manufacturers in the long run • Cost savings from manufacturer can be passed on to consumer • Thought to be healthier than irradiated/preservative laden products • Slows microbial growth • Reduces risk of food poisoning • Enzyme activity is slowed therefore safer/better appearance for consumer • Packaging is water resistant so will stop product drying out • Oxygen is reduced and therefore microbial growth is slowed. • Only high quality foods are used. 	<p>2 marks</p> <p>1 mark for each advantage</p>
11	<p>Explain the following terms.</p> <p>(a) Osteoporosis (b) Osteomalacia</p>	<p>Osteoporosis</p> <ul style="list-style-type: none"> • A bone disorder resulting in bone fracture/curvature of the spine due to a continual loss of bone mass/density • A brittle bone disease/bones may break easily • A bone disease resulting from poor calcium absorption • Porous bones <p>Osteomalacia</p> <ul style="list-style-type: none"> • Adult rickets • The strength of bones and teeth are not maintained due usually to a lack of vitamin D/too much phytic acid/too much NSP in the diet • Lack of vitamin D in the diet which results in too little calcium being absorbed (accept lack of calcium) affecting strength of bones 	<p>2 marks</p> <p>1 mark for each explanation</p>

Question		Response	Marking Guidelines
12	State two functions of water in the body.	<ul style="list-style-type: none"> • Prevents dehydration • Lubricates joints/membranes • Regulates body temperature • Keeps lining of mucus membranes/digestive tract/bronchial tubes moist • Transports nutrients round the body • Required for many metabolic reactions • Required for all body fluids (digestive juices, mucus, plasma, saliva, blood, lymph, sweat and urine) • Helps remove waste products/toxins (from the body) • Prevents constipation • Can help brain function • May help improve behaviour • Required for breathing/respiration. 	<p>2 marks</p> <p>1 mark for each correct function</p>
13	List one advantage and one disadvantage of irradiated foods.	<p>Advantages</p> <ul style="list-style-type: none"> • Extends shelf/storage life of foods • Reduces food spoilage/slows down decay of food products • Stops sprouting of vegetables (eg potatoes) • Controls/delays the ripening of fruits (eg bananas) • Kills parasites in meats (eg tapeworm in pork) • Can prevent food poisoning/food borne diseases • Can be used to destroy micro-organisms in food • Reduces the need for chemical preservatives • Can completely sterilise food making it safe for vulnerable groups eg hospital patients <p>Disadvantages</p> <ul style="list-style-type: none"> • Reduces nutritional quality of food • Some vitamins are sensitive to irradiation (Vitamins A, C, E, K and B group) • Flavour/texture may be slightly affected • Foods containing fats may become rancid • Specific storage, preservation and chilling methods may be required • Foods may look fresh but chemical changes continue so consumer may be buying an inferior product 	<p>2 marks</p> <p>1 mark for one advantage</p> <p>1 mark for one disadvantage</p>

		<ul style="list-style-type: none"> • Consumers are worried about possible side effects • There is no way of identifying food ingredients in processed foods that have been irradiated • Food may appear safe though not all bacterial toxins have been destroyed • Still relatively expensive technology (results in increased cost for consumer) 	
14	State one advantage and one disadvantage to the consumer of fruit juice that has undergone Ultra Heat Treatment (UHT).	<p>Advantages</p> <ul style="list-style-type: none"> • A long shelf life for fruit juice at room temperature (greater than 6 months can be expected) • Kills harmful bacteria in fruit juice • A completely sterile fruit juice is obtained • Protects fruit juice from microbiological spoilage (due to airtight packaging) • UHT fruit juice is generally cheaper than fresh fruit juice • Allows bulk purchase of fruit juice which is useful in emergencies • No specialised equipment required to store fruit juice <p>Disadvantages</p> <ul style="list-style-type: none"> • Flavour/texture of fruit juice is altered • Fruit juice must be used within five days of opening • Vitamin C in fruit juice is destroyed during treatment (although this is added back after treatment) • Variable losses of folic acid/vitamin C may occur during prolonged storage of fruit juice 	<p>2 marks</p> <p>1 mark for one advantage</p> <p>1 mark for one disadvantage</p> <p>linked to fruit juice</p>

Section B

- 1 a) The table opposite shows a day's nutrient content of meals eaten by a 76 year old woman.
- Using your knowledge of nutrition, and the information provided, evaluate the suitability of this day's nutritional intake.

Marking Instructions:

6 x 1 marks for each point of evaluation linked to the intake of a 76-year-old woman.

Total – 6 marks

Energy intake

- Energy is excess of the 1810 kcals, **which** could result in the 76-year-old woman becoming obese (obesity would occur if energy intake exceeds energy output).
- 42% of energy is from fat and this is above the recommended 35% in line with dietary targets **which** could result in the 76-year-old woman suffering from obesity/CHD.
- Energy intake is very high and the 76-year-old woman may not be as physically active **so** there will be a higher risk of obesity.
- Excess energy could be beneficial to the 76-year-old woman during the winter months **as** it may help provide warmth.
- Energy intake is very high but the 76-year-old woman may use the extra energy and **therefore** not put on additional weight.

Protein intake

- Protein intake is high (55g) and it is likely the excess will be stored as fat in the 76-year-old woman, **which** will further increase the risk of obesity.
- Excess protein is converted in the liver and used as a source of energy and **therefore** if this energy is not used by the 76-year-old woman, the risk of obesity is increased.
- Protein intake is high however this could be beneficial for a 76-year-old woman **which** would help with the repair and maintenance of body tissues.

Sodium intake

- Sodium/salt intake is high and **therefore** this could cause the 76-year-old woman to suffer from high blood pressure/hypertension.
- If these high sodium/salt levels are maintained the 76-year-old woman could **therefore** suffer from stroke/heart disease/kidney disease.

Fat intake

- Fat intake is too high (108g) and because of the woman's age/stage, it is unlikely this amount of fat is required **therefore** this will increase the risk of obesity/CHD.
- The % of total energy intake from fat is too high (42%)/higher than the recommended 35% of energy intake and **therefore** if this level has been maintained in the 76-year-old woman there will be a health risk of obesity/CHD.
- The 76-year-old woman's diet contains a lot of polyunsaturated fats (72g) and this could be beneficial to her **as** these contain omega 6/omega 3 which will help to lower her blood cholesterol/prevent blood clots/prevent heart disease.

Folate intake

- Folate intake is low (135µg) and this could be a problem for the elderly woman **as** it is not stored in the body/a constant supply is needed to help prevent (megaloblastic) anaemia.
- Low intake of folate will result in a reduction of red blood cells **which** could be even worse for the 76-year-old woman because her iron levels are also low.

Riboflavin intake

- Riboflavin intake is slightly high (1.5mg) **however** this will not pose a problem for the 76-year-old woman, as an excess of riboflavin is not known to cause any harmful effects.
- Riboflavin intake is slightly high (1.5mg) but it is water-soluble and **therefore** excess is washed out of the body so will not be toxic for the 76-year-old woman.
- Riboflavin is slightly high which is good **because** this will help release energy from carbohydrate and this may be good for the 76-year-old woman.

Iron intake

- Iron intake is low (4.0mg) which is bad **as** this could lead to anaemia in this 76-year-old woman.
- Iron intake is low and **therefore** the 76-year-old woman could suffer from tiredness/lacking energy.
- Iron intake is low **but** with good intake of vitamin C, iron absorption will be improved for this 76-year-old woman.
- Although iron intake is low, if this was in the form of haem iron it would be more easily absorbed for this 76-year-old woman **therefore** helping to prevent anaemia.

