Cambridge Assessment International Education

Cambridge International A Level

FOOD STUDIES **9336/01**

Paper 1 Theory **October/November 2020**

MARK SCHEME

Maximum Mark: 100

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

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PUBLISHED

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Science-Specific Marking Principles

1	Examiners should consider the context and scientific use of any keywords when awarding marks. Although keywords may be present, marks should not be awarded if the keywords are used incorrectly.
2	The examiner should not choose between contradictory statements given in the same question part, and credit should not be awarded for any correct statement that is contradicted within the same question part. Wrong science that is irrelevant to the question should be ignored.
3	Although spellings do not have to be correct, spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. ethane / ethene, glucagon / glycogen, refraction / reflection).
4	The error carried forward (ecf) principle should be applied, where appropriate. If an incorrect answer is subsequently used in a scientifically correct way, the candidate should be awarded these subsequent marking points. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.
5	‘List rule’ guidance For questions that require ***n*** responses (e.g. State **two** reasons …): • The response should be read as continuous prose, even when numbered answer spaces are provided. • Any response marked *ignore* in the mark scheme should not count towards ***n***. • Incorrect responses should not be awarded credit but will still count towards ***n***. • Read the entire response to check for any responses that contradict those that would otherwise be credited. Credit should **not** be awarded for any responses that are contradicted within the rest of the response. Where two responses contradict one another, this should be treated as a single incorrect response. • Non-contradictory responses after the first ***n*** responses may be ignored even if they include incorrect science.

6 Calculation specific guidance

Correct answers to calculations should be given full credit even if there is no working or incorrect working, **unless** the question states 'show your working'.

For questions in which the number of significant figures required is not stated, credit should be awarded for correct answers when rounded by the examiner to the number of significant figures given in the mark scheme. This may not apply to measured values.

For answers given in standard form (e.g. $a \times 10^n$) in which the convention of restricting the value of the coefficient (a) to a value between 1 and 10 is not followed, credit may still be awarded if the answer can be converted to the answer given in the mark scheme.

Unless a separate mark is given for a unit, a missing or incorrect unit will normally mean that the final calculation mark is not awarded. Exceptions to this general principle will be noted in the mark scheme.

7 Guidance for chemical equations

Multiples / fractions of coefficients used in chemical equations are acceptable unless stated otherwise in the mark scheme.

State symbols given in an equation should be ignored unless asked for in the question or stated otherwise in the mark scheme.

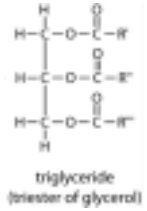
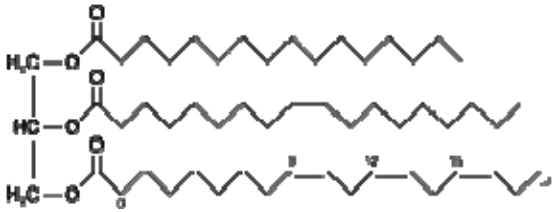
Question	Answer	Marks	Guidance
1(a)	*Monosaccharides* contain 2 to 7 carbon atoms; they are glucose, galactose and fructose; most commonly are hexoses; containing 6 carbon atoms; or pentoses; containing 5 carbon atoms; with a general formula of $C_6H_{12}O_6$; these sugars provide quick release energy; that can be converted to glycogen; *Polysaccharides* long chains of monosaccharides joined together; they are large molecules; some have branched structures; formed by 1–6 glycosidic links; their general formula is $C_6H_{12}O_5n$; where n can be thousands of monosaccharide units; starch polysaccharide can be found as amylose; a straight chain of alpha glucose units; or as amylopectin; short branched chains of alpha glucose; nutritionally starch provides slow release energy; plus other nutrients / protein / fat / B vits; amylose  amylopectin   amylose  *Non starch polysaccharides* like cellulose; are large molecules made up of several thousand units; of beta glucose; held together by 1–4 glycosidic links; provide no nutrition to the body; as the body does not have the necessary enzyme for hydrolysis;	**12**	Must make reference to all saccharides for full marks. Must be a balanced answer covering all saccharides for full marks. 4 marks for each saccharide. Per saccharide, 1 mark for nutritional information Per saccharide, 3 marks for structure Allow suitable diagrams, with straight chain and branched chains shown, only if within the correct context. Credit for health benefits linked to non-starch polysaccharides?

