

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0648 FOOD AND NUTRITION

0648/13

Paper 1 (Theory), maximum raw mark 100

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.

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Mark schemes will use these abbreviations

- ; separates points worth 1 mark
- - separates points worth less than 1 mark
- / alternatives
- **R** reject
- **A** accept (for answers correctly cued by the question)
- **I** ignore as irrelevant
- **ecf** error carried forward
- **AW** alternative wording (where responses vary more than usual)
- **AVP** alternative valid point
- **ORA** or reverse argument
- underline actual word given must be used by candidate
- () the word/phrase in brackets is not required but sets the context
- max indicates the maximum number of marks
- *italics* used to denote words or phrases from the question

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Question	Answer	Marks
1 (a)	oxygen – hydrogen – carbon – nitrogen –	[2]
(b)	growth; repair; maintenance / renewal; energy; production of hormones / enzymes / antibodies; production of blood cells;	[3]
(c)	hydrochloric; peptones / peptides / polypeptides; rennin; trypsin; ileum; amino acids;	[3]
(d)	chemical structure denatured / changed; this is permanent / irreversible; coagulation / setting occurs; description of changes with example / from liquid to semi-solid or solid, e.g. egg / from translucent to opaque, e.g. egg / colour change from red to brown, e.g. meat; overheating causes food to become less digestible;	[2]
(e)	HBV contains all / sufficient / correct amount essential / indispensable amino acids; meat – fish – cheese – eggs – milk – soya – Quorn; LBV lacks at least one essential / indispensable amino acid; pulses / named example – cereals / named example – nuts / named example – gelatine – bread – legumes / named example;	[4]
(f)	soya beans / soya bean products only plant product with HBV protein; e.g. flour – tofu – milk – tempeh – TVP; mixture of LBV protein foods – in same meal; e.g. beans on toast / lentil soup and bread; <u>complementary proteins</u> when HBV and LBV foods eaten together; e.g. soya bean curry with brown rice; essential amino acids lacking in one are compensated by the other;	[5]
2 (a) (i)	liver – kidney – red meat / named example / blood sausage – corned beef – eggs / yolk –	[1]
(ii)	cocoa – plain chocolate – curry powder – black treacle – dried fruit / named example – pulses / named example – green leafy vegetables / named example wholegrain cereal –	[1]
(b) (i)	<u>haemoglobin</u> ;	[1]
(ii)	transports oxygen to cells for cell respiration;	[1]

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Question	Answer	Marks
(c) (i)	<u>anaemia</u> ;	[1]
(ii)	pale complexion; lethargic/tired/fatigue/lack of energy/weakness; headaches; dizziness/faint;	[2]
(d) (i)	<u>vitamin C</u> / <u>ascorbic acid</u> ;	[1]
(ii)	<i>fruit source</i> : citrus fruit/named example/rose hips/blackcurrants/kiwi fruit/strawberries/mango/starfruit/dragonfruit/pineapple/soursop/papaya/ guava/melon – <i>vegetable source</i> : red/green peppers; new potatoes; tomatoes; green vegetables/named example –	[1]
3 (a)	controls/regulates the amount of water in the body; maintains normal pH of blood/fluid/electrolytes; transmits nerve signals; constituent of hydrochloric acid; helps muscular contraction/prevents muscle cramp;	[2]
(b)	hot climates; workers in heavy industry/manual workers; long distance/marathon runners/athletes;	[2]
(c)	headache; nausea and vomiting; muscle cramps; fainting; fatigue/tiredness/drowsiness/lethargy;	[2]
(d) (i)	use less salt in cooking – add less/do not add salt at the table – eat less processed foods/fast foods – read labels for salt content – buy low salt/potassium chloride – do not buy salted products, e.g. bacon/butter/fish in brine/crisps – rinse salted/brined products – use soy sauce sparingly – choose food/breakfast cereals lower in salt –	[2]
(ii)	herbs are edible grasses/leaves; e.g. parsley/sage/bay/thyme/used in parsley sauce/sage in stuffing/infused in tea; can be use dried or fresh; store dried herbs in dark places to preserve colour; spices are from root/stem/flower/seed/bark; e.g. nutmeg/cinnamon/cloves/used in gingerbread/mustard in cheese sauce; stimulate flow of digestive juices/aids digestion; add colour; add flavour/season; add aroma; used in small amounts;	[2] [2]

