MARK SCHEME for the May/June 2010 question paper

for the guidance of teachers

6065 FOOD AND NUTRITION

6065/01

Paper 1 (Written), 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 must be read in conjunction with the question papers and the report on the examination.

• CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the May/June 2010 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



Page 2			Mark Scheme: Teachers' version	Syllabus	Paper
			GCE O LEVEL – May/June 2010	6065	01
			Section A		
(a)	(i)	simp swee	o saccharides ble sugars – C ₆ H ₁₂ O ₆ – basic unit – end product of dige et – soluble in water bints) (2 points = 1 mark)	stion –	[2
	(ii)	dout swee brok	Accharides ble sugars – $C_{12}H_{22}O_{11}$ – 2 monosaccharides combined et – soluble in water – glucose + 1 other simple sugar en down to monosaccharides during digestion pints) (2 points = 1 mark)		[2
	(iii)	mad not a Non prev chain starc	e up of many monosaccharides – insoluble in water – all polysaccharides can be digested – Starch Polysaccharide (NSP) – adds bulk to diet – ents constipation/diverticulitis/varicose veins etc.– n is branched – cannot break – ch can be digested – because molecules are linked tog pints) (2 points = 1 mark)		e chain [ź
	(iv)	in th amy conv in th amy in th malta villi - have gluce then	estion and absorption ne mouth lase/ptyalin – from salivary glands – acts on <u>cooked</u> st verting it into maltose ne duodenum lase – in pancreatic juice – converts starch to maltose ne ileum ase – in intestinal juice – converts maltose to glucose - finger-like projections – in walls of small intestine – e walls made of single cells – and a network of blood c ose passes through walls of blood vessels – into blood transported to liver points) (2 points = 1 mark)	– apillaries –	[(
	(v)	Reast tooth exce asso risk o 3 rea	sons for reducing sugar intake n decay – bacteria change sugar to acids – dissolve er ess stored as fat – obesity – breathless – low self–este ociated with coronary heart disease (CHD) – varicose v of diabetes – too much glucose in blood for insulin pro asons + 3 explanations bints) (2 points = 1 mark)	em – veins – hypertens	-
	(vi)	avoid fewe use drink do n fewe	as of reducing sugar d adding sugar to drinks – use artificial sweetener – er sweets/chocolate – biscuits/cakes – reduce sugar in canned fruit in fruit juice instead of syrup – k low calorie drinks/Diet Coke – avoid fizzy drinks – ot buy sugar-coated breakfast cereal – buy 'sugar free er convenience foods – study nutritional information on bints) (2 points = 1 mark)	' products –	[(

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			GCE O LEVEL – May/June 2010	6065	01
(b)	(i)	forma picks trans energ CO ₂ tranp	ortance of iron ation of haemoglobin – red pigment in blood – s up oxygen from lungs – oxyhaemoglobin – sports oxygen to cells – oxidises glucose – cell respira gy produced – leaving carbon dioxide and water – attaches to haemoglobin – carboxyhaemoglobin – ported to lungs – for breathing out/disposal bints) (2 points = 1 mark)	ition –	[
((ii)	liver/ eggs dried gree	rces of iron /kidney – red meat (or one named e.g. corned beef) – s – cocoa/plain chocolate – curry powder – black tread d fruit (or named e.g.) – pulses (or named e.g.) – soya n vegetables (or one named e.g.) pints) (2 points = 1 mark)	le –	
(i	iii)	、 ·	ciency disease emia		l
(i	v)	pale feel o	p toms – tired/lethargic/fatigued – weak – headaches – dizzy/faint – lacks energy – breathless – bints = 1 mark)		
(c)	(i)	clear make for pr grow helps abso	ortance of vitamin C r skin – building/maintenance of linings of digestive sy es connective tissue – to bind cells together – roduction of blood – and walls of blood vessels – imm /th – helps to heal wounds/fractures – s to build strong teeth and gums – orption of iron – antioxidant etc. bints) (2 points = 1 mark)		
(1	ii)	citrus strav gree	rces of vitamin C s fruit (or named e.g.) – blackcurrants – rose hips – wberries – melon – tomatoes – mango – green pepper n vegetables (or named e.g.) – new potatoes etc. pints) (2 points = 1 mark)	"S —	
(1	-	Defic Scur (1 ma	•		
(1	-	walls bruis gums as bl	aptoms s of blood vessels weaken/break – blood escapes – ses appear under the skin – pain in muscles and joints s bleed – teeth loosen – heart failure – lood passes through walls of capillaries etc. bints = 1 mark)	i —	I