Question	Answer	Marks	Guidance
1(b)	responsible for the partial hydrolysis of cooked starchy foods in the mouth; salivary amylase converts some starch into maltose; enzyme works best at pH 6 to pH7 and the mouth is a neutral environment; 37 °C / body temperature is within the optimum range for enzyme activity;	**3**	Answer must explain, not just list at least **one** best condition.
1(c)(i)	carbohydrates present in foods that are not digested by the body; and do not count towards energy intake; some energy may be made available by the fermentation of unavailable carbohydrates in the intestines by bacteria; *Examples:* Cellulose; resistant starch; resistant oligosaccharides;	**3**	2 marks for explanation 1 mark for **one** correct example
1(c)(ii)	sugars that are not contained in the cell walls of the food; and are not milk sugars; also known as free sugars; *Examples:* honey; fructose; glucose syrup; sucrose, glucose;	**3**	2 marks for explanation 1 mark for **one** correct example
1(c)(iii)	sugar molecule has a free aldehyde / ketone / carbonyl group; reacts with protein or amino acid; sugar loses an electron / is oxidised; *Examples:* glucose; fructose; galactose; lactose; maltose	**3**	2 marks for explanation 1 mark for **one** correct example
1(d)	higher temperature; higher pH; reducing available water;	**1**	

Question	Answer	Marks	Guidance
2(a)	cystic fibrosis; during normal absorption a protein called CFTR; coded by the CFTR gene ; acts as a chloride channel; and regulates the transport of sodium / chloride into the cells; a faulty gene; can cause CFTR to allow too much sodium / salt; and not enough water into the cells of the lungs;	**5**	4 marks max for correct description
2(b)(i)	iodised salt, vegetables grown near the sea, sea fish, cod liver oil, milk, baked potato	**1**	**Two** correct sources is 1 mark 60 mcg is minimum

Question	Answer	Marks	Guidance
2(b)(ii)	deficiency leads to a reduction in the amount of thyroxine produced by the thyroid gland / hypothyroidism; slowing down metabolism; leading to goitre / swelling in the thyroid gland; excess leads to thyroid dysfunction; excess production of thyroxine / hyperthyroidism; increase in metabolism; thyroid cancer.	**4**	
2(c)(i)	*Basal Metabolic Rate*: the minimum amount of energy required by the body when at rest;	**1**	
2(c)(ii)	*Thermogenesis* is a metabolic process where the body burns calories to produce heat; and maintain body temperature; thermogenesis is one factor that affects BMR; as the amount of calories burned will depend on the individual and their circumstances; thermogenic effect of food – BMR increases as intake of food stimulates metabolism / metabolic rate increases after a meal / meal produces extra energy in form of heat;	**3**	
2(d)(i)	*Saturates*: men 30 g, women 20 g	**2**	
2(d)(ii)	*Water:* 1.5–2.5 L unless qualified (climate / diet / exercise etc can affect water need)	**1**	

Question	Answer	Marks	Guidance
2(e)	Nutritional requirements – HBV protein for growth spurts; calcium rich dairy foods for strong / healthy bones; vitamin D from oily fish for absorption of calcium; iron for synthesis of red blood cells; vitamin D to prevent rickets ; reduced sodium for healthy kidney function; vitamin A for healthy vision / strong immune system / normal growth; Dental health – children require water with added fluoride for enamel mineralisation; low sugar / no sugar foods and drinks should be encouraged to avoid dental caries; Prevention of childhood obesity – monitored calorie intake to meet the needs of the growing child and their physical activity level; reduction / avoidance of sugary snacks to prevent the development of obesity; and Type II diabetes; Introduction to different foods – young children should be encouraged to try different foods regularly; small portions should be given to avoid over facing the child; Formation of snacking habits – fruit and vegetables should be introduced as snack foods instead of sugary foods; meals should be based on starchy carbohydrates to prevent the child snacking between meals; School meals – should be assessed and their calorie value included into the daily allowance; school meals may be small portions and unhealthy options so this should be considered; Influence of peers / media – children should be educated about healthy foods and junk foods do that they are able to make informed decisions when faced with peer pressure or media pressure;	**8**	