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Question	Answer	Marks
4 (a)	<u>white fish</u> ; cod / plaice / skate; <u>oily fish</u> ; herring / salmon; two from: crab; lobster; mussels; prawns;	[6]
(b)	M1 <u>vitamin A / retinol</u> ; M2 production of visual purple or rhodopsin in retina of eye / helps vision in dim light / at night; prevents night blindness; formation of mucous membranes; required to keep mucous membranes moist; for healthy skin; antioxidant; growth; M1 <u>vitamin D / cholecalciferol</u> ; M2 helps absorption of calcium / phosphorus; formation or maintenance of bones or teeth; prevents rickets in children; prevents osteomalacia in adults; growth;	[2] [2]
(c)	bright eyes not sunken / prominent; firm flesh; plenty of scales / bright scales / scales attached to skin; stiff tail; skin moist not slimy; bright red gills / not sunken; pleasant smell;	[2]
(d)	freezing; bacteria cannot multiply at low temperatures; temperature is $\leq -18^{\circ}\text{C}$; bacteria dormant at this temperature; salting; water removed by osmosis; bacteria need water to multiply; bacteria cannot multiply; drying; water evaporated / removed; bacteria need water to multiply; bacteria cannot multiply; pickling; pH unsuitable for bacterial growth; water removed from bacteria by osmosis; replaced by vinegar / acid; conditions unsuitable for bacterial growth; bacteria cannot multiply in acidic conditions; smoking; chemicals / phenol from wood smoke destroy or inhibit growth microorganisms; salted before smoking; water removed by osmosis; canning; bacteria destroyed by heat; can is sealed; bacteria cannot enter;	[6]
(e) (i)	protects from intense heat of oil / from burning; when heated the egg coagulates / sets preventing too much oil being absorbed by the fish during cooking; prevents the fish from disintegrating; improves taste / flavour; improves texture / makes it crunchy / crispy; improves colour / batter is golden; improves satiety / it absorbs fat which takes a long time to digest / batter mainly carbohydrate which is filling; increases portion size; prevents loss of moisture from fish; adds nutritional value (statement must be qualified);	[4]

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Question	Answer	Marks
(ii)	<p>pan not more than half full to prevent overflowing when food is added; dry food / equipment thoroughly before putting into fat preventing spitting / splutter; put food into pan carefully / do not throw food into pan to avoid splashing; use back burner if possible so less chance of being knocked over; pan handle turned in to avoid knocking over; pan should have flat base so it does not wobble; do not overfill pan with food or oil because it might overflow; do not overheat oil as this could catch on fire; have a lid nearby to cover pan / prevent oxygen reaching flames if it catches fire; do not move pan if it is on fire because of the risk of personal injury; do not leave the pan unattended because of the risk of a fire starting; turn heat off if oil begins to smoke due to fire risk; turn heat off after use and do not move pan until the oil is cold;</p>	[5]
(iii)	<p>stop burning process by immersing affected area in cold water for at least 10 minutes to reduce pain and risk of blistering; remove jewellery near the burnt area of skin but not if it is stuck to the skin as this could cause more damage; cover affected area (with clean plastic bag / non-fluffy cloth / cling film) to reduce risk of infection;</p>	[2]
(iv)	<p>do not move the pan; smother flames with lid / damp towel / fire blanket; turn off heat source if possible; do not use water; leave pan until completely cold;</p>	[2]
5 (a)	<p>whisk the eggs and sugar until thick and creamy / leaves a trail to incorporate air; sieve flour to aerate and remove lumps; fold in flour gradually or carefully with a metal spoon or palette knife to prevent air loss; pour into prepared / greased and floured / greased and lined tin which will prevent sticking; do not spread or air bubbles will break buy just tilt to give even thickness;</p>	[4]
(b)	<p><i>convection</i>: heat energy is transferred through gases such as hot air in oven; molecules become less dense and rise; colder molecules fall and are then heated which creates convection currents;</p> <p><i>conduction</i>: heat energy is transferred through solids such as oven shelf / cake tin; heat energy is transferred through liquids as cake mixture becomes liquid when heated; rapid vibration of neighbouring particles generates heat which passes to all parts of cake from outside where mixture touches tin;</p>	[4]

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Question	Answer	Marks
6 (a)	integrated/free standing; size of cooker in relation to family size/ space available in kitchen; choice of fuel/ gas/ solid fuel/ uses electricity; cost to buy/ money available; ease of cleaning; appearance/ colour/ style; guarantee; features/ spit roaster/ griddle/ double oven/ ceramic hobs/ automatic timer; manufacturer's name/ reliable manufacturer;	[3]
(b)	use a kitchen waste disposal unit; recycle paper/ glass/ aluminium; compost food waste; empty all bins regularly/ do not allow bin to overflow; wash/ disinfect all bins regularly; line with plastic bin liner/ wrap waste food; wrap broken glass; tie bags; keep bin area clean to prevent flies/ insects; cover bin tightly to prevent attracting flies/ vermin; keep outside bin away from house and open windows so flies do not get into house; do not pour fat down drains as drains get blocked when fat hardens;	[3]