General comments

- As the nutrient content is based on one day's meals, the elderly woman's diet may not be as high in fats/sodium/protein/energy if looked at on a weekly/three-day basis and **therefore** she may not suffer from the long term health problems.
- As the nutrient content is based on one day's meals, the elderly woman's diet may not be as low in iron/folate if looked at on a weekly/three-day basis and **therefore** may not suffer from anaemia/tiredness etc.
- If this is a typical nutrient intake for the elderly woman, she could already be suffering from diet related illnesses such as CHD/obesity/hypertension/anaemia.

- 1 b) List a set of **four** dietary guidelines to help reduce the risk of obesity in women over 75 years of age.

Marking Instructions:

4 x 1 mark for each guideline.

Total – 4 marks

- Try to include plenty of fresh fruit and vegetables in their diet.
- Have breakfast every day.
- Use low sugar varieties of foods (examples accepted).
- Avoid processed snacks high in sugar/fat.
- Avoid prepared convenience meals (examples accepted).
- Avoid adding sugar to cereals/tea/coffee.
- Cut down consumption of fatty foods.
- Use low-fat varieties eg semi skimmed/skimmed milk/low-fat cheese/low-fat spread.
- Refrain from eating foods such as sausages/cakes/biscuits/crisps/pastries.
- Avoid fried foods.
- Grill/stir-fry/steam foods as an alternative to frying (use healthy cooking methods).
- Use low-fat spread/very thin spreading of butter.
- Select a healthy snack eg fruit/vegetables/crispbreads/low-fat yoghurt (rather than a high fat/sugar snack) (example accepted).
- Include plenty of starchy carbohydrates eg wholemeal bread/rolls/cereals/baked potato/home made soup/pulses.
- Drink water as an alternative to sugary drinks.
- Reduce overall calorie intake
- Choose lean meat (example accepted).
- Cut fat off meat (example accepted.)
- Any other suitable examples.

- 1 c) Give **three** reasons which may account for the low intake of fruit and vegetables by some elderly people.

Marking Instructions:

3 x 1 mark for any three reasons which must take account of the elderly.
(Headings have been provided to assist marking but are not required by the candidate)

Total – 3 marks

Cost/Available income

- Cost of fruits/vegetables may be more expensive and elderly people may be on a tight budget (pension).

Likes/Dislikes/Personal taste

- Fruit/vegetables may be difficult for elderly to eat without prior preparation making them unappealing.
- Elderly people are often set in their ways with regards to foods and may be unwilling to trial and purchase foods, which they may not be used to.
- Residual smells in catering establishments/residential homes/day care centres from vegetables may put the elderly against consuming them.
- **Elderly may choose sweet food as a quick snack and therefore not prepare/consumer fruit and vegetables.**

Time available

- Fruit/vegetables may be difficult to eat without prior preparation which may be time consuming making them unappealing/unsuitable for the elderly.
- Fruit/vegetables have a short storage time so more frequent shopping trips are required and this could be difficult for the elderly/infirm.

Knowledge

- Limited experience of eating/tasting a range of fruit/vegetables as a child/adult will affect current consumption by the elderly.
- Limited knowledge on how to prepare fruits/vegetables may result in less willingness to purchase/consume by the elderly.
- Limited knowledge on the Scottish Dietary Targets and the importance of increasing fruit/vegetable intake by the elderly.

Availability

- Limited availability of high quality/fresh fruit/vegetables at local corner shops, which may be the preferred place to shop for the elderly due to poor mobility/inadequate transport.
- Vegetables served at catering establishments/residential homes/day care centres are overcooked and therefore unappealing to the elderly.

Convenience

- Convenience foods/meals for one which may be consumed by the elderly are often low in fruit and vegetables.
- As elderly people may not have a freezer they may not be able to store these fruit and vegetables.

Advertising/marketing/promotional techniques

- Lack of fruit/vegetable advertising in comparison to the promotion of high sugar/fatty foods applies to elderly as well as other age groups.

Health

- Fruit/vegetables can sometimes have unpleasant side effects on the digestive system for the elderly.
- The elderly may find some fruits/vegetables difficult to chew/eat especially if they have lost their teeth/have false teeth.
- Loss of manual dexterity in the elderly may make preparation/cooking of vegetables difficult.

Transport/geographical location/access to shops

- Limited availability of high quality/fresh fruit/vegetables at local corner shops, which may be the preferred place to shop for the elderly due to poor mobility/inadequate transport.
- Fruits/vegetables tend to be quite heavy and this could be particularly problematic for the elderly if they have problems carrying heavy items/no transport.
- As fruit and vegetables are perishable this may require more frequent shopping trips which will increase cost/time required for transport.

1 d) Explain **one** cause and **one** effect on health of **each** of the following dietary diseases.

- (i) Diverticulitis
- (ii) Hypertension

Marking Instructions:

2 x 1 mark for diverticulitis

2 x 1 mark for hypertension

Total – 4 marks

Diverticulitis

Causes

- Low NSP intake.
- Low intake of wholemeal bread/cereals/pulses.
- Low intake of fruit/vegetables.
- Low fluid intake (insufficient water in the diet).
- High intake of refined and convenience foods.
- Lack of physical exercise/activity (to keep the intestine active).
- Stress (has a knock-on effect).
- **High fat / saturated fat intake**

Effects

- Abdominal pain.
- Vomiting.
- Diarrhoea/constipation
- Fever (possibly).
- Flatulence.
- Bloating
- Complication – life threatening infection in the abdomen.
- **Pockets formed on the intestine.**

Hypertension

Causes

- Stress/annoyance/anxiety.
- High sodium/salt intake.
- High fat intake.
- Lack of physical exercise/activity.
- Obesity.
- Smoking.
- Alcohol.

Effects

- Occasional symptoms – headache/blurred vision/breathlessness.
- Stroke.
- Heart Disease.
- Kidney Disease.

1 e) Explain the effect of heat on carbohydrates.

Marking Instructions:

3 x 1 mark for each explanation

Total – 3 marks

Sugar

Dry Heat

- Sugar first melts, then caramelises and finally burns (leaving a black residue).
- Sugar contributes to the colour of baked items by caramelisation on exposure to the dry heat of the oven, forming a golden brown crust.

Moist Heat

- Sugar first dissolves, and then at high temperatures/prolonged heating it becomes a syrup.
- Sugar syrup will caramelize and finally burn/char when the water has evaporated.

Overheating

- Nutritional value as energy source is not impaired/lost unless the sugar is burnt/charred.

Starch

Dry Heat

- Starch changes to dextrin when foods are roasted/baked/toasted (the dextrin is more soluble than starch).
- The surface of any baked item changes to dextrin during cooking in the oven.
- Dextrinisation caused by dry heat contributes to the brown colour.

Moist Heat

- Starch grains first soften and swell, then absorb water causing some to rupture.
- Once ruptured, releases starch which forms a gel.
- Gelatinisation occurs when starch granules absorb water and swell which thickens the mixture.

Overheating

- Overheating of starch causes charring and damage to its structure.