Question	Answer	Marks	Guidance
3(a)	glycerol bound to 3 fatty acids; ester bonds; may / may not be the same 3 (alkyl) groups (R', R'', R'''); may/may not be saturated; simple triglyceride has same (alkyl) groups; mixed triglyceride has different (alkyl) groups;  or 	**4**	1 mark for suitable diagram
3(b)(i)	*Deep fried potatoes:* refined vegetable oils*;* groundnut oil; lard; *Salad dressing:* olive oil; walnut oil; vegetable oil; *Flaky pastry:* butter / margarine; lard; *Victoria Sandwich Cake:* margarine / butter;	**2**	**Two** correct answers is 1 mark Accept brand names of refined vegetable oils No marks for repeated fat or oil AVP
3(b)(ii)	Deep fat frying requires a fat or oil that has a high smoke point; as the fat will reach temperatures between 175 °C to 200 °C; if the smoke point of the oil is too low the oil / fat will decompose; acroleins will be formed; ref. to unsaturated fat as healthier vs saturated fat ;	**2**	

Question	Answer	Marks	Guidance
3(c)	*Comparisons:* both types of rancidity spoil fats and oils; both types of rancidity produce off flavours and aromas; through the formation of aldehydes and ketones; both types of rancidity are accelerated by heat; *Contrasts: hydrolytic rancidity* involves lipases; that hydrolyse fats into fatty acids and glycerol; *hydrolytic rancidity* is accelerated by microorganisms; *hydrolytic rancidity* takes place in the presence of water. *Oxidative rancidity* is a reaction between unsaturated triglycerides and oxygen; *oxidative rancidity* is accelerated by light / copper / iron	**7**	Max 3 marks for description with no comparisons or contrasts. Must discuss both types of rancidity for full marks. Must make comparisons and contrasts for full marks.
3(d)	both are units of energy measurement; 1 calorie is the amount of heat needed to heat 1 g of water to 1 °C; 1 kcal is 1000 calories / 1000 joules in a kilojoule; there are 4.186 joules in a calorie;	**3**	**One** point is 1 mark
3(e)	simple carbohydrates require little digestion; cause the glucose level of the blood to rise rapidly; in response the pancreas secretes a large amount of insulin; to keep blood glucose levels from rising too high; repeated episodes of this response can lead to Type 2 diabetes; this large insulin response results in making the blood sugar fall to levels that are too low; three to five hours after the sugary food has been consumed; this fall in blood glucose levels may then lead to an adrenaline surge; which can cause nervousness and irritability; e.g. chocolate bar (or other valid example); complex carbohydrates are broken down to monosaccharides in the intestines before they are absorbed into the bloodstream; this takes time; do not cause same sudden rise of glucose and hormone levels; because the digestion and absorption processes are much slower; e.g. grains, legumes (or other valid example); complex carbohydrates have fiber that helps bowel regularity / promotes cardiovascular health by reducing cholesterol ; complex carbohydrates also contain B vitamins ;	**7**	**One** point is 1 mark

Question	Answer	Marks	Guidance
4(a)(i)	structural protein; forms a scaffold to provide strength and structure; forms skin / cartilage / bone;	**2**	**One** point is 1 mark
4(a)(ii)	A fibrous protein; made up of glycine, proline, hydroxyproline; chains of polypeptides wrap around each other in threes; to form a triple helix; with a rope like structure; hydrogen bonds form between the chains of polypeptides;	**4**	**One** point is 1 mark 1 mark for simple diagram e.g. 
4(b)	i fibrous; ii soluble; iii albumin / globulin / casein;	**3**	**One** point is 1 mark
4(c)	salad dressing; hollandaise sauce; mayonnaise;	**1**	1 correctly identified product
4(d)(i)	needed for the absorption of calcium; assists in the formation of healthy bones / teeth; antioxidant; regulates calcium and phosphate in the body; boosts the immune system as T-cells become primed to fight infection;	**3**	**One** point is 1 mark
4(d)(ii)	cholecalciferol;	**1**	
4(d)(iii)	calcium, phosphorus, potassium, selenium, zinc, sodium;	**2**	**Two** correct minerals is 1 mark

