Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

FOOD AND NUTRITION **6065/01**

Paper 1 Theory **May/June 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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Question	Answer	Marks
1 (a)	how the body uses energy / chemical processes or (chemical) reactions occurring in the body;	[1]
(b)	(mechanical energy for) muscle movement / voluntary work / involuntary work / exercise; (chemical energy for) metabolism / chemical reactions / growth and repair / digestion / absorption / excretion; (heat energy to) maintain body temperature; (electrical energy for) transmission of nervous impulses; (basal metabolism for) heartbeat / blood circulation / breathing / brain activity;	[3]
(c)	warmth / heat / insulation; energy <u>store</u> / protein sparing; protection of internal organs; solvent for fat-soluble vitamins / vitamins A and D; formation of cell membranes; increases calorific value of food without adding bulk; high satiety value / gives a feeling of fullness after a meal; provides <u>essential</u> fatty acids;	[4]
(d)	obesity; heart conditions / heart attack / CHD / CVD; mental illness / low self-esteem; high blood pressure / hypertension; strokes; high cholesterol / blocked arteries; diabetes; dental caries / tooth decay;	[4]
(e) (i)	meat – fish – cheese – eggs – milk – soya –	[2]
(ii)	pulses – beans – peas – cereals / (whole)grains – cereal products – nuts – gelatine – seeds –	[2]
2 (a)	starch is changed to <u>maltose;</u> by salivary <u>amylase;</u>	[2]
(b)	<u>duodenum</u>;	[1]
(c)	<u>bile</u>;	[1]
(d)	erepsin / pepsin / trypsin / trypsinogen;	[1]
(e)	<u>amino acids</u>;	[1]

Question	Answer	Marks
3	wholegrain / wholemeal cereals; cereal products / bread / flour; fortified breakfast cereal; wheat germ; red meat; liver; kidney; heart; eggs; fish roe; milk / dairy products; seeds / nuts / beans / peas / pulses; potatoes; asparagus / kale; cauliflower; oranges; beri beri; riboflavin; sunlight; dementia / dermatitis / diarrhoea;	[2] [1] [1] [1] [1]
4 (a)	production of visual purple in retina of eye; helps vision in dim light / at night; prevents night blindness; formation of mucous membranes; required to keep mucous membranes, e.g. throat / digestive / bronchial / excretory tracts, moist and free from infection; for healthy skin; antioxidant; required for growth;	[3]
(b) (i)	milk – cheese – butter – liver – kidney – eggs – fish liver oil – oily fish –	[2]
(ii)	(beta-)carotene;	[1]
5	protein; (rapid) growth / production of hormones / repair; calcium / phosphorus; bones / teeth; vitamin D; absorption of calcium; iron; carries oxygen for respiration / blood loss during menstruation / anaemia; vitamin C; absorption of iron;	[6]
6 (a)	oats – barley – rye – corn / maize / mealie-meal – millet – rice – sorghum – quinoa –	[2]
(b)	readily available; easy to transport; easy to store; easy to grow; cheap; source of energy; slow-release carbohydrate / complex carbohydrate; filling; source of (LBV) protein / idea of protein complementation; NSP (in wholegrains) / good for digestive system / help prevent constipation; versatile / variety / can be used for sweet and savoury dishes;	[4]

Question	Answer	Marks
7 (a)	use wholemeal flour; use wheatmeal flour; use granary flour; add oats; add bran; add nuts / seeds; add dried fruit / named example; add (fresh) fruit / named example; add vegetable / named vegetable;	[4]
(b)	high / more gluten content; gives a strong elastic dough / helps trap carbon dioxide; gives a better structure / firmer structure / firmer shape;	[1]
(c)	sensitivity / intolerance to the protein gluten / wheat;	[1]
(d)	(too) hot – destroys / kills the yeast; warm – activates the yeast; (too) cold – slows the activity of the yeast;	[1]
(e)	strengthen gluten / add flavour / add taste;	[1]
(f)	carbon dioxide produced; warmth encourages fermentation; carbon dioxide expands / makes the bread rise; liquid changes to steam; gluten stretches and coagulates; heat kills the yeast; alcohol evaporates; starch gelatinises due to moist heat on starch; crust forms on the outside due to dry heat on starch; outside crust browns due to dextrinisation (of starch); caramelisation (of sugar); Maillard browning;	[5]
(g)	warmth; sugar; oxygen / lack of oxygen; suitable pH;	[2]
8 (a)	sauté; dry; shallow; deep; stir;	[3]
(b)	quick method of cooking / convenient; food becomes brown; crisp surface / nice texture; flavour developed; colour developed; appetising smell; little loss of nutrients;	[3]