2	a)	A food manufacturer plans to develop a bread based snack. Identify and explain four stages in the development of this snack.
Marking Instructions:		
4 x ½ mark for identification of stage in development of this product.		
4 x 1 mark for each explanation linked to bread based snack .		
Stage has to be identified before mark is awarded for explanation. Where the stage is incorporated in the explanation this can be credited.		
Total – 6 marks		

Development Stage	Explanation
Concept generation	<ul style="list-style-type: none"> • This stage is important as it involves developing ideas for a new bread-based snack. • Thinking stage/thinking up new ideas, for a gap in the market within the bread based snack range. • Development of ideas from market analysis of popular existing bread based snack products, looking at, for example, why a certain flavour is popular/looking for something similar yet new and different. • Manufacturers do not want to replicate existing bread based snack products in the market. • Developers will consider cost/portion size/methods of reheating and cooking/flavour/ texture/appearance of bread based snack. • Manufacturers need to establish if there is a gap in the market for a new bread snack.
Concept screening	<ul style="list-style-type: none"> • Consider all ideas for a new bread-based snack, keep some and discard some. • This stage is important as it allows the production process to move away from initial ideas to actual development issues for the bread-based snack. • Allows the manufacturer to develop a specification for new bread-based snack against which to develop ideas. • Specification allows manufacturer to eliminate ideas for bread based snack that might be costly/difficult to process/not meet other constraints. • The best ideas are taken forward and a specification for new bread-based snack is written. • Allow for new bread-based snack product ideas to be generated so a

	<p>prototype can be developed.</p> <ul style="list-style-type: none"> • Measuring the proposed ideas against the design specification for the bread-based snack acts as a process of elimination for some products.
Prototype production	<ul style="list-style-type: none"> • A prototype is an example or specimen of what the bread-based snack product will be like. • Prototype of the bread-based snack is developed and measured against the specification. • Prototype of the bread-based snack is tested for appeal and may be further modified or rejected. • Period whereby prototypes of the bread-based snack are created for a possible range of bread based products and some will be eliminated. • It would be too costly to trial every bread-based snack idea, therefore only the products that match the specification can be tested.
Product testing	<ul style="list-style-type: none"> • This is an important stage as it allows the bread-based snack product to be tested on consumers so opinion can be obtained (eg by trial by work forces/social groups/various ages/tasting panels etc.) • Allows the bread-based snack product to be further refined or eliminated as a result of consumer opinions. • Allows the range of possible bread-based snack solutions to be further refined – the most suitable and popular product will be kept. • Various groups will be used to gain market opinion of the possible bread-based snacks. • Ideas may be refined/modified to result in the most popular bread product being kept. • Certain bread based snack products will be eliminated due to their unfavourable tests.

<p>Information and advertising materials designed for packaging</p>	<ul style="list-style-type: none"> • Allows the legal team and/ or advertising team to begin to develop the important work in relation to selling the bread-based snack product. • Allows the advertising team to devise and/or cost the advertising campaign, which will affect selling price of bread-based snack product. • Allows the advertising team to cost the packaging, which will affect selling price of the bread-based snack product. • Legal labels to comply with legal statutory requirements will be designed and produced for the bread-based snack. • Type of packaging will be investigated and tested for the bread-based snack.
<p>First production run</p>	<ul style="list-style-type: none"> • Allows for the production of the bread-based snack for the first time as a full production run, so the product can be assessed. • Allows the quality assurance team to test the bread based snack product to ensure quality and/or uniformity of standards during the manufacturing process. • An important stage in the development of the bread based snack product as it affects many of the other stages eg if ingredients are changed then the labelling would require to be changed.
<p>Marketing plan</p>	<ul style="list-style-type: none"> • Allows for the development of a range of activities to promote the product eg promotion of product within the shop, free recipes etc. • Initial pricing of the bread-based product will be considered eg low to attract consumer interest, high to denote quality. • Packaging will be finalised to include bread based snack product price. • Positioning of bread-based product within the market to attract consumer interest. • Promotion of bread-based product eg money off, linked with drink purchase, meal deal promotion etc.

Launch

- An important stage of the plan as the bread-based product is now on sale.
- Piloting of the bread-based product could be carried out to monitor the sales in a small area initially. (From experience gained here the manufacturer can adjust the marketing approach before using it more widely). (Piloting to gauge success of product).
- Market monitoring finally the bread-based snack product is launched into the national market place.
- Sales figures will be checked very carefully initially to measure success of bread-based snack product.
- Market research will provide regular feedback so that the manufacturer can continually re-think/re-adapt the marketing approach of the bread-based snack as quickly, economically and effectively as possible.
- Market research will provide regular feedback on the bread-based snack. This allows the product to continue to be refined and improved.
- Test marketing carried out to monitor initial sales of the bread-based product. The manufacturer would adjust marketing if necessary.
- Market monitoring, the final launch of the bread-based snack product, and analysis of sales to establish product position against top selling products.

2 b) Evaluate the use of market research in product development.

Marking Instructions:

4 x 1 mark for each point, which evaluates the market research within product development.

Total – 4 marks

(Headings have been provided to assist marking but are not required by the candidate)

Target market

- Market research in product development can be used to establish what would influence consumers to buy a new product, **therefore** establishing requirements for a target market.
- Market research in product development can be used to establish if there is a need for a certain product, which can then be investigated further to, find out what that need entails and **therefore** establish if the product has potential.
- Market research in product development can evaluate existing products already available and would **therefore** enable developer to establish strengths that should be incorporated in the new product.
- Market research in product development allows checking of what is already on the market **so** that they can develop a new or make changes to an existing item.
- Market research in product development is used to assess the possible competition for a product and **therefore** establish whether it is viable to continue.
- Market research in product development allows establishment of market trends, **therefore** finding out what product the consumer wants to buy.
- Market research in product development can narrow down when a product is bought **which** enables the developer to establish a specific need.
- Market research in product development establishes where the product is bought, **so** that developers can target correct market place.
- Market research in product development identifies the target market that would be interested in buying the product **so** that an appropriate product can be developed.
- Market research in product development offers the design team the models available **which** allow them to develop and change existing ideas.
- Market research in product development establishes what would influence consumers to buy a new product, therefore establishing requirements for a target market **so** company is more likely to produce a successful product.
- Market research in product development is used to establish if there is a need for a certain product **so** can increase product choice for consumers.

- Market research in product development can evaluate existing food products already available **so** can help the developer establish the product's strengths/weaknesses and alter accordingly.
- Market research in product development is used to assess the possible competition for a new product, **therefore** developer can decide whether it is viable to continue.
- Market research in product development is used to establish market trends, **therefore** finding out what the consumer wants to buy so can increase sales.
- Market research in product development establishes where/when a product is bought to enable the developer to market the product accordingly **so** saving time/money/increasing sales.
- Market research in product development is used to provide regular feedback **so** manufacturer can re-think/re-adapt the marketing approach.
- Market research in product development provides manufacturers with valuable consumer information ie likes and dislikes of product **which** could be used to influence development/ modification of the product.

Price

- Market research in product development is used to gain public opinion on cost of product **so** the manufacturer/customer can assess if they think the product is value for money/economical/viable to produce.
- Market research in product development offers price comparison **which** allows the manufacturers/retailers to make a decision regarding a suitable price.
- Market research in product development can gain public opinion on correct costing of product, **so** can increase sales in final production stage.

Sensory tests

- Market research in product development enables manufacturers to conduct sensory tests **which** help to determine opinion on appearance/texture/smell of a potential product.
- Market research in product development (eg sensory testing) enables manufactures to gain public opinion on overall product acceptability/quality/preference, **which** helps to determine a product leader.
- Market research in product development offers knowledge on the quality of the items within a price range **thus** allowing the developer to make alterations in this area.
- Market research in product development can be a lengthy process which would not offer an immediate product to sell **therefore** may add extra time/cost to product development process.
- Market research in product development enables manufacturers to conduct sensory tests **so** as to determine opinion on new products' acceptability before full scale production thus saving money.