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(d) Deficiency diseases

Not iron or vitamin	C – in previous questions
Vitamin A/Retinol	Night blindness/Xerophthalmia
Vitamin D/Cholecalciferol	Rickets/osteomalacia
Vitamin B1/Thiamine	Beri–beri
Vitamin B2/Riboflavin	Dermatitis/cataracts
Vitamin B3/Nicotinic acid	Pellagra
Vitamin B12/cobalamin	Pernicious anaemia
Folate/folic acid	Anaemia/spina bifida
Calcium	Rickets/osteomalacia/osteoporsis/tetany
lodine	Goitre
Protein	Kwashiorkor
Carbohyrate/fat/protein	Marasmus (lack of energy foods)
4 deficiency diseases × 1 point	
4 associated nutrients × 1 point	
(8 points) (2 points = 1 mark)	

[4]

(e) Planning meals for the elderly

small portions - appetite reduces with age remove bones/skin etc. - eyesight may be poorer - food needs to be easy to eat/chew may need to cut into small pieces/mince - elderly may have few teeth fewer carbohydrate foods - elderly may be less active need protein foods - to repair worn out cells iron – to prevent anaemia vitamin C – to absorb iron – immunity calcium/phosphorus - to maintain bones and teeth - for blood clotting - muscle function vitamin D – to absorb calcium soft foods - easier to eat low in fat – easier to digest – reduces risk of CHD – obesity reduce salt – reduces risk of hypertension/high blood pressure reduce sugar - reduces risk of tooth decay and obesity - high sugar intake is linked to diabetes fruit and vegetables - NSP - less risk of constipation variety of colour - flavour - texture - to add interest - make appetising reduce spices and strong flavours - these are less easily tolerated snack foods should be nutritious - include milk daily etc. (12 points) (2 points = 1 mark) [6]

[Section A Total: 40]

	Pa	ge 5	Mark Scheme: Tea GCE O LEVEL – N		Syllabus 6065	Paper 01
				Section B	0003	01
2	(a)	protein (vitamin A vitamin E	e s in eggs or named e.g. ovalbumin/muc A/retinol – vitamin D/cholecalc 32/riboflavin (or vitamin B) – ir) (2 points = 1 mark)	iferol –	r	[3]
	(b)	trapping lightenin thickenin setting emulsify binding coating glazing enriching garnishin colour 5 uses +	h/breakfast/snack – air/making mixtures rise – g ig ing 5 examples	omelette, scrambled e Swiss roll, sponge flat mousse, meringue, so custard, sauces, soup quiche, rich cakes, ba mayonnaise, rich cakes Scotch eggs, fish cakes Scotch eggs, fish fillet pastry, bread etc. sauces, milk pudding, salad, dressed crab, o pastry, cake etc.	n etc. bufflé b etc. iked egg custard es etc. s, stuffing etc. is etc. soup etc.	etc. c.
		(10 point	ts) (2 points = 1 mark)			[5]
	(c)	not too d in an egg do not st do not fr freeze of do not w round en check fo use in ro keep aw	of eggs ce/refrigerator – keep longer – lry – water evaporates – g box/special rack in fridge do core past expiry date – not saf eeze whole eggs – liquid insic nly if separated – add sugar o ash shells – removes protecti ad upwards – air space at top r cracked eggs – bacteria ento tation – prevents waste – ay from strong smells/onions/ c) (2 points = 1 mark)	or – safe/less easily brok e to eat – risk of Salmon de shell expands and crac r salt to egg whites – ve cuticle – bacteria ente – holds yolk in place – er – egg contaminated –	ella – cks shell er –	ell – etc. [3]
	(d)	protein c egg whit egg whit becomes yolk thicl green rin iron in yo indigestil	s when egg is boiled boagulates/sets/solidifies/hard e at 60°C – egg yolk at 66°C e thickens – changes from tra s firm – then rubbery if overco kens – becomes powdery whe ng forms around yolk – ferrous blk – sulfur in egg white – ble if overcooked c) (2 points = 1 mark)	– insparent to opaque – oked – en overheated –		[4]

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3 (a) Food additives

nutritional - vitamin C in fruit juice, calcium in white flour, vitamins A and D in margarine improve keeping quality/preserve/reduce spoilage - used in processed foods make food more attractive/add colour - flavour - smell can improve texture/consistency - stabilisers emulsify fat and water - prevent separating - ice cream, mayonnaise anti-oxidant – prevent rancidity in fats can be natural but not found in particular food added to or synthetic – e.g. vitamin C can be made synthetically – can be artificial colours and flavours etc. E numbers have been approved by the European Community – must be used in smallest amount possible to produce desired effect some people are allergic/intolerant to certain additives long-term effect is not known - used in processed foods must be stated, by law, if contained in the product danger of adding nut extracts for those allergic to nuts etc. may be used to increase sales - longer shelf-life - reduce waste etc. (10 points) (2 points = 1 mark)

(b) Uses of fats and oils

spreading on bread - butter, margarine frying - corn oil, sunflower seed oil, dripping sauce-making - margarine, butter aeration – margarine traps air when creamed with sugar in cakes pastry-making - holds layers apart in flaky pastry - cake-making shortening - crumbly texture of shortcrust pastry, rock buns etc. adding flavour - butter in cake-making improve keeping quality - butter used in rich cakes etc. sealing - melