



FOOD AND NUTRITION

0648/11

Paper 1 Theory

May/June 2019

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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This document consists of **16** printed pages.

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.

Question	Answer	Marks
1(a)	<i>type of carbohydrate for slow release of energy</i> starch	1
1(b)	<i>definition of monosaccharide</i> simple sugar / single-unit carbohydrate base unit for other carbohydrates	1
1(c)	<i>examples of monosaccharides</i> glucose; fructose; galactose	2
1(d)	<i>food products which demonstrate dextrinisation</i> any baked dish containing flour; roast potatoes; roasted root veg such as carrots / parsnips; named breakfast cereal; toasting bread; breadcrumbs coating on fish etc.	4
1(e)	<i>effects of moist heat on starch</i> starch grains first <u>soften</u> in liquid; starch grains <u>absorb</u> liquid; starch grains <u>swell</u> ; starch grains burst / rupture (due to heat and absorption of liquid); <u>gelatinisation</u> occurs (when starch granules absorb water / swell); mixture <u>thickens</u>	3

Question	Answer	Marks
1(f)	<p><i>effects of eating too much carbohydrate</i></p> <p>obesity increases the risk of complications during surgery / pregnancy / childbirth; problems with the knees / hips / spine / arthritis; respiratory problems; high blood pressure / strokes; CHD / heart disease; low self-esteem; type 2 diabetes; dental caries / tooth decay; IBS</p>	3
1(g)	<p><i>effects of eating too little carbohydrate</i></p> <p>lack of energy / lethargic / tiredness / weakness / fatigue; weight loss; constipation / haemorrhoids / diverticular disease / bowel cancer; hypoglycaemia / blood glucose levels drop below normal causing shakiness / confusion / difficulty speaking; ketosis where the body breaks down stored body fat to use as energy causing ketones to build up in the body which can cause headaches / nausea / dizziness / bad breath</p>	3
1(h)	<p><i>part of the digestive system where maltase and lactase are found</i></p> <p>ileum / small intestine</p>	1

Question	Answer	Marks
2(a)	<p><i>functions of calcium</i></p> <p>important for building / forming bones / teeth / nails; essential for maintaining healthy / strong bones / teeth / nails; increases bone density which increases bone mass; needed for contraction of the muscles; needed for the maintenance of a regular heart beat; needed for nerve function; involved in blood clotting</p>	4
2(b)	<p><i>sources of calcium</i></p> <p>bread; dried seaweed / Kombu / Nori; fish where bones are eaten / canned fish; flour; green vegetables / named example; hard water; nuts / named example; prawns; pulses / named example; sesame seeds; soya / soya products; <u>wholegrain</u> cereals / named example / wholegrain breakfast cereals</p>	3
2(c)(i)	<p><i>another name for vitamin D</i></p> <p><u>cholecalciferol</u></p>	1
2(c)(ii)	<p><i>other nutrient which works with calcium and vitamin D</i></p> <p><u>phosphorus</u></p>	1

Question	Answer	Marks
2(d)	<p><i>groups of people who will not be able to make vitamin D from the sun</i></p> <p>people who are house-bound / do not go outdoors; those who cover their body for religious / health reasons; people who live in industrial / polluted areas where sunlight cannot penetrate; people who live in cities surrounded by high buildings; people who live in countries with limited sunlight hours; wearing a sunscreen with a sun protection factor of 30 reduces vitamin D synthesis in the skin by more than 95%; people with occupations that limit sun exposure; people with dark skin have larger amounts of melanin in the epidermal layer and this reduces the skin's ability to produce vitamin D from sunlight</p>	3

Question	Answer	Marks
3(a)	<p><i>symptoms of anaemia</i></p> <p>lack of red blood cells / too little haemoglobin in the blood; pale complexion; lethargic / tired / fatigue / lack of energy / weakness; short of breath; headaches; dizziness / faint</p>	3
3(b)	<p><i>groups of people who have a higher need for iron in their diet</i></p> <p>pregnant; lactating; menstruating; after injuries / operations; babies</p>	3

Question	Answer	Marks
3(c)(i)	<i>why it is important to have a daily supply of vitamin C</i> vitamin C cannot be stored in the body / vitamin C is water soluble so is easily lost from the body	1
3(c)(ii)	<i>sources of vitamin C</i> blackcurrants; citrus fruit / 1 named example; all coloured peppers; green vegetables / 1 named example; kiwi fruit; mango; new potatoes; rose hips; strawberries; tomatoes	3

Question	Answer	Marks
4(a)	<i>how many eggs needed to complete the recipe</i> 4 / four / 200 g	1
4(b)	<i>why cake suitable for a person who is lactose intolerant</i> no lactose present as no <u>dairy</u> / no butter used / marg used rather than butter	1

