



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

FOOD AND NUTRITION

0648/11

Paper 1 Theory

October/November 2016

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.

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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

Page 3	Mark Scheme	Syllabus	Paper
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Question	Answer	Marks
1(a)	carbon – hydrogen – oxygen –	1
1(b)	vitamin A; vitamin D;	2
1(c)	<p><i>saturated fat</i> all carbon atoms are <u>saturated</u> with <u>hydrogen</u> atoms; (carbon-carbon) single bonds; usually solid at room temperature; usually from animal foods;</p> <p><i>polyunsaturated fat</i> can take up more <u>hydrogen</u>; more than one (carbon-carbon) double bond in molecule; liquid / oil at room temperature; usually plant – or fish origin;</p>	1 1
1(d)	sesame seed oil – sunflower seed oil – maize / corn oil – palm oil – peanut / groundnut oil – oily fish (or named example) – fish <u>liver</u> oil (or named example) – soya bean oil – safflower – flax seed – pine nuts – walnut oil – hazelnut oil – cotton seed – canola oil – castor oil – grapeseed – poppy seed –	2
1(e)	eat less red meat – e.g. beef / pork / lamb; substitute <u>red</u> meat with soya products / TVP; trim fat from meat / remove skin from chicken; choose white meat / fish; do not fry foods in lard / butter / dripping – use plant oils instead;	5

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Question	Answer	Marks
	<p>reduce consumption of chocolate; eat fewer cakes / biscuits / pastries; avoid avocado; eat fewer eggs; eat less butter / cheese; choose low-fat versions of products, e.g. yoghurt / cheese; use skimmed milk; spread butter thinly; do not put butter on vegetables when serving / mashing potatoes / use margarine / oil; change from butter to margarine when cooking / spreading;</p>	
1(f)	<p>frying – corn oil / sunflower oil; roux / sauce-making – margarine / butter; aeration / creaming – margarine / butter traps air when creamed with sugar in cakes; pastry-making – holds layers apart in flaky pastry; flavour in cake-making – butter / margarine; rubbing in / shortening – margarine / butter / white fat; improve keeping quality – butter used in rich cakes; dressings – oil in French dressing; form an emulsion – olive oil in mayonnaise; basting – dripping / oil adds moisture to meat cooked by dry heat / grilled / roasted; make vegetables crispier by roasting – lard; decorating – butter icing; prevent sticking / greasing – oiled baking tins; colour (in pastry / cakes / scones) – butter / margarine;</p>	5

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Question	Answer	Marks
1(g)	melts; bubbles as water driven off; darkens in colour; splits into fatty acids and glycerol/separates; bluish haze given off; ignites/burns;	3
1(h)(i)	<u>emulsifies</u> fat;	1
1(h)(ii)	converts fat to <u>glycerol</u> ; and <u>fatty acids</u> ;	2

Question	Answer	Marks
2(a)	wholegrain/wholemeal cereals – wholemeal cereal products/wholemeal bread – wheat germ – yeast and yeast extracts/Marmite – <u>red</u> meat – liver – fish roe – milk and dairy foods – bran – nuts/named nut – oats – eggs – legumes/beans/peas/pulses – asparagus – Brussel sprouts – spinach – sesame seeds – sunflower seeds – named fortified food – potatoes – kidney –	1
2(b)	failure to grow/stunted growth/retarded growth; skin lesions/cracks in skin; dermatitis; conjunctivitis/blurred vision/itchy eyes/sore eyes; swollen tongue; sore/dry cracked skin around mouth/lips; throat swelling/soreness;	3

Page 6	Mark Scheme	Syllabus	Paper
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Question	Answer	Marks
2(c)	<p>growth; <u>release</u> of energy; formation of red blood cells; prevent <u>pernicious</u> anaemia; aids metabolism / metabolism of amino acids; maintenance of healthy nerve cells; production of DNA / RNA / works with folic acid;</p>	2