Question	Answer	Marks
(c)	pan for deep frying is not more than half full of oil so fat does not overflow when the food is added; lower food gently into the fat to avoid splashing fat; do not overfill the pan with food due to the danger of overflowing; make sure the inside of the food is properly cooked / danger of food poisoning if the inside is not thoroughly cooked; make sure the pan / equipment / food is dry because water turns to steam and can splutter (causing burns); put pan on the back burner as there is less chance of it being knocked over; pan handle turned in in case it is knocked over; flat base on frying pan so it sits securely on the burner; do not leave unattended as it may ignite; monitor temperature as the oil can ignite; turn heat off if fat begins to smoke as fat is near flash point; have a lid / damp tea towel / fire blanket nearby to extinguish flames; do not move pan until fat is cold because it may still catch fire; leave pan to cool before handling / washing up the pan; no water nearby because water will make the fat spit;	[5]
(d)	immerse the affected area in cold water for at least 10 min / put affected area in running water for at least 10 min; remove jewellery near the burnt area of skin but do not remove anything that is stuck to the burnt skin; cover affected area with a clean, non-fluffy cloth / cling film;	[2]
9 (a)	size of family; requirements of oven, e.g. defrosting / reheating / cooking fresh ingredients; space available in the kitchen / size of microwave; type required, e.g. combination oven and microwave; digital or manual controls; not too complex to work; reliable brand; design and style / colour; power output / heating category A–E / energy efficiency; cost;	[4]
(b)	not all foods can be cooked, e.g. pastry / whole eggs; food does not brown; food does not become crisp; flavours do not develop because food cooks quickly; not suitable for large pieces of food / joints of meat / rays only penetrate 4 cm; no metal dishes / metal decorations because this causes arcing (which can damage the magnetron); easy to overcook due to speed of cooking; standing time required to allow cooking to continue, so overcooking can occur; different thickness of food cook unevenly / food needs to be turned / moved round frequently; liquids need to be stirred to allow even cooking / avoid 'hot spots'; size of the oven cavity limits the quantity and size of the food which can be cooked;	[4]

Question	Answer	Marks
(c)	magnetron generates electromagnetic waves / microwaves / radiation; penetrate food to depth of 4 cm; molecules in food absorb electromagnetic waves / microwaves / radiation; molecules in food agitated; agitation produces thermal heat energy; heated molecules transfer heat to neighbouring molecules by conduction;	[3]
10 (a)	*packaging [max 8]* protects food from damage during transport / storage; to provide information to consumer, e.g. nutrition; looks attractive / appealing; saves time in shops – foods do not need to be wrapped – easy to carry; prevents tampering; to prevent contamination from dust / flies / pests / microorganisms; makes storage easier – rigid shapes can be stacked; items contain a specific weight / portion size / can be sold at a set price; can be used during the reheating of food; to protect from damage, e.g. eggs in cartons; to extend the life of a product by canning; to extend the life of a product by removing oxygen in vacuum packaging; to extend the life of a product by removing light in foil packaging; to extend the life of a product by using an atmosphere of nitrogen in MAP; *labelling [max 8]* give information to the consumer – some information is a legal requirement; name of product – so correct type of food can be bought; picture of product – see contents at a glance; product description – know what is being bought, e.g. specific cut of meat / tuna in brine; brand name – may want to buy from a well-known range / reliability; name and address / phone number / email of manufacturer – in case of complaint / need to contact; price – so customers can compare / get value for money; recycling symbol – correct disposal of packaging; country of origin ability – select / boycott products / carbon footprint / political reasons; list of other products in range – to encourage customer to buy more; ingredient list / in descending order / by weight – may have allergies / wish to avoid ingredient / can identify any high risk foods included in product so that control can be put in place; cooking instructions – for best results / new product / inexperienced; storage instructions – to identify the best conditions in which to keep the product; serving suggestions / recipes – to give ideas to consumer; weight – to calculate unit cost / make comparisons / buy the amount required; use-by date / best before date – to indicate how long the product can safely be kept / used; special information – may indicate if bones / nuts are present which may endanger some consumers; special claims, e.g. reduced fat / no added sugar / added vitamin C / no artificial colourings – to enable wise choice;	[15]

Question	Answer	Marks
	vegetarian society symbol – so vegetarians know it is a suitable product; wheat ear symbol / gluten free – coeliacs can consume; may include nuts – avoid if allergic; halal / other information – suitable for certain religions; portions provided – to know how many can be served; kcal / kJ content per 100 g / per serving – helps to plan a balanced diet; may give RDI for particular nutrients – shows proportion supplied by one serving; states type of fat – vegetarians will not wish to include animal fat in their diet; states how much of fat is saturated – for those with CHD / low cholesterol diet; quantity of sodium – for those with hypertension; amount of sugar – diabetics – for low-fat / slimming diet;	
(b)	*reasons for preserving food [max 7]* to provide food when supply is limited / buy food when it is plentiful to use when scarce / to use in emergencies / famine / war; to enjoy food out of season; to cope with a glut / prevent waste; to give variety / different flavours / textures / new products made – jam, pickles; to prevent food spoilage (by destroying microorganisms) / to prevent the growth of microorganisms / to extend shelf life; to make food storage easier – qualified or with example; to allow food to be transported from area to area or between countries / to enjoy produce from other countries; to store food when the quality is best and cost is lowest / to save money – make uses of food when cheap; to retain as many of the qualities of fresh food as possible / flavour / colour / appearance / texture / nutritive value; to prevent the re-entry of microorganisms by sealing well; *removing moisture [max 3]* drying removes water – microorganisms cannot multiply without water; drying method(s) discussed, e.g. freeze-drying, roller-drying, spray-drying, salting; relevant example, e.g. instant coffee / powdered milk; *reducing temperature [max 3]* water in cells becomes frozen and unavailable for growth of bacteria; microorganisms cannot multiply at low temperatures / microorganisms become dormant; microorganisms multiply <u>more</u> rapidly at the temperatures in the refrigerator (comparison required); different method(s) discussed, e.g. cryogenic freezing, plate freezing; relevant example, e.g. store meat in the refrigerator / freeze vegetables; *using sugar [max 3]* in jam making heat destroys / kills microorganisms; high sugar content / 60% added sugar prevents growth of microorganisms; water withdrawn from cells so too concentrated for microorganisms to thrive; sealed in jars which prevents entry of microorganisms; relevant example, e.g. jam-making / named jam;	**[15]**