Packaging

- Market research in product development could consider suitable types of packaging which the consumer would prefer for the product and **therefore** help the design process.
- Market research in product development helps to consider suitable types of packaging, **so as** to determine consumers' preference for the new product/protect product from contamination/safer for consumer.
- Market research in product development is used to gain public opinion on suitable methods of cooking and/or reheating for the product, **therefore** predicting criteria for product labelling and/or packaging so more acceptable product for consumer/to help increase sales of final product.

Costs

- Market research in product development can be a costly process which would cut down on any profit for the company **as** professional fees would have to be paid.

2	c)	Identify two voluntary points of information found on food labels. Explain how each point may benefit the customer.
<p>Marking Instructions: 2 x ½ mark for identification of voluntary requirements of food labelling. 2 x 1 mark for each explanation. Voluntary information must be identified before mark can be awarded for explanation. Where the voluntary requirement is incorporated in the explanation this can be credited.</p> <p style="text-align: right;">Total – 3 marks</p>		

Voluntary Information	Explanation linked to food labelling
Nutritional labelling	<ul style="list-style-type: none"> • Many manufactures provide labels, which show nutritional information to enable consumers to make healthier choices. • If a claim is made “low fat” a manufacturer needs to support this with nutritional labelling to make it clearer for consumers. • Information is usually provided per 100grams or 100ml/per serving to allow consumers to compare products. • In line with dietary guidelines eg baked beans contain one serving per half can to allow consumers to then make informed choices. • Allergenic ingredients can be displayed to enable consumer to make informed choices to suit their needs. • Ingredients that form part of a compound if less than 25% of the product, enables consumers to be selective with meat-based products. • Certain Genetically Modified foods (such as tomato puree/paste/rennet) must be listed so consumers can then decide whether to purchase. • Types of carbohydrates are stated as a percentage of sugar/starch allowing consumers to make informed/healthier choices. • Types of fat are stated as a percentage of saturates/unsaturates/ polyunsaturates allowing consumers to make informed choices. • Labels may include a full list of vitamins/minerals allowing consumers to make informed choices. • Labels may identify sodium/salt which allows consumers to compare products to suit their dietary needs. • Dietary fibre/NSP is written as a percentage or weight on label which enables consumers to compare products and make healthier choices.

<p>Bar codes</p>	<ul style="list-style-type: none"> • When a packet contains a bar code it can be scanned at the checkout, the scanner reads the code then registers the price, which the consumer can then check to see correct price was paid. • Consumer able to see running total of products being scanned and will decide which method of payment to use. • Speeds up payment at the point of sale as the product is electronically scanned which saves the consumer time. • Self scan products help speed up the process and saves time for the consumer. • Allows for accurate stock control ensuring that the consumer gets the full range of products.
<p>Customer care information (or suitable example)</p>	<ul style="list-style-type: none"> • Advice is given regarding safety when cooking and/or reheating the product to protect consumer from any food safety and/or poisoning possibilities. • Diagrams or suggestions for adult supervision if children are involved to prevent any accidents. • Suggestions are provided as to how the product can be served or adapted, to help meet the needs of consumers. • Recipe ideas are provided to cover consumers' own likes or dislikes. • Web addresses provided to enable consumer to find out more about the product and/or company.
<p>Environmental information</p>	<ul style="list-style-type: none"> • Recycling/disposable symbols may influence the environmentally aware consumer to purchase a product. • Recycling glass symbol indicates to the consumer that the product has been produced from the recycled glass which is more environmentally friendly. • Recycling symbol indicates that glass/aluminium/cardboard/plastic can be recycled which will be more environmentally friendly/reduce costs to future consumers. • 'Tidy man' symbol encourages consumers to protect the environment by disposing of rubbish carefully.

<p>Organic food labels</p>	<ul style="list-style-type: none"> • Organic food labels inform the consumer that the product has been produced organically. • Organic food labels inform the consumer that the product has been grown without aid of artificial fertilisers/pesticides which may be important for consumers who have allergies/wish to avoid chemicals. • Foods produced by organic farming methods produce limited damage to the environment which may be good for consumers who are concerned about the environment. • Organic food labels increase consumer confidence that no man made chemicals that could be carcinogenic have been used.
<p>Vegetarian labels</p>	<ul style="list-style-type: none"> • Vegetarian labels/logos must fulfil certain requirements laid down by the vegetarian society and therefore help reassure the consumer. • Products bearing the vegetarian logo must be free from animal flesh/meat/bone stock/animal carcass fat/gelatine/aspic or any other products resulting from slaughter and therefore this helps reassure the consumer. • Products bearing the vegetarian logo must use free range eggs and so reassure the consumer. • Products bearing the vegetarian logo must be free from cross contamination with non vegetarian products/ingredients in the production process and so reassure the consumer. • Consumers are protected from false labelling of vegetarian products under the Food Safety Act 1990.
<p>Nut allergies</p>	<ul style="list-style-type: none"> • A label which indicates that the product does contain/may contain nuts so helpful to a consumer who wishes to avoid a product containing nuts/suffers from a nut allergy.

2 d) Evaluate the use of organic foods to the consumer.

Marking Instructions:

4 x 1 mark for each evaluative comment on influence on consumer's choice of food.

Total – 4 marks

Organic Produce

Positive

- Organic food uses less chemical fertilisers/chemical **therefore** consumers may prefer to buy these products as they are perceived to be healthier/fewer side effects/allergies.
- The organic market is expanding **so** there will be increased competition and this may mean a price reduction for the consumer/more choice for consumer.
- Consumers may be reassured they are causing less harm to the environment **so** will select them in preference to non-organic.
- Organic foods may be more in keeping with some peoples' ethical beliefs **so** this could influence their choice.
- Consumer may select organic foods, **as** flavour is perceived as better because they use less chemicals.

Negative

- Organic foods have fewer chemicals **so** they have to be used within a short time of purchase as they decay very quickly.
- Organic foods have fewer chemicals so they have to be used within a short time of purchase **therefore** consumers should be aware that organic vegetables have to be purchased regularly as they do not keep.
- They have fewer chemicals therefore their shelf life is shorter and **so** need to be used quickly to prevent decay/may mean more waste/shopping trips for consumers.
- Organic foods are more expensive **but** consumers buy them because they feel they are better for the environment in the long term.
- Organic foods tend to be more expensive to buy, **therefore** not available to low-income groups, only available to high income groups.
- Organic foods tend to be more expensive to buy as it is difficult to justify the increased cost on nutritional grounds, **therefore** the consumer may choose not to buy.
- Organic products are not completely fertiliser/chemical free, many are permitted in organic farming, and **therefore** some risk to health is still possible.

- There is no clinical evidence that organic foods are more nutritious/healthy **therefore** no evidence the greater expense is justified.
- Quality may be less uniform which may make it unacceptable to the consumer, **as** appearance is less attractive.
- Regulation of organic products may be difficult eg a jar of organic pasta sauce comprises many ingredients **therefore** it would be difficult to ensure that each is 100% organic.
- Many organic foods are grown in countries where regulations are less stringent **therefore** it is difficult to be sure that the foods are completely organic.
- Many organic foods are flown in from large distances and **therefore** are not environmentally friendly due to their fuel consumption.

2 e) Explain **three** ways in which the Food Safety Act 1990 protects the consumer.