Question	Answer	Marks
3(a)	<p>makes hormone thyroxine; controls rate at which energy is used / controls rate of metabolism; prevents goitre / swelling of thyroid gland in the neck;</p>	1
3(b)	<u>goitre</u> ;	1
3(c)	<p>seafood / salt water fish / named example – seaweed – milk – cheese – green (leafy) vegetables – cod liver oil – vegetables grown near the sea – iodised salt / iodised water –</p>	1

Question	Answer	Marks
4(a)	<p>seeds / named seeds – nuts – pulses / legumes – beans – peas – named examples of pulses – fruit / dried fruit / named fruits – vegetables / named vegetables – wholemeal bread – wholegrain cereals – maize – wholegrain breakfast cereal – brown rice – wholemeal pasta – wholemeal flour – oats – bran – rye –</p>	2
4(b)	higher cholesterol;	6

Page 7	Mark Scheme	Syllabus	Paper
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Question	Answer	Marks
	constipation; higher <u>blood</u> sugar; hernia; cancer of colon / bowel cancer; diverticular disease; haemorrhoids / piles; varicose veins; accumulation of toxins; lack of satiety;	

Question	Answer	Marks
5(a)	to provide food when supply is limited / times of need; to enjoy food out of season; to give variety / new products made, e.g. jam, pickles; to cope with a glut / prevents waste / use when plentiful; to prevent food spoilage / decay / prevent the growth of yeast / mould / bacteria; to allow food to be transported from area to area / between countries; to save money by making use of food when cheap; to use in emergencies / famine / war; to retain as many of the sensory qualities of fresh food as possible, e.g. flavour / colour / appearance / texture; to retain nutritive value;	5
5(b)	HTST / flash method / Holder method;	1

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Question	Answer	Marks
5(c)	milk is homogenised; heated to 80 °C / 176 °F for 15 minutes; sugar added; some water removed / evaporated; cooled and sealed in cans / canned;	3
5(d)	keep in a cool place / refrigerate because bacteria reproduce more slowly / inhibit growth of bacteria; store in clean containers so that residual bacteria in container cannot contaminate milk; do not mix old and new milk if older milk is beginning to sour because this will affect new milk; cover to prevent entry of dust / insects; do not store near strong-smelling foods because milk absorbs the smell, e.g. cheese, onions; store in a dark place / away from sunlight because riboflavin destroyed by exposure to sunlight; use within two or three days so that souring does not begin; freeze the milk as the bacteria become dormant; do not freeze milk in glass bottles as the liquid will expand and may crack the bottle;	4

Question	Answer	Marks
6(a)	rubbed in / rubbing in;	1
6(b)	heat energy is transferred by the movement of the air / liquid / gas; when air / liquid / gas heated it becomes less dense and rises; hot air / liquid / gas displaces cold air / liquid / gas which sinks and is heated again; convection currents formed; continues until a constant temperature is reached;	3

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Question	Answer	Marks
6(c)	<u>fat</u> in cheese melts; <u>protein</u> coagulates; overcooking makes cheese tough / stringy / rubbery / hard to digest;	2
6(d)	formation of crisp crust / crunchy; starch breaks down into dextrin / dextrinisation occurs; food turns (golden) brown;	2

Question	Answer	Marks
7(a)	sieving – flour for shortcrust pastry / scones; creaming – fat and sugar for rich cakes; rubbing in – dish made with shortcrust pastry; whisking eggs and sugar – Swiss roll / sponge cake / sponge drops; beating – eggs before adding to creamed mixture; rolling and folding – dish made with flaky pastry / puff pastry;	4
7(b)	Yorkshire puddings; toad-in-the-hole; éclairs; choux buns; profiteroles;	1
7(c)	warmth; moisture; food;	2
7(d)	<u>carbon dioxide</u> ;	1

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Question	Answer	Marks
7(e)(i)	yeast will be killed / destroyed;	1
7(e)(ii)	yeast will become dormant;	1
7(f)	strong / hard flour has high gluten content; spring wheat / Canadian flour contains more than 10% protein which allows the dough to stretch; plain flour because yeast is the raising agent; wholemeal flour adds colour / "nutty" flavour / B vitamins / NSP;	2

Question	Answer	Marks
8(a)	<i>appropriate reason required for the mark to be awarded in each case</i> walls / floors / ceilings must be in good condition / easy to clean / cleaned regularly – reason; work surfaces smooth / no cracks / non-absorbent material / easy to clean – reason; clean work surfaces / equipment regularly – reason; food storage areas easy to clean / cleaned regularly – reason; temperature of fridge / freezer monitored – reason; clean chopping boards / knives / other equipment / hands after use with raw food – reason; keep pets / pests away from food preparation areas; dispose of rubbish in covered bins / empty bins regularly / disinfect bins regularly – reason; use different colour chopping boards / knives / change chopping boards for different food – reason; clean tea towel / dish cloth regularly and do not use it for other purposes – reason; do not use chipped / damaged equipment – reason; appropriate reasons, e.g.: – to prevent cross-contamination / transfer of bacteria – to prevent growth of microorganisms – to avoid attracting pests	4

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Question	Answer	Marks
8(b)	<p><i>appropriate reason required for the mark to be awarded in each case</i></p> <p>hard-wearing / durable – reason; needs to be easy to clean – reason; heat resistant – reason; non-absorbent to grease and liquid – reason; stain resistant – reason; not hazardous for slipping / falls / tripping / will not crack or scratch; not too cold / warm to feet – reason; not too hard for comfort – reason; no loose mats / highly polished finish – reason; colour / aesthetic appeal to complement / coordinate with decoration / please the consumer; light colour to give kitchen brightness / keep kitchen cool; cost to fit with budget; vinyl tiles / sheet / thermoplastic / linoleum because it is comfortable / warm / resistant to moisture / traffic; ceramic tiles can be cold / resistant to stains / hard underfoot / need regrouting / durable; wood floor / laminate engineered because it is warm / durable / easy to clean / cheaper; cork because it is a renewable and sustainable source / warm / soft / soundproof / insulating / can be sealed; rubber because it is warm / soft / insulates / resists water / resists burns / it is slip resistant / hard wearing; quarry tiles / stone / slate / travertine because it is porous so stains easily unless sealed / expensive / hard on feet / crockery may break if dropped onto the tiles; carpet / carpet tiles because it is hard to clean / not stain resistant / hard-wearing;</p>	4

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Question	Answer	Marks
8(c)	<p>must suit cooking stove so that the pan works on the stove (gas / electric / solid fuel / open) where it will be used;</p> <p>size of pan should suit size of hob / burners available to prevent waste of fuel or handles heating / damaged / using too much fuel to heat a big pan on small flame;</p> <p>choose a variety of sizes / types because this will suit cooking different quantities / for different sizes of family;</p> <p>thick base so will not buckle with heat;</p> <p>flat / ground base for use with solid fuel or electric stove to give good contact with solid hotplate / prevent waste of heat / stable to prevent tipping over;</p> <p>handle comfortable / firmly attached / plastic / wooden as poor conductors of heat;</p> <p>non-stick surface is easy to clean but need non-metal utensils / good for healthy cooking as no need for oil or fat;</p> <p>rounded corners between base and sides prevents food collecting easier to stir / easier to clean;</p> <p>cost to keep to budget;</p> <p>well-fitting lid saves fuel / prevents evaporation of water;</p> <p>colour to match with kitchen design;</p> <p>brand / quality to buy from a reliable supplier / recommended;</p> <p>weight of pan so not too heavy with total weight of food being cooked;</p> <p>aluminium is lightweight but dents if dropped / can buckle with strong heat;</p> <p>copper / copper base because it conducts heat well, expensive;</p> <p>not copper pan to prevent loss of vitamin C;</p> <p>stainless steel is good conductor of heat / hard-wearing / keeps shape;</p> <p>enamel is colourful which may match / brighten kitchen but chips if dropped;</p> <p>glass is easy to clean / can see contents;</p> <p>iron is cheap but stains / rusts;</p>	4