Question	Answer	Marks				
4(c)	<table border="1"> <tr> <td data-bbox="322 213 633 518">self-raising flour</td> <td data-bbox="633 213 1953 518"> adds bulk / is main ingredient; provides starch / carbohydrate / energy; gluten in flour forms framework or structure / sets on heating; contains baking powder which helps cake rise; traps air during sieving which helps cake rise; if wholemeal may change taste / colour / add fibre; soft flour has low gluten and gives soft tender crumb and even texture; dextrinisation of surface during baking </td> </tr> <tr> <td data-bbox="322 518 633 788">caster sugar</td> <td data-bbox="633 518 1953 788"> softens crumb or gluten in flour; sweetens / adds flavour / taste; traps air when creamed which acts as a raising agent / lightens texture / increase volume; caramelises through dry heat during baking / browns / colour; adds moisture as sugar liquefies on heating; preserves as high sugar concentration; holds fat in emulsion </td> </tr> </table>	self-raising flour	adds bulk / is main ingredient; provides starch / carbohydrate / energy; gluten in flour forms framework or structure / sets on heating; contains baking powder which helps cake rise; traps air during sieving which helps cake rise; if wholemeal may change taste / colour / add fibre; soft flour has low gluten and gives soft tender crumb and even texture; dextrinisation of surface during baking	caster sugar	softens crumb or gluten in flour; sweetens / adds flavour / taste; traps air when creamed which acts as a raising agent / lightens texture / increase volume; caramelises through dry heat during baking / browns / colour; adds moisture as sugar liquefies on heating; preserves as high sugar concentration; holds fat in emulsion	6
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4(d)	<p><i>how to make the cake mixture using the creaming method</i></p> <p>cream margarine and sugar; cream with wooden spoon / electric mixer; cream until light and fluffy; beat eggs; add beaten eggs gradually to creamed mixture; beat well between each addition; sieve flour; fold flour into mixture with metal spoon to obtain soft dropping consistency</p>	5				
4(e)	<p><i>convection</i></p> <p>heat energy is transferred by the movement of the air in oven / liquids in cake mixture; when air / liquid is heated it becomes less dense and rises; hot air / liquid displaces cold air / liquid which sinks and is heated again; convection currents formed; continues until a constant temperature is reached</p>	5				

Question	Answer	Marks
4(f)(i)	<p><i>reasons why cake has risen to a peak and cracked</i></p> <p>oven temperature too high; too much mixture for the size of tin; cake placed too high in oven; crust forms too soon and continues to rise so the crust cracks</p>	2
4(f)(ii)	<p><i>reasons why cake has sunk in the middle</i></p> <p>insufficient baking time; oven door opened too soon during baking; oven temperature too low; too much sugar has been added to the mixture; too much liquid has been added to the mixture; mixture has been over-beaten</p>	2
4(g)	<p><i>types of icing which could be used to decorate the cake</i></p> <p>buttercream; cream cheese; fondant / sugar paste; frosting; ganache; glacé; meringue; royal</p>	3

Question	Answer	Marks
5(a)(i)	<i>substance which helps jam set</i> pectin	1
5(a)(ii)	<i>wrinkle test</i> put some jam on cold plate / saucer; leave to cool; push jam with finger to see if it wrinkles	2
5(a)(iii)	<i>reason why are jars heated before filling with home-made jam</i> sterilises / kills any microorganisms in the jars; prevents glass cracking when hot jam put inside	1
5(b)	<i>how to prepare fresh peas for freezing</i> pod / shell; sort removing foreign object / decayed material; blanche / plunge into boiling water for max. 3 mins; drain and put into cold / iced water; drain and open freeze; bag and (label)	4
5(c)	<i>effects of dehydration on food</i> colour of the food may change; food will become brittle (herbs) / hard (dried pulses) / dries up / loss of moisture / may crumble (coffee granules); food may wrinkle / shrink in size; food become lighter in weight; food becomes sweeter / more salty / more concentrated; some vitamin C / vitamin B1 (thiamine) / water soluble vitamins may be lost; food has longer shelf life; reduces growth of microorganisms	3

Question	Answer	Marks
5(d)	<p><i>methods of treating milk to preserve it for use in emergencies</i></p> <p>ultra-heat treatment / UHT; drying; condensing; evaporating; freezing</p>	3

Question	Answer	Marks
6	<p><i>ways to prevent bacterial contamination during food preparation</i></p> <p>clean surfaces with hot soapy water / antibacterial spray; clean equipment with hot soapy water; do not use cracked or chipped equipment; ensure all equipment is dried in open air / with clean tea towel; ensure all dish cloths / tea towels used are washed regularly; wash / clean food (vegetables / fruits) before cooking; use different equipment for raw and cooked food / different coloured chopping boards / knives; make sure frozen food like meat is completely thawed; keep food in appropriate storage conditions prior to / during preparation; do not allow pets / pests in the kitchen; wrap / dispose of waste food in covered bin</p>	6