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Question	Answer	Mark
7 (a)	<p><i>lifestyle</i> time available for eating / cooking; use of convenience foods / ready meals / take-away versus food cooked from basic ingredients; where food is eaten at home / restaurant / work / outdoor / on the move; financial factors, e.g. larger income means more money to spend on more luxury food; facilities available / technological equipment available; occasion of meal breakfast / lunch / dinner / everyday meal / treat celebration / festival / party; following specific diet due to state of health, e.g. anaemia / obesity / diabetic; avoidance of food due to allergies / intolerance; choosing to follow nutritional advice low fat / sugar / salt / high fibre; if food is eaten alone / with family / friends / work colleagues; ethics, e.g. vegetarian / vegan / organic / food miles / packaging; influence of others / advertising / role models / power of persuasion from children or family or peers to eat specific foods; type of meal / when meal is eaten / snack between meals / regular meal times / irregular mealtimes; link to being active / sedentary;</p> <p><i>religion</i> <i>Jewish religion:</i> kosher foods / follows the rules in the Torah / Holy Book; eat fish with scales and fins and animals that chew the cud and have cloven hooves; forbidden foods, e.g. shellfish, rabbit, pork, eels, gelatine; may not eat meat and milk together so separate storage and preparation areas and cooking equipment;</p> <p><i>Christian religion:</i> celebrate through festivals – with special traditional foods, e.g. Lent / Christmas / Mothering Sunday / Easter / Shrove Tuesday / Good Friday;</p> <p><i>Muslim religion:</i> food must be halal; animal has to be slaughtered in a certain way; animals must be alive and healthy at the time of slaughter, killed by a Muslim with one clean cut to the throat while a special dedication is recited; all blood must be drained from the animal; forbidden foods, e.g. haram, pork, fish without scales, shellfish, meat incorrectly slaughtered; alcohol is forbidden; practise regular fasting at Ramadan; fast for one month and at the end of the month a big celebration takes place – Eid-ul-Fitr;</p> <p><i>Hindu religion:</i> Hindus do not eat beef / cow sacred; can drink milk and eat milk products; strict Hindus are vegetarian;</p> <p><i>Buddhist religion:</i> many Buddhists are vegetarians, although meat and fish not forbidden; monks and nuns cannot grow, store or cook food and must rely upon food given to them;</p> <p><i>Sikh religion:</i> many Sikhs are vegetarian; only beef and alcohol forbidden;</p>	<p>[15]</p> <p>For full marks, candidates should:</p> <ul style="list-style-type: none"> • demonstrate a detailed, sound and balanced understanding of the topic; • refer to relevant examples; • use correct terminology; • provide comments which are precise and relevant; • answer in a well-organised and clearly presented way.

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	<i>Rastafarian religion</i> : no animal foods, except milk; food must be Ital or alive, natural and clean; no canned and processed foods; no salt, coffee or alcohol;	
(b)	<p><i>importance of packaging food products</i> to protect from damage during storage and transport/easier to transport/safe transportation/stacking; to provide information to consumer, e.g. nutrition; to attract customers/enhance appearance; to prevent tampering; can be used during the reheating of food; to reduce waste by protecting from damage, e.g. eggs in cartons; to increase the shelf life of foods/to extend the life of a product, e.g. by canning; to enable some foods can to be sold in prescribed amounts, e.g. butter; to enable hygienic storage/to prevent contamination from dust, flies, pests and bacteria;</p> <p><i>importance of labelling food products</i> to give information to consumer/some information is a legal requirement; name of product – so consumer knows what is being bought; description – further details, e.g. tuna in brine/oil; name of manufacture – reliability/know what to expect; contact details – in case of complaints/compliments; ingredients – descending order – by weight – may have allergy information; cooking instructions/instructions for use – for best results; storage instruction – to maintain quality; place of origin – some people may not want to buy products from a particular country; date stamp/use by date – to know how long the food is going to last; serving suggestion – to give ideas to consumer; picture of product – to know what the consumer can expect; weight/volume – to calculate unit cost/make comparisons; nutritional information if linked to special claims – reduced fat/no added sugar/added vitamin C, etc.; vegetarian society symbol – so vegetarians know food is suitable; wheat ear symbol – gluten free/coeliac can consume; recycle symbol – consumer knows how to dispose of packaging; nutritional information/GDA– consumer knows nutritional value per 100 g; kilojoule/calorie content – to help manage dietary intake; sugar content – useful for diabetics; fat content – states amount of saturated fat – useful, e.g. if have CHD; salt – control salt intake if suffering from hypertension; additives identified – may wish to avoid/allergies, etc.; price – if on special offer/can compare with other products;</p>	<p>[15]</p> <p>For full marks, candidates should:</p> <ul style="list-style-type: none"> • demonstrate a detailed, sound and balanced understanding of the topic; • refer to relevant examples; • use correct terminology; • provide comments which are precise and relevant; • answer in a well-organised and clearly presented way.