Marking Instructions:

3 x 1 mark for each explanation

Total – 3 marks

- The Act covers the whole food chain from farm and/or factory to point of sale for the consumer, thus reducing the number of cases of food-borne illness.
- All food premises must be registered which enables Environmental Health Officers to monitor food hygiene/safety within the premise and so helps protect the consumer.
- The court can impose a prohibition order on the manager of any food business not complying with the Act and so helps protect the consumer.
- Anyone working in the food business must conform to this Act which ensures all food produced is safe for consumers to eat.
- The Act relates to temperature controls, thus eliminating potential food poisoning for consumers.
- The Act relates to treatment/composition/labelling of the food which protects the consumer.
- Environmental Health Officer/Trading Standards Officers can take samples of food for analysis, which means legal action can occur if food is falsely described/labelled and so helps protect the consumer.
- It is an offence to produce and/or sell to the consumer any food that is injurious to their health.
- The Food Safety Act is a criminal law that demands that food must not injure the health of consumers.
- The Food Safety Act demands that food cannot be unfit for human consumption and therefore helps protect the consumer.
- The Food Safety Act enforces that food must not be contaminated and therefore helps protect the consumer.
- The Food Safety Act enforces strict hygiene rules and therefore helps protect the consumer.
- Consumers are protected by the Food Safety Act if a product is not of a stated quality.
- The Food Safety Act lists it an offence to mislead the consumer via a label and therefore helps protect the consumer against false claims.
- This Food Safety Act controls food hygiene in factories/hotels/shops/cafes/restaurants/stalls/mobile shops/vehicles, therefore the consumer is protected in many ways.
- Additives must meet the requirements of the Food Safety Act and have set controls to conform to.

3 a) Evaluate the impact of the following menu on the health of primary school children.

- Cheese stuffed crust pizza with vegetable and pepperoni toppings.
- Self service salad bar
- Unlimited soft drinks

Marking Instructions:

5 x 1 mark for each point evaluated in detail linked to the health of a primary school aged child.

Total – 5 marks

Pizza

Cheese

- Cheese contains calcium, which will help form children’s bones and teeth, **which** is crucial at this development stage.
- Cheese has a high fat content, especially saturated fats **which** may lead to obesity in children/ contribute to coronary heart disease later in life.
- Cheese does contain protein, **which** primary children will require, especially for growth, maintenance and repair of their body tissues.
- Cheese contains a high salt content, **which** (develop a liking for salty foods) could contribute to high blood pressure/coronary heart disease later in life.
- Cheese contains the fat-soluble vitamin A to help with keeping the mucous membranes moist and **so** help prevent infection in primary school children.
- Cheese contains the fat-soluble vitamin D; Vitamin D will enable calcium to be absorbed **therefore** forming and maintaining strong bones and teeth in primary school children.
- High fat content is not in line with Scottish Dietary Targets to ‘eat less fat’, **therefore** could lead to obesity in primary school children.

Vegetables

- Vegetables are high in non-starch polysaccharides/NSP/dietary fibre, which help prevent constipation/bowel disorders **therefore** children should have regular bowel actions.
- Tomatoes in the pizza base are high in Vitamin A & C, which help stop fatty deposits sticking to artery walls, **thus** preventing coronary heart disease in later life.
- The selection of vegetables in the pizza may include the ACE “Anti oxidant” vitamins **which** will help prevent cancers and/or heart disease in later life.
- The vegetable content of the pizza will help children to increase their fruit and/or vegetable consumption, **therefore** increasing intake in line with current dietary advice.

Pepperoni

- Pepperoni is very high in saturated fat, **which** may lead to obesity in the primary children/and contribute to heart disease/stroke/kidney disease later in life.
- Pepperoni has a high salt content, which could contribute to high blood pressure and may contribute to heart disease/kidney disease/stroke later in life.
- The high salt intake in pepperoni will not help children to reduce his/her salt intake in line with current dietary advice; **as** a result this may lead to high blood pressure in later life.
- Since pepperoni is meat based it will contain high biological value protein, **which** is essential for the child's growth development/to maintain and repair body tissue when required.
- Pepperoni will have a good iron content so can help prevent anaemia in primary children.

Pizza base

- The pizza base will contain carbohydrates, **which** will provide energy for the active children to burn off.
- The pizza base will contribute towards the total complex carbohydrate intake for the day, helping to fill up the child **so** they will not snack on more fatty and/or sugary products.
- The pizza base will help the child to reach the target 'eat more bread', **as** it is a carbohydrate base/ for increasing complex carbohydrates.

Overall

- The protein intake is high due to the cheese and pepperoni toppings but excess protein can be converted to energy which is good **as** school children are usually active.
- Active children who eat excess protein and do not burn off this energy, may **therefore** become obese.

Salad bar

- The selection of salad ingredients will be high in vegetables, which provides children with non-starch polysaccharides/NSP/dietary fibre, **which** help prevent constipation/bowel disorders; therefore the children should have regular bowel actions.
- The salad bar vegetables will contain the ACE "Anti oxidant" vitamins **which** will help prevent cancers/heart disease in the children in later life.
- Selection of vitamin C vegetables eg tomatoes will help iron absorption, **therefore** preventing anaemia in primary school children.
- Selection of potato salad/coleslaw/pasta salad/sweetcorn will contribute towards the total complex carbohydrate intake for the day, **therefore** helping to fill up children so they will not snack on more fatty/sugary products.

- Selection of potato salad/coleslaw/pasta salad/sweetcorn will contribute towards the total complex carbohydrate intake for the day and provide children with non-starch polysaccharides, **which** help prevent constipation/bowel disorders; therefore children should have regular bowel actions.
- Eat as much as you want will encourage children to over eat, **which** could result in obesity.
- Children choose the salads, **therefore** taking account of their likes and dislikes/encouraging them to taste different or new healthier items
- If salads have no/little dressing/mayonnaise they will be low in energy **so** can help prevent obesity in children.
- Children may not choose salads and therefore will not obtain NSP so could lead to constipations/ bowel problems etc.

Salad bar-Dressings

- Mayonnaise based dressings will be very high in saturated fat, **which** may lead to obesity/ contribute to coronary heart disease later in life.
- Oil based dressings will be higher in polyunsaturated fats and although they will contribute to total fat, they will not increase the saturated content, **thus** preventing cholesterol build up in later life.
- Yoghurt based dressings contribute to children's calcium content, **therefore** strengthening bones and teeth.
- Yoghurt based dressings will be low in fat **so** can help prevent obesity/CHD in later life in primary children.
- Regular added sprinkles eg croutons and bacon bits will contribute to total fat content, **therefore** leading to obesity in the children.

Unlimited soft drinks

- High sugar content in drinks, **which** could result in dental caries in children's developing teeth.
- General high-energy content, **which** could lead to obesity in children/contribute to coronary heart disease later in life.
- High sugar/energy content, **therefore** encouraging a sweet tooth in the children and should be avoided.
- Additives are used in the drinks, **which** could cause allergies or trigger asthma attacks (preservative Sodium Benzoate) in children.
- The range of additives eg (colour Tartrazine), used in the drinks can cause health problems, **which** could result in hyperactivity/headaches in children.
- Concern regarding the amount of sweeteners used in sweet drinks and consumed by children **as** they may have a long-term effect on health.
- As drinks are unlimited children are being encouraged to consume in excess/fill them up before consuming their food, **which** will lead to very high-energy intake and obesity.

- 3 b) Evaluate the effectiveness of endorsement by a celebrity personality when marketing for a fast food outlet.

Marking Instructions:

3 x 1 mark for each evaluated point on endorsement by a famous celebrity/fast food outlet.