Question	Answer	Marks	Guidance
4(d)(iv)	*calcium:* component of bones and teeth*;* blood clotting; muscle contraction; regular heartbeat; nerve activity; *phosphorous:* component of bones and teeth; energy storage and transfer; cell division; reproduction; component of ATP / adenosine triphosphate; for energy release; helps to metabolise fats and proteins; helps to keep blood pH neutral; *potassium:* transmission of nerve impulses; muscle contraction / beating of the heart; control volume and osmotic pressure of blood / tissue fluids; *selenium:* antioxidant properties; regulates thyroid function; boosts immunity; *zinc:* makes new cells and enzymes; helps to process protein, carbohydrates and fat; helps to heal wounds; *sodium:* maintains correct concentration of body fluids; controls blood pressure / volume; regulates function of muscles and nerves; prevention of muscle cramps; pH balance;	**3**	**One** point is 1 mark
4(e)	glycogenesis; is the formation of glycogen from glucose; when blood glucose levels are high; allowing excess glucose to be available for conversion; in the liver; with insulin as a stimulus; the glycogen is stored in the liver and muscle cells;	**6**	**One** point is 1 mark

Question	Answer	Marks	Guidance
5(a)	curing; raw pork is injected with a concentrated salt solution/brine; and sodium nitrite; to act as a preservative; the pork is then immersed in a brine solution; and left for a few days; the colour of the raw pork becomes redder; as myoglobin becomes nitrosomyoglobin;	**5**	1 mark for correctly named process 4 marks for description of process One point is 1 mark.
5(b)	*Description:* food is placed in plastic packaging; air is sucked out; the plastic is sealed; the food is in anaerobic conditions; *Named food:* coffee, chestnuts, fish, meat, cheese;	**3**	2 marks for description 1 mark for **one** named food AVP

Question	Answer	Marks	Guidance
5(c)(i)	fatty tissue from around the kidneys and inside the loin of a pig; is wet rendered; by boiling the fat in water or steaming at a high temperature; the lard is insoluble in water and floats on top of the water; it is skimmed off the surface or separated in an industrial centrifuge; it may be bleached; and deodorizing agents, emulsifiers, and antioxidants are added to prevent spoilage.	**5**	**One** point is 1 mark
5(c)(ii)	a mixture of hydrogenated vegetable oils; are cooled; and crystallised; then kneaded to a smooth consistency;	**3**	**One** point is 1 mark
5(d)	110 g of lard / margarine / butter, 280 g of water, 500 g of plain flour, 2 tsp salt ; place the lard and water together in a saucepan and bring to the boil; sieve the flour into a large bowl with the salt; make a well in the middle of the flour and pour in the lard and water mixture; mix thoroughly to form a dough; rest for 20 minutes;	**5**	1 mark for correct list of ingredients (may omit salt) 1 mark for correct quantities 3 marks for method where **one** point is 1 mark

Question	Answer	Marks	Guidance
5(e)	make food safe to eat by killing harmful micro-organisms; destroy natural toxins in food – e.g. red kidney beans must be boiled for 20 mins to destroy the toxins; preserve food from natural / microbiological decay – e.g. fruits; make food more digestible – e.g. cellulose in fruit, lightly boiled; make food easier to eat / chew – e.g. tenderise meat; soften the food – e.g. gelatinisation of starch in potatoes / flour in sauce; to reduce bulk – e.g. green leafy vegetables reduce when cooked so that more can be eaten; to enhance flavour – e.g. development of extractives in roasting meat; to improve flavour – e.g. cooking fresh / young vegetables strengthens flavour; to blend flavours – e.g. meat with vegetables in a casserole; to change texture – e.g. fruit / vegetables become softer or eggs / meat / fish firmer or baked goods / fried foods become crisper; to improve colour – e.g. red raw meat becomes brown cooked meat / baked and fried food turns brown; volatile substances released – e.g. smell of onions – stimulates flow of the digestive juices; to give variety in the diet – e.g. potatoes boiled / creamed / fried or meat roasted / grilled / fried; to create new dishes – e.g. mixing of ingredients to make cakes / biscuits; to provide hot food in cold weather – e.g. hot soup in cold winter; necessary for some processes – e.g. dissolving gelatine / making of sauces / cake-making;	**4**	Any 4 at 1 mark each Need reason plus example / explanation for 1 mark

