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Cambridge International General Certificate of Secondary Education

FOOD AND NUTRITION

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Paper 1 Theory

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MARK SCHEME

Maximum Mark: 100

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This document consists of **9** printed pages.

Question	Answer	Marks
1(a)	undernutrition is not enough food / amount of nutrients; overnutrition is too much food / too much of one or more nutrients;	2
1(b)(i)	kwashiorkor; marasmus; night blindness; pellagra; beri beri; goitre; rickets / osteomalacia; scurvy; anaemia; osteoporosis; tetany;	2
1(b)(ii)	obesity; dental caries; CHD / atherosclerosis; Diabetes / high blood sugar levels; hypertension;	2

Question	Answer	Marks
2(a)	carbohydrates provide the body with energy; vitamin B group releases energy to the body from carbohydrates; energy from carbohydrates may be inaccessible if there is insufficient vitamin B group consumed;	2
2(b)	vitamin C helps the body absorb iron iron is a vital component of haemoglobin found in red blood cells; vitamin C plays a vital role in the synthesis of red blood cells;	2
2(c)	both involved in the transmission of nerve impulses; both involved in muscle contraction; both help regulate water content and electrolyte balance; potassium helps counter the effects of sodium as it has a blood pressure lowering effect in people with raised blood pressure;	2

Question	Answer	Marks
3(a)	growth; repair; maintenance / renewal; energy; manufacture of antibodies / enzymes / hormones;	4

Question	Answer	Marks
3(b)	<p>protein foods which supply all the essential amino acids are said to have high biological value;</p> <p>protein foods which do not contain all the essential amino acids are said to be low biological value;</p> <p>proteins are built up of amino acid chains; there are 22 different naturally occurring amino acids; number, type and arrangement of amino acids varies so biological value of the protein also varies; (eight of the) amino acids are essential for tissue grown in adults; children need two additional essential amino acids;</p>	3
3(c)(i)	<p><u>pepsin</u>; converts protein to <u>peptones</u> / <u>peptides</u> / <u>polypeptides</u>; <u>rennin</u> clots milk;</p>	3
3(c)(ii)	<p><u>erepsin</u>; converts <u>peptones</u> / <u>peptides</u> / <u>polypeptides</u>; to <u>amino acids</u>;</p>	3
3(d)	<p>chemical structure denatured / changed; coagulation / setting occurs / becomes firm / hardens; this is permanent / irreversible; protein becomes less soluble when heated; normal heat makes protein more digestible; overheating makes protein difficult to digest / 'rubbery' / reduces its nutritive value;</p>	3
3(e)	<p>soya is only vegetable source of HBV protein / contains all essential amino-acids; useful for vegans / vegetarians as source of protein; good source of NSP / fibre; low in total calories; (follows dietary guidelines due to) being low in fat; (follows dietary guidelines due to there being) no saturated fat / cholesterol; is cheap to buy; is easy to transport / does not require refrigerated vehicles / is lighter in weight to carry; is dehydrated so easy to store; has a long shelf life; requires no preparation other than soaking; no waste produced during preparation; is easy to cook / cooks quickly so saves on fuel and time; takes on flavour of dish being created; versatile as it is available in many forms such as sausages / mince / chunks; can be used as a meat replacement / substitute; can be used as a meat extender to give a cheaper product; no chance of BSE / bird flu; alternative to cows milk if allergy;</p>	6

Question	Answer	Marks
4	prevents dehydration / hydrates the body; required for all body fluids digestive juices / mucus / plasma / saliva / blood / lymph / sweat / urine; regulates body temperature (through perspiration); helps digestion; helps removal of toxins; improves concentration / brain function; lubricates (muscles and joints / AVP); transports nutrients around the body; improved absorption of water soluble vitamins / B vitamins / vitamin C; required for metabolic / chemical reactions; helps the removal of waste / faeces; combines with NSP to reduce risk of bowel disorders / constipation / diverticular disease / helps make faeces soft / bulky; reduce risk of kidney problems / stones; decrease risk of migraines / headaches; less risk of high blood pressure; needed during lactation for milk production;	6

Question	Answer	Marks
5(a)	add moisture such as gravy with roast meat / custard with apple pie; add nutrients such as milk / egg in custard / chocolate sauce / cheese sauce; add colour such as tomato sauce with pasta / jam sauce / chocolate sauce; add flavour such as cheese sauce with cauliflower / mint sauce / apple sauce; counteract richness such as apple sauce with roast pork / orange sauce with duck; add interest / variety such as curry sauce / chocolate sauce with ice-cream; add contrasting texture such as bread sauce with roast poultry / tartare sauce with fried fish; bind ingredients together such as fish cakes or croquettes;	8
5(b)	melt margarine on low heat; add / stir in flour with wooden spoon to form a roux; cook roux over gentle heat stir all the time until sandy / crumbly / paste; do not allow to brown as it is a white sauce; remove from heat; add milk gradually; stirring all the time; return to heat and bring to boil stirring continually; boil for 3 minutes (to cook starch so grains will burst and absorb the milk); sauce will thicken (as starch gelatinises);	5
5(c)(i)	milk added too quickly / too much milk added at a time; milk added on heat; not stirred well (between each addition of milk); not stirred during boiling;	2

Question	Answer	Marks
5(c)(ii)	inaccurate weighing and measuring; too much liquid; insufficient flour; not heated enough / insufficient time at correct temp; starch has not gelatinised; undercooked;	2