Total – 3 marks

Positive

- Promotion by the famous celebrity can be used with various medias TV, radio, in-store, posters etc, which captures large audiences for this fast food outlet **so** can increase sales.
- High profile famous personality may be an indication of the status of the fast food outlet being marketed and **so** increase sales.
- Purchasing from the fast food outlet being endorsed by a celebrity, **results** in the consumer feeling they are buying into the lifestyle of the celebrity.
- Consumers may be more likely to be aware of the fast food outlet and remember it in the future if a famous person is involved, **therefore** making a connection with outlet and celebrity.
- By using a personality who has a positive image, such endorsement by a famous personality will have a positive effect and **therefore** increase the marketing/sales of the product.
- Consumers are more likely to purchase the food from the fast food outlet **as** they think a famous personality has ‘tried’ the product so can increase sales.

Negative

- Chosen celebrity may not appeal to a large target audience **so** useful only for specialised market, which is not suitable for a fast food outlet.
- Children who “Hero Worship” will visit the outlet in the belief they have something in common with their celebrity **which** may increase their risk of obesity/CHD/dental caries.
- Topical use of celebrity eg sport celebrity during the Olympics so everyone recognises the person and then focuses on what is being promoted in the fast food outlet **therefore** this means promotion will be seasonal and short lived.
- Costs vary depending on the status of the celebrity **therefore** fast food outlet companies with small advertising budgets may be limited in their choice of celebrity.
- This can be an expensive method of promotion, **as** the fast food outlet may have to pay the personality to carry out the advertising/high cost which is then passed on to the consumer.
- When the personality has a negative image, **such** endorsement by a famous personality will have a negative effect on the marketing/sales of the product from the fast food outlet.

3 c) Identify and explain **two** control measures which may be taken to prevent the spread of Staphylococcus aureus.

Marking Instructions:

2 x ½ mark for identification of control measures.

2 x 1 mark for each explanation.

Control measure must be identified before mark can be awarded for explanation. Where the control measure is incorporated in the explanation this can be credited.

Total – 3 marks

Control Measure	Explanation
Good personal hygiene of the food handler	<ul style="list-style-type: none"> • Washing hands before and after handling food to prevent Staphylococcus aureus contamination from hands. • Washing and drying of hands after visiting the toilet to prevent Staphylococcus aureus contamination from hands. • Washing of hands especially after sneezing, coughing, blowing nose or smoking as bacteria multiply in these areas close to mouth and nose to prevent spread of Staphylococcus aureus. • Cuts/boils/sores should be covered with a suitable dressing, preventing Staphylococcus aureus contamination of food by bacteria/blood. • Cover cuts with waterproof dressings to prevent Staphylococcus aureus contamination of food by the bacteria/blood. • Exclude handlers with septic cuts/boils to prevent Staphylococcus aureus contamination of food by the bacteria/blood. • Exclude handlers with excessive coughs/sneezes/discharges from eyes/ears/nose as they can spread Staphylococcus. • Staphylococcus is predominantly found in the nose and mouth, preventing sneezing and coughing will prevent droplet infection. • No smoking during food preparation as contact with the mouth increases Staphylococcus. • No smoking during food preparation as coughing produces droplet Staphylococcus aureus infection. • Hands must be kept clean at all times so that Staphylococcus aureus is not transferred to the food being prepared. • Nails should be short so that Staphylococcus aureus is not trapped beneath the nails.

	<ul style="list-style-type: none"> • People who continually put their hands in their mouth should not be employed as food handlers as this will increase Staphylococcus. • Food handlers should be given hygiene training to ensure they are aware of preventing the spread of Staphylococcus aureus.
Ensure high standards of kitchen hygiene	<ul style="list-style-type: none"> • Avoid handling food/use different utensils/knives/chopping boards for high and low risk foods to prevent Staphylococcus aureus spread. • Avoid use of raw cow/goat milk in any foods, as these can be main sources of the bacteria. • Washing work surfaces ensures Staphylococcus aureus that have been transferred cannot be passed onto other foods and/or equipment. • Wash equipment to ensure that any Staphylococcus aureus that has been transferred to equipment has been removed. • Incorporate a HACCP system to ensure threat of Staphylococcus aureus is avoided.
Thorough cooking/ reheating	<ul style="list-style-type: none"> • Rapid cooking of high-risk foods as the bacteria produces a toxin in food, which is difficult to destroy by normal cooking temperatures. • Reheat foods once only to 82°C to destroy Staphylococcus aureus.
Correct storage	<ul style="list-style-type: none"> • Refrigeration (below 5°C) of high-risk foods to prevent spreading the risk of the bacteria multiplying. • Freezing (-18°C) of high risk foods to prevent spreading the risk of the bacteria multiplying. • Store hot foods at 63°C to prevent Staphylococcus aureus multiplying.

3 d) Explain **two** advantages of **each** of the following technological developments.

- (i) Extrusion cooking
- (ii) Functional foods
- (iii) Myco-proteins.

Marking Instructions:

2 x 1 mark for each advantage from each technological development.

Total – 6 marks

Extrusion Cooking

- Wide variety of breakfast cereals and snacks available in different shapes or sizes to add fun dimension for younger children – (Kellogg’s Muddles).
- Range of precooked noodles/pasta shapes that appeal to specific groups (eg children - spaghetti in alphabet shapes).
- Range of precooked/pasta shapes/noodles adds variety in colour/texture/shape to the diet.
- Savoury snacks are often fortified with additional vitamins, seen as a nutritional advantage.
- Pillow shaped snacks can have fruit puree within them, this contributes to daily fruit portion, following current dietary advice.
- Extrusion can make snacks more attractive by refining the rough texture from bran, making it more appealing/palatable.
- Uses readily available/cheap ingredients therefore low in cost to manufacturer/cheaper for consumer.
- Starch is easier to digest/more easily absorbed into the bloodstream.
- Slightly higher levels of NSP which aid the digestive system.
- Can be processed with no added fat therefore helps to meet the target to reduce fat.
- Extruded products have a long shelf life.

Functional Foods

- Food products are marketed as having specific health effects so can be beneficial to consumer.
- Consumers may purchase a functional food in order to obtain a specific nutrient which they lack if it is normally found in foods they find unpalatable (eg omega 3 in oily fish).
- If family history points to heart disease, selecting a functional spreading fat (which contains plant sterols), could effectively control blood cholesterol within the family throughout their life.
- Many of the probiotic drinks help to fight a wide range of food poisoning bacteria, (including E.coli), which children/elderly are at risk from.
- Increased variety of functional foods are now available so more choice for consumer.

- Certain bacteria (Bifid bacteria & Streptococcus thermophilus) found in bio yoghurts could prevent diarrhoea in children/elderly.
- Calcium fortification is common in cereal snacks and packs advertise to the children's market by stating what the function of calcium is, so parent is better informed.
- Some functional foods will provide a reasonably inexpensive source of additional minerals/vitamins in the diet.
- Convenient for today's lifestyle by being able to bring about health benefits quickly.

Myco proteins

- Myco proteins are seen as a good nutritional value product so may be beneficial in the diet.
- Myco proteins are similar to chicken in texture/colour therefore appeals to fussy eaters.
- Myco proteins readily absorbs flavour of certain ingredients, so can be used to cook a favourite meal.
- Myco proteins although expensive compared to meat, there is no waste as it is free from gristle, fat and bone, consumers may prefer the smoother texture.
- Myco proteins are a useful food for consumers who do not eat enough fruit and vegetables, as it contains non-starch polysaccharides and will prevent constipation.
- Myco proteins are versatile, as it can be bought fresh or frozen in chunks/minced. (Can be bought as cooked ready meals/sausages/sliced as ham for sandwiches etc) so easy to select a type to suit whole family.
- Myco proteins are low in fat/low in calories so may help prevent obesity/CHD.
- Myco proteins do not shrink when cooked therefore no waste.
- Myco proteins can easily be frozen/chilled so it is a very convenient product.
- Myco proteins are high in zinc so good for vegetarians who can often lack this nutrient.
- Nutritional value of myco proteins does not change during cooking/freezing.
- Useful as a replacement for meat as it provides a good source of protein.
- Myco proteins are good source of NSP so small portions are filling.

3 e) Explain **three** functions of the Food Standards Agency.

Marking Instructions:

3 x 1 mark for each explanation

Total – 3 marks

- Responsible for licensing of meat processing companies to ensure hygiene controls on meat and meat products.
- In Scotland the FSA will deal with issues relating to meat and meat products and/or regulation of animal feed.
- In Scotland the FSA will deal with issues relating to food hygiene/fish/shellfish/milk hygiene/novel foods/radiological safety/food emergencies.
- FSA support consumer choice through promoting accurate/meaningful food labelling/issuing leaflets/posters.
- FSA protects the consumer through effective enforcement and monitoring of food related regulations and policies.
- FSA develop food labelling/labels to give more accurate information to help with safe storage of food and therefore prevent food safety risks and outbreaks of food poisoning.
- FSA give advice to the public on food safety and standards therefore raise the awareness and educate the public.
- FSA commission research into food related matters so the industry and public are kept up to date with food safety issues.
- Represents the consumer in matters of food safety/standards so the voice of the consumer is heard.
- Monitoring of the composition of food, food labelling and additives.
- Responsible for protection of public health in relation to food hygiene.
- FSA provides advice and information to the public and government on food safety.
- FSA will consult and seek advice from advisory support committee.
- Commission research to support its function and the giving of information to the public.
- Monitor and enforce food safety standards (through the Meat Hygiene Service).
- Represent the UK on matters of food safety and food standards in the EU and worldwide.
- Control of genetically modified food for human consumption and animal feedstuffs.
- Licensing and inspection of manufacturers who produce irradiated food.
- Protection of public health against chemical contaminants in food.

4 a) Identify **four** methods of mechanical aeration. Explain how **each** brings about change in food products.

Marking Instructions:

4 x ½ mark for method of mechanical aeration

4 x 1 mark for each well explained description

Total – 6 marks

Mechanical Aerating	Explanation
Beating	<ul style="list-style-type: none"> • This enables more air bubbles to be trapped between loose foam, helping the product to rise.
Sieving	<ul style="list-style-type: none"> • This enables more air to be trapped between the fine particles of flour (helping the product to rise when baked).
Whisking	<ul style="list-style-type: none"> • With egg the protein albumin stretches (to hold up to 7 times its own value of air) trapping small air bubbles in stable foam. This will result in a very light textured product (eg meringue).
Whipping	<ul style="list-style-type: none"> • With cream, the fat globules begin to coalesce, this will thicken the mixture.
Rubbing-in	<ul style="list-style-type: none"> • The fat is rubbed into thin film surrounding the flour (forming a waterproof barrier/traps air) to help baked products rise. • If the mixture is lifted well out of the bowl, more air is trapped enabling the product (scones/pastry) to rise more.
Creaming	<ul style="list-style-type: none"> • Individual fat crystals surround the tiny air bubbles, trapping air (this allows the product/cakes to rise more/making a closer texture).
Kneading	<ul style="list-style-type: none"> • The kneading of bread dough traps air (enables the gluten to develop) to help bread rise. • Enables chains of yeast cells to be broken up, this creates a light, well-risen and even bread.

4 b) Explain the effects of altering the proportion of **each** of the following ingredients in a baked product.

- (i) Fat
- (ii) Sugar

Marking Instructions:

2 x 1 marks for effect of altering proportion of fat

2 x 1 marks for effect of altering proportion of sugar

Total – 4 marks

Reducing Fat will:

- Give the baked product a less moist result (eg scones will be less tender/soft).
- Affect the keeping qualities – the baked product will become stale more quickly.
- Give the baked product less flavour, no distinct taste.
- Give the baked product a much paler colour.

Increasing Fat will:

- Give the baked product a greasy result eg pastry will be fragile and crumbly, excess grease will seep out.
- Improve the flavour of the product (eg Rich Madeira cake has higher percentage of butter).
- Give the product a darker colour (butter in particular gives a dark golden colour).

Reducing sugar will:

- Give the baked product less flavour (lack of sweetness).
- Give the baked product poorer keeping qualities (cannot act as a preservative).
- Give the baked product a paler colour (lack of caramelisation).
- Prevent the baked product from rising (lack of syrup to soften the gluten).

Increasing the sugar will:

- Increase the amount of time the product will be baked for.
- Give the baked product a darker colour (especially for pastry).
- Give the baked product a gritty texture/hard sugary crust/“speckled” appearance).
- If there is fruit in the baked product it will sink (as the gluten has over softened and collapses).
- Increase the sweet flavour in the product.

4 c) Evaluate Fair Trade products for the consumer.

Marking Instructions:

3 x 1 mark for each point evaluated to use by the consumer.

Total – 3 marks

Positive

- As the market is expanding within retail outlets there will be increased competition/ **no middleman**, **so** this may mean a price reduction for the consumer.
- As the market is expanding more small farmers and organisations are being incorporated into the Foundation, **therefore** creating a wider range of products for consumers to buy.
- Consumers are being reassured morally, **as** they are buying products that were originally bought directly on the basis of a fair trade from producer organisations.
- There are continuous improvements to the welfare of fair trade producers and workers/working conditions **so** consumers feel they are helping the developing world/supporting their ethical beliefs.
- The products are being continuously improved which increases quality **so** better product for the consumer.
- Catalogues available, **so** consumers can do their shopping from their home so saves time.
- The Foundation constantly carries out checks to confirm approved products continue to meet their set criteria **therefore** consumers are reassured their beliefs are upheld.
- Increasing wide range of Fair Trade products available in supermarkets and **therefore** consumer has more choice.
- Fair Trade fortnight **so** consumers are more aware of the shops selling fair trade products.
- Fair Trade label is marked on food products and **therefore** easy for consumers to identify the product.

Negative

- The fair trade products tend to be expensive and are **therefore** not available to low-income groups/only available to high-income groups.
- Currently the range of fair trade products is limited **so** the consumer has less choice.
- Limited availability of fair trade products may mean that consumers who want to buy it may not be able to access fair trade products and **therefore** consumer may be disappointed.

4 d) Evaluate on-line shopping as a method of purchasing food.

Marking Instructions:

4 x 1 mark for each point evaluated in detail linked to on-line purchase of food.

Total – 4 marks

Convenience

- On-line shopping is a convenient form of food shopping without leaving own home, **which** is advantageous for consumers who are house bound/have a busy lifestyle/work shifts.
- On-line access page of supermarket website gives step-by-step instructions **which** are beneficial for consumers lacking in confidence when shopping on-line for food items.
- When on-line shopping, it is easy to find specific food products, **as** everything is arranged in departments/aisles/shelves.
- When on-line shopping the consumer is able to carry out an individual food product search, **which** helps speed up time spent on-line.
- On-line shopping is a less stressful way of shopping for the consumer **as** it saves time of travelling to and from the shop/saves time of loading/unloading food products at checkout and car/saves time of unloading shopping at home from car to house.
- Consumers who use on-line food shopping need to set up a credit card payment account, which is kept for future use, **therefore** allowing future ease of signing in.
- On-line shopping is user friendly, as the home purchased food gifts can be delivered to the recipient directly, and can be gift wrapped for a small charge, **therefore** saving the consumer time.
- When on-line shopping it can be awkward to return unwanted food items if shopping is not checked on delivery, **therefore** an inconvenience to consumer.
- Consumers need to have access to a computer that is on-line, **which** may be difficult for low-income consumers.
- If consumer has a broad-band connection the speed of on-line shopping is much increased so saves more time.
- Some consumers may like to speak to someone dealing with their order therefore do not like the anonymity of online shopping.