Question	Answer	Marks
7(a)	<p><i>Discuss how a balanced diet can help support healthy development in a pre-school child</i></p> <p>follow nutritional tools – may name and describe a nutritional tool and how it helps support healthy development;</p> <p>small / not excessive amount of fat as a concentrated source of energy / conveyer of fat soluble vitamins A / D / E / K; deficiency could cause lack of fat soluble vitamins – excess could cause obesity;</p> <p>provide starchy carbohydrates for energy; deficiency may cause lack of energy / fatigue – excess may cause obesity;</p> <p>limit amount of sugary food / drinks / dilute fruit juices to prevent tooth decay / obesity;</p> <p>no more than 2–3 g of salt per day; deficiency may cause hyponatremia (very rare in pre-school child unless on certain medication or live in extremely hot climate) – excess may cause problems with kidneys / heart / liver / high blood pressure;</p> <p>calcium for bones / teeth; deficiency may cause tetany / rickets / dental caries / brittle hair and nails – excess may cause hypercalcemia / problems with kidneys;</p> <p>fluoride for teeth; deficiency may cause dental caries – excess causes mottled teeth;</p> <p>iron for formation of red blood cells / energy production; deficiency may cause fatigue / weakness / pale complexion / anaemia – excess may cause liver disease / rheumatoid arthritis;</p> <p>protein for growth / repair; deficiency may cause retarded growth (extreme deficiency kwashiorkor / marasmus) – excess may cause (in the long term) osteoporosis / kidney stones / kidney failure / gout;</p> <p>vitamin A for development of eyesight / immune system; deficiency may cause impaired vision in dim light / night blindness / dry and infected skin / retarded growth – excess may cause problems with skin and joints;</p>	15

Question	Answer	Marks
7(a)	<p>vitamin B group (thiamine / riboflavin / niacin) for release of energy from carbohydrates / normal growth / nerve function; deficiency retarded growth / irritability / inflammation of the nerves / beri-beri / dermatitis / conjunctivitis / swollen tongue / diarrhoea / dementia – excess very rare as it is water-soluble;</p> <p>vitamin C for absorption of iron / immune system / make connective tissue / heals wounds; deficiency may cause connective tissue not made correctly / blood vessel walls weaken and cause haemorrhaging under skin / bleeding gums / in rare cases scurvy – excess is rare but may cause nausea / diarrhoea;</p> <p>vitamin D to absorb calcium for growth and development of bones and teeth; deficiency may cause tetany / rickets / dental caries / brittle hair and nails / retarded growth – excess may cause hypercalcemia due to build-up of calcium / problems with kidneys;</p> <p>adequate NSP and water to prevent constipation / dehydration</p>	

Question	Answer	Marks
7(b)	<p><i>Some people shop for food during their lunch break.</i></p> <p><i>(i) Discuss hygiene points to consider when choosing food in a supermarket</i></p> <p><i>(ii) Describe how to ensure food remains safe to eat until it can be taken home.</i></p> <p><i>hygiene points [max. 8 marks]</i></p> <p>buy only from shops where environment is clean / tidy / hygienic / no rubbish – creates smells which attracts vermin / pests; only buy where premises are free from vermin / flies – pests carry bacteria which passes onto food; premises should have separate hand washing / equipment washing facilities – to maintain hygiene; chiller / refrigerator / freezer should display temperature – if not cold enough bacteria will not be inactive / food with spoil more quickly; check frozen food has not been stored above the load line – may have started to defrost so bacteria may have grown / multiplied; food handler should have clean overall / apron – bacteria from clothing can be transferred to food; food handler should have clean hands / short fingernails / no nail varnish / use disposable gloves – bacteria thrive in dirt under nails; food handler should not be coughing / sneezing – cross contamination; food handler should have all cuts / wounds covered with blue plaster – cross contamination; food handler should have hair tied back from face / covered – prevent hair in food; food handler should not blow into paper bags to open them / lick fingers when picking up wrapping paper – bacteria in mouth passes to paper then food; food handler should handle food with the appropriate utensils – avoids cross-contamination; food handler should use different knives / boards for raw and cooked food – avoids cross-contamination; food handler should not handle food and money – dirt on money passed to food; check expiry dates of pre-packaged foods / do not buy expired food – food may not be safe to eat / may have spoilt / quality may be affected; do not buy food with damaged package – food may be contaminated (with bacteria); do not buy tinned food which is dented / blown / rusted – harmful bacteria may have grown; do not purchase food with abnormal appearance / foul smell – food may be contaminated</p>	15

Question	Answer	Marks
7(b)	<p><i>food remains safe until taken home [max. 8 marks]</i></p> <p>do not buy frozen foods – they would defrost; buy perishable / chilled / meat / dairy last – to ensure food stays cool / to ensure bacteria has less time to multiply; keep raw meat / fish / dirty veg away from cooked / ready to eat food – less chance of cross-contamination; use a cool bag / cool box / ice blocks / polystyrene material – provides insulation; wrap all refrigerated / chilled food separately – provides more insulation; ensure all refrigerated / chilled food is kept together / in same bag – keeps cooler; store in a cool place / fridge if available in work; check packaging carefully / buy foods with good packaging – keeps foods in good condition; store in the car boot / coolest part / keep car cool / out of sunlight – to maintain quality of food / prevent bacteria multiplying; return home as soon as possible / take quicker route home – to store food appropriately as quickly as possible</p>	