Question	Answer	Marks
6(a)	mixture rises; mixture becomes light / fluffy; product has open texture; product is easier to digest; product is more attractive;	2
6(b)	<u>sieving</u> ; flour for shortcrust pastry / scones; <u>creaming</u> ; fat and sugar for rich cakes; <u>rubbing in</u> ; fat and flour for shortcrust pastry; <u>whisking egg white</u> ; meringue / soufflé; <u>whisking eggs and sugar</u> ; Swiss roll / (sponge) cake; <u>beating</u> ; eggs before adding to creamed mixtures; <u>rolling and folding</u> ; flaky pastry / puff pastry;	8
6(c)	alkali / bicarbonate of soda / sodium bicarbonate / baking soda; acid / cream of tartar; starch filler / corn flour / corn starch / anti-caking agent;	3
6(d)	an airtight container is moisture / water proof / keeps out air / oxygen; dampness causes a reaction between acid and alkali; carbon dioxide would be given off; when damp mixture used there would be a poor reaction so product would not rise properly;	2
6(e)	carbon dioxide;	1
6(f)	water changes to steam; when it reaches boiling point / 100 °C; the steam pushes up the mixture as it escapes; the steam will rise / expands / (as less dense);	2
6(g)	any choux pastry dishes; any batter dishes; any flaky pastry dishes	2

Question	Answer	Marks
7	space available inside the kitchen; family size / capacity / storage needs per person; larger refrigerator; amount of money available; refrigerator with a freezer compartment on top / refrigerator with a freezer compartment on bottom / refrigerator and freezer side by side; built-in refrigerator / free-standing / under-counter; colour / trim panels to match kitchen cabinets; restaurant-style glass doors; noise during operation; energy efficiency / rating; star rating for frozen food compartment; automatic defrosting / frost free manufacturer's name; door shelving are adjustable in height to fit various height bottles and containers; in-door ice and water dispensers; spill proof shelves designed with catch-edges and raised front and rear lips prevent spills from spreading to other shelves; beepers to alert when a door is left ajar; lights turn on when it's time to change the water filter; temperature controls; warranty; ease of cleaning;	8

Question	Answer	Marks
8(a)	<p>Describe the nutritional requirements of an adolescent and discuss some of the issues which may increase an adolescent's risk of developing obesity.</p> <p>Nutritional Requirements high energy / energy-dense food; more energy needed for the rapid growth spurt / building new tissue; need for high energy food due to high levels of activity; protein for growth spurt / body building / muscle development / repair / production of hormones; calcium / phosphorus / vitamin D for skeletal growth / bones / teeth; greater risk of osteoporosis later in life if inadequate; vitamin D for absorption of calcium; vitamin B release of energy from carbohydrate; iron to carry oxygen for haemoglobin / cell respiration / energy release / blood loss during menstruation; vitamin C for absorption of iron;</p> <p>Issues need to show individuality / non-conformity; poor eating habits formed in childhood; grazing rather than eating a 'proper' meal / skipping meals resulting in snacking; participate in more sedentary activities in front of screens; passive eating; snacks high in fat / sugar / soft drinks; do not walk / cycle to school / lack of physical activity; spend more time indoors; poor food choices / lack of nutritional knowledge; more disposable income / 'junk food' cheaper; more freedom to choose their own food; reject food which parents may provide as 'healthy'; open to persuasion of advertising / media of high fat / sugar food; emotional use of food due to relationship issues / bullying / stress; peer pressure / conforming with friends to eat fast food / eating fast food is fashionable; eat less food containing NSP so snack more often as no satiety; eat more convenience / takeaway / 'junk' food at home as parents both work;</p>	15

Question	Answer	Marks
8(b)	<p>Outline ways to be economical with food and fuel when planning, preparing and cooking family meals.</p> <p>Food have a budget and stick to it; plan the meals you are going to eat / make a shopping list; buy in bulk as long as the product does not have a short shelf life; buy foods in season / use garden produce / pick your own / local farms / markets; own country of origin foods; compare / research online prices in different shops; check the unit price on foods eg price per kg so price comparisons can be made; buy store's own brand / make use of special offers in shops / save 'money off' coupons; check best before date so there is a longer time to use / less waste; store products correctly / use stock rotation so products keep longer so less waste; peel fruit and vegetables thinly to avoid waste; do not cook more food than is necessary for the meal; use cheaper sources of protein such as milk / cheese / eggs / soya products / pulses; use convenience / processed foods with care as they are usually more expensive than fresh / make your own dishes rather than buying pre-prepared; use cheaper cuts of meat; tinned and frozen fruit and vegetables can be cheaper than fresh; use left over food as next day meals; buy food reduced at end of day;</p>	15

Question	Answer	Marks
8(b)	<p>Fuel</p> <p>make one pot meals in slow cookers so only use one heat source; cook in bulk / freeze or eat the next day; don't cook separate meals for individuals in the family; use steamer so several layers share one hot plate; use a pressure cooker which cooks quicker so uses less fuel; cut food into smaller pieces so it cooks quicker; keep a lid on the pan to retain heat and cook faster; use a small amount of water in kettle / pan; do not overcook; cook when needed so no need to reheat; use a microwave which is faster so uses less fuel; size of pan should fit hot plate to avoid wasting fuel around base of pan; gas flames should not come around base of pan or heat is wasted; cook the whole meal in the oven or on hob; batch bake to use all oven shelves; do not preheat oven for too long; turn off heat before cooking finished to use residual heat; use flat based pans for good contact between burner and pan; use quick methods such as frying / grilling; choose materials which are good conductors of heat for pans such as copper / iron; use divided pans; boil two things together such as potatoes and carrots;</p>	