Value for money/cost

- When on-line shopping the consumer may have less impulse buys of food items, which they do not need **hence** saves money for these consumers.
- On-line shopping can be value for money if consumer uses home page special offers on food, **therefore** saving money.
- Huge range of food on-line food shops to select from (specialists to large supermarkets), **therefore** consumer can search very quickly and compare product prices for best buy so saves time.
- On-line shopping customers are rewarded if regular users of the service, as e-mail reminders of sales/special deals are sent to them, **therefore** gaining extra opportunities to save money.
- Using a computer on-line will incur either broadband costs/telephone charges, **therefore** the time of day that consumers shop, could increase or decrease costs.
- On-line shopping usually incurs delivery charge, **which** can be expensive for individual food items so costs more for the consumer.
- Saves fuel costs/wear and tear/car bumps/accidents **so** despite delivery charge can save consumer money in the long run.

Range

- Food products that are not available can be substituted with a similar one if consumer wishes; **therefore** a full shopping is carried out, saving the consumer time.
- Under the Sale and Supply of Goods Act, if the product is substituted and the consumer does not wish it, the product can be rejected **which** prevents extra costs being added.

Environmentally friendly

- On-line shopping is more environmentally friendly **as** delivery van visits all consumers, rather than each consumer visiting the shop in their own transport.

Food safety

- Some shops using on-line shopping enable consumers to select a convenient delivery time, (usually a set two-hour slot) and save the consumer time waiting to receive goods, **therefore** preventing food safety issues with perishable foods.
- Delivery vans for on-line shopping have chilled section **so** perishable foods are less likely to be subject to microbial growth than transporting by car so consumer is less likely to suffer from food poisoning/or food more likely to arrive in good condition.

Security

- Despite security measures, computer frauds with credit card purchases do occur, so some customers are reluctant to purchase on-line.

Quality

- The consumer is not directly picking the food product, **therefore** concern as to quality of fresh produce selected on their behalf.
- Date marks on foods may be near expiry; **therefore** this may increase wastage and/or require immediate consumption so is a poor deal for the consumer.

- 4 e) Explain the protection offered to the consumer, when purchasing food, by the Sale and Supply of Goods Act 1994.

Marking Instructions:

3 x 1 mark for each well-explained protection linked to the purchase of food.

Total – 3 marks

- This law gives consumers the right to expect certain standards in the food they purchase.
- The food must be of “satisfactory quality”, free from defects/100% perfect in appearance/safety/durability.
- The food must be “fit for purpose”; including any specific purpose buyer mentioned to the seller eg additive free (free from mono-sodium glutamate etc).
- The food should be “as described”, on the product packaging (if it states the flavour is cheese and onion, then the product should reflect this flavour).
- If any of the conditions of the act are broken, the seller must offer you a full refund/replace the food/give a credit note.
- The consumer enters into a contract when they purchase a food product, if you have a complaint the seller must remedy it.
- The consumer is not legally obliged to return faulty products to the seller at their own expense (the seller should collect bulky items).
- As long as the consumer has some form of proof of purchase, the seller should deal with the unsatisfactory food product.
- The Act enables consumers to have “reasonable time” to examine the food.
- The consumer may be able to claim compensation if loss is suffered because of unsatisfactory food.
- Consumers who fail to get satisfaction from the seller can go to court to sue for the return of their money or for compensation for the food.
- It is an offence for a supplier to sell food unless it is safe, Trading Standards Department will investigate this on the consumer’s behalf.
- The Act protects the consumer for all foods bought from a trader, whether from a shop/street market/catalogue/doorstep seller.

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Section A

Question	Resource Management Unit		Consumer Studies Unit		Course Skills		Totals
	Course content	Mark	Course content	Mark	Knowledge	Evaluation	
1	Causes of food poisoning	1			1		1
2	Effects of cooking on nutrients	1			1		1
3	Causes of contamination	1			1		1
4	Factors which hinder iron absorption	1			1		1
5	Sensory testing	1			1		1
6	Causes of contamination	1			1		1
7	Current Dietary Advice	1			1		1
Totals		7			7		7

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Section A (continued)

Question	Resource Management Unit		Consumer Studies Unit		Course Skills		Totals
	Course content	Mark	Course content	Mark	Knowledge	Evaluation	
8	Effects of cooking nutrients	1			1		1
9	Market research	2			2		2
10			The impact of technological developments on consumer choices	2	2		2
11	Prevention of dietary diseases	2			2		2
12	Functions and sources of water	2			2		2
13			Food politics	2		2	2
14			The impact of technological developments on consumer choices	2		2	2
Carried forward		7		0	7	0	7
Totals		14		6	16	4	20

Section B Question 1

Question	Resource Management Unit		Consumer Studies Unit		Course Skills		Totals
	Course content	Mark	Course content	Mark	Knowledge	Evaluation	
(a)	The use of Dietary Reference Value's (DRV's)	6	/			6	6
(b)	Current dietary advice	4			4		4
(c)	Current dietary advice	3			3		3
(d)	Prevention of dietary diseases	4			4		4
(e)	Effects of cooking on nutrients	3			3		3
Totals		20		0	14	6	20

Section B Question 2

Question	Resource Management Unit		Consumer Studies Unit		Course Skills		Totals
	Course content	Mark	Course content	Mark	Knowledge	Evaluation	
(a)	Product development strategy	6			6		6
(b)	Market research	4				4	4
(c)			Current voluntary food labelling	3	3		3
(d)			Factors which influence consumer choice of food	4		4	4
(e)			Food Safety Act 1990	3	3		3
Totals		10		10	12	8	20

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Section B Question 3

Question	Resource Management Unit		Consumer Studies Unit		Course Skills		Totals
	Course content	Mark	Course content	Mark	Knowledge	Evaluation	
(a)	Current Dietary Advice	5				5	5
(b)	Product development strategy	3				3	3
(c)	Causes of food poisoning	3			3		3
(d)			The impact of technological developments	6	6		6
(e)			Food Standards Agency (roles & responsibilities)	3	3		3
Totals		11		9	12	8	20

Section B Question 4

Question	Resource Management Unit		Consumer Studies Unit		Course Skills		Totals	
	Course content	Mark	Course content	Mark	Knowledge	Evaluation		
(a)	Functional properties	6			6		6	
(b)	Factors affecting finished products	4			4		4	
(c)			Food politics	3		3		3
(d)			Factors which influence consumer choice of food	4		4		4
(e)			Sale & Supply of Goods Act 1994	3		3		3
Totals				10		10	13	7

Question Paper Summary: Mark Allocation

Question	Unit title		Course Skills		Totals
	Resource Management	Consumer Studies	Knowledge	Evaluation	
Section A	14	6	16	4	20
Section B					
1	20		14	6	20
2	10	10	12	8	20
3	11	9	12	8	20
4	10	10	13	7	20
Totals	54 – 55	25 – 26	54 – 55	25 – 26	80
Target Range	50 – 60 marks	20 – 30 marks	50 – 55 marks	25 – 30 marks	80

[END OF MARKING INSTRUCTIONS]