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Question	Answer	Marks
9(a)	<p>need to have a balanced diet – maintenance of the mother’s body weight and the growing fetus; sufficient <u>HBV protein</u> – growth of fetus; increase <u>calcium</u> and/or <u>phosphorus</u> – building bones/teeth/skeleton growth of fetus/prevents weakened bones (osteoporosis or osteomalacia) in mother; increase <u>vitamin D</u> – absorbs calcium/prevent low birth weight/tetany/oesteomalacia in mother; increase <u>iron</u> – mother’s blood volume increased in pregnancy/prevents anaemia in mother/fetus needs six month store of iron due to lack of iron in milk; increase <u>vitamin C</u> – to absorb iron/boost immune system; <u>NSP</u> – prevent constipation; essential <u>fatty acids</u> (EFAs)/linoleic/linolenic/omega 6/omega 3 – brain development of fetus/lower blood cholesterol of mother; increase <u>folate/folic acid</u> for nervous system/reduces the risk of miscarriage/prevent neural tube defects/spina bifida/premature birth/for development of brain/RNA/DNA production; <u>vitamin B</u> – release energy from carbohydrates/fats/protein; more starchy food due to higher energy needs (1000 kJ/250 kcal); reduced fat – difficult to digest– baby too big – mother overweight/CHD; reduced sugar – less active so less energy used/diabetes/obesity; reduce salt intake levels – increase risk of high blood pressure/hypertension/fluid retention/risk for the fetus; avoid unpasteurised cheese/pâté/ready-prepared salads which may contain listeria causing still-birth or miscarriage; avoid raw or partially cooked eggs/mayonnaise/mousse due to risk of salmonella; avoid alcohol/caffeine/nicotine – prevents calcium being laid down correctly; avoid liver in first few months pregnancy due to high concentration vitamin A which could affect development of the fetus; avoid shark/swordfish/tuna/marlin due to high levels of mercury; avoid nuts/allergy concerns;</p>	15
9(b)	<p><i>steaming</i> <i>advantages [max 4]</i> little attention required except to top up water/some have timers/do not have to flip or turn; easy to digest/light texture so suitable for convalescents/elderly/young children; food not in contact with water so no loss of <u>water-soluble</u> vitamins; food not likely to overcook/does not fall apart/breakup;</p>	15

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Question	Answer	Marks
	<p>saves fuel / can cook several dishes in different tiers; uses only one burner on stove; can be carried out in pressure cooker so saves time; healthy method as no fat is used; because it is long slow method can be used to tenderise food so good for inexpensive meat / cheaper cuts;</p> <p><i>disadvantages [max 4]</i> food takes a long time to cook; can be an expensive use of fuel; heat destruction of vitamin C more likely to occur; kitchen likely to be filled with moisture / uncomfortable to work in / deterioration of decoration; food does not develop colour / does not look attractive; food can be insipid / tasteless so needs to be served with a sauce; food remains soft / not crisp / variety of texture / lacks “bite” / needs additional accompaniment to vary texture;</p> <p><i>frying</i> <i>advantages [max 4]</i> quick method of cooking / good when time is limited; saves fuel; food becomes brown / looks appetising / looks attractive; develops crisp surface / appealing / variety of textures; flavour developed / if coatings are used absorbs flavour from oil / fat; appetising smell / increases flow of saliva for easy digestion; high satiety value;</p> <p><i>disadvantages [max 4]</i> adds fat / increases calorific value of product which can lead to obesity / CHD; needs constant attention during cooking; fried food may be difficult to digest / not suitable for convalescents; can be a dangerous process / needs skill; can be expensive to buy enough oil for a deep-fat-fryer; cannot cook large amounts at once; if the fat is too hot food will be overcooked on the outside and raw inside; if the fat is too cool food will absorb oil / become soggy / unappetising;</p>	

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Question	Answer	Marks
	must strain oil when cool to remove crumbs of food which can decompose and give a bitter flavour / leave dark specks on food; some foods need to be coated to prevent them falling apart / absorbing too much fat;	