Question	Answer	Marks	Guidance
6(a)	the ethos of fair trade is that products allow farmers / growers in developing countries to receive a fair price for their work from companies in developed countries; this in turn allows people in developing countries to afford essentials like food / education / healthcare; payments are made in advance to ensure the farmer / grower can fulfil orders/improve production methods; there is a certainty of safe working conditions; women and children who are often marginalised are given fair pay / conditions; fair trade foundation educates farmers in how to improve crop knowledge ; doubt as to whether the aims of fair trade are met and doubt that farmers do actually receive more money; fair trade cooperatives incur certification and inspection fees; additional marketing costs and costs arising from the monopoly power of the cooperative; there is evidence that money that is meant to be reaching the developing world is actually spent on business and production;	**6**	Full marks are available for responses that consider the possible advantages and disadvantages of Fairtrade farming. Does not need to be a 3 – 3 split for full marks.
6(b)(i)	oil seeds such as olives / sunflower are husked or cleaned of dirt and dust; then crushed; crushed seeds are heated to temperatures between 110 °C to 180 °C in a steam bath to start the oil extraction process; seeds are put through a high volume press which uses high heat and friction to press the oil from the seed pulp; seed pulp and oil are then put through a hexane solvent bath and steamed again to squeeze out more oil;	**4**	One mark per point.
6(b)(ii)	*Canola oil* is produced in highly industrialised nations like the USA and Canada and receives government subsidies for its production; growers work for multinational companies and harvest enormous quantities of the seed which makes the price of the oil lower; *Olive oil* is produced in Mediterranean countries where the harvests are smaller; olive crops may fail resulting in a scarcity of olives for turning into oil; whilst mechanised the level of production is smaller resulting in higher prices; Harvesting by hand is expensive / harvesting mechanically cheaper e.g. olives ; Mass production reduces overall costs ; Some oils need early harvesting – yield is lower – price is higher ;	**3**	Reasoning / explanation is necessary per mark.

Question	Answer	Marks	Guidance
6(c)	country relies on its own produce / crops to feed its people (on a national level); there may be policies to enhance self-sufficiency in staple crops; there will be little need to import foods from other countries; this provides protection against variable world food prices / avoids an interruption to supplies; food is cheap and the economy is buoyant; could be a family who grow all of their own food and raise their own livestock for milk and meat (on a small scale); food is free; no transportation needed / save on fuel costs ; the disadvantages could be crop failure leading to starvation; a lack of variety in the diet, leading to malnutrition; loss of income from no trade;	**5**	
6(d)(i)	foods are exposed to ionizing radiation/gamma rays; gamma rays are emitted from radioactive forms of the element cobalt (cobalt-60) or of the element caesium (caesium-137); to destroy enzymes, bacteria and other microorganisms; also delays sprouting and ripening – to inhibit sprouting (e.g., potatoes) and delay ripening of fruit to increase longevity; used on fruit, veg, spices, cereals, fish and poultry; irradiation does not make foods radioactive or noticeably change the taste / texture / appearance of food;	**5**	**Five** marks for description
6(d)(ii)	risks to workers of accidental exposure to dangerous levels of radiation; possible damage to local environment caused by accidents at processing plant; unknown long term effect on consumers; micronutrient levels can be lower e.g. vits B_{12} / C / E; cost is higher so not good value for money; doesn't destroy viruses so not 100% safe product;	**2**	**One** point is 1 mark

Question	Answer	Marks	Guidance
7(a)	*moist heat* gelatinisation; starch grains in suspension; when heated to 60 °C swell; liquid diffuses into the grains at 85 °C; amylose and amylopectin are completely dispersed in the liquid; and a sol is formed; when sugar is heated in water, the sugar crystals dissolve and the sugar goes into solution; *dry heat* caramelisation; heated sugars melt to form caramel; in ten gradual changes between melting and caramelisation; between the temperatures of 104 °C and 177 °C / high temperatures. Sucrose decomposes into glucose and fructose; and condensation occurs; as the individual sugars lose water and react with each other. Most foods only brown on outside; and form a nutty flavour; boiling / foaming follows; eventually burning / bitterness occurs. dextrinisation; short chains of starch form longer chains of starch when exposed to dry heat; become brown coloured substances; called pyrodextrins;	**9**	One point is 1 mark. Must discuss all four reactions for full marks.
7(b)	heat energy can pass from one point to another without the aid of a medium; radiation passes through a space or vacuum; infra-red rays pass from the heat source in direct / straight lines; falling on any object in their path; heat is absorbed by the food; food needs turning as only one side of the food is cooked; heat can only penetrate up to 4 cm thickness;	**4**	**One** point is 1 mark Also allow mark for heat being transferred via conduction from the hot grill pan;
7(c)	homogenised milk is of a uniform consistency; as it is forced through mesh under pressure; causing the fat to be broken up into tiny droplets; there is no layer of cream at the top of the milk; the fat droplets are evenly distributed throughout the milk;	**4**	
7(d)	*Ingredients:* white wine vinegar, egg yolks, butter, seasonings; *Method:* mix / process the vinegar and egg yolks; suspended over pan of warm water to prevent curdling; melt the butter; slowly / steady trickle add the melted butter to the egg and vinegar mixture; season;	**4**	1 mark for ingredients list – must include vinegar, egg yolk and butter

Question	Answer	Marks	Guidance
7(e)	appetite is stimulated by the sight, smell, touch and taste of food; salivary juices are stimulated by attractive smell / appearance; enjoyment of the food is increased if food is presented well; correct portion size important to attract small eaters/the elderly; fun / colourful appearance can attract children;	**4**	

Question	Answer	Marks	Guidance
8(a)	occurs due to the presence of bacteria, moulds and yeasts; microorganisms in the correct conditions will reproduce rapidly; the correct conditions are available food, correct pH, left for some time, warm temperature, presence of oxygen, lack of oxygen if bacteria are anaerobic, and presence of moisture; yeasts reproduce by budding; on plant foods; causing fermentation; and a bitter flavour / unpleasant aroma; bacteria reproduce by fission; moulds grow into a mass / mycelium of threads called hyphae; they give a mouldy taste / aroma; the mould can be green/blue/black/orange and unattractive;	**6**	1 mark for **three** named microorganisms 2 marks for **six** correctly named conditions 3 marks for description of spoilage. Must discuss all microorganisms for full marks.
8(b)	*Source:* unpasteurised milk, raw / undercooked meat / poultry / fish, animal intestines/faeces, sewage, untreated water; *Symptoms:* abdominal pain, diarrhoea, bloody diarrhoea, nausea, vomiting, fever;	**2**	1 mark for **two** correctly named sources 1 mark for **two** correctly named symptoms

Question	Answer	Marks	Guidance
8(c)	short fingernails prevents dirt from being trapped under the nails and means that nails can be scrubbed easily with a brush; washing hands in hot soapy water removes bacteria; removing jewellery prevents dirt / soap from being trapped in the jewellery and cross contaminating the food; covered cuts / boils prevents the transfer of bacteria from skin like streptococcus aureus; covered head hair / facial hair prevents physical contamination from hairs that carry bacteria; no smoking, chewing, touching mouth prevents bacteria from the mouth being cross contaminated through saliva; clean personal protection clothing / apron prevents cross contamination from outdoor clothing; absence from work is required if employee has sickness and diarrhea / impetigo / heavy cold regular handwashing throughout preparation and cooking time, after using toilet, touching raw meat, putting the rubbish out; dry hands thoroughly as microbes thrive in warm wet / damp conditions; store outdoor clothing in a locker outside the food room so outdoor bacteria are not introduced; no licking fingers to taste food, use a separate spoon for tasting and dip into food only once then wash, saliva contains staphylococcus bacteria which will be passed from the spoon into the food;	**6**	Six individual points required
8(d)	*Aluminium:* advantages: cheap to buy; lightweight; disadvantages: stains easily; not strong; *Stainless steel:* advantages: will not chip or flake; strong; resistant to rust; does not stain; does not leave a metallic taste in the food; hold heat well; disadvantages: not an efficient conductor of heat so slow to heat up; *Enamelled steel:* advantages: can be painted / colourful / attractive; conduct heat rapidly; can use on hob and in cooker; can be used to serve food in as attractive appearance; disadvantages: chip easily; stain;	**6**	**Two** marks available for each material. All materials must be discussed for full marks

Question	Answer	Marks	Guidance
8(e)	*aspartame* artificial sweetener that is used to replace the use of sugar and lower the calorie content of the dessert; *caramel* artificial colouring that is used to give a brown colour to the dessert; *propylene glycol monostearate* emulsifier used to emulsify the liquid and fat ingredients in the dessert and prevent separation;	**3**	Must be a descriptive answer not just a one word answer. Allow for aspartame that it is much sweeter than sugar so less used – less storage space for manufacturer.
8(f)(i)	for the manufacturer to manage the supply chain when various food items are distributed; for the manufacturer to keep track of how many items are on the supply line; for the retailer for stock management; used by consumer on phone app to count calories / price;	**1**	
8(f)(ii)	weight in g shows the consumer how much food is in the package; allows for recipe planning; allows for calculating purchasing quantities; net quantity must be displayed by law (in most countries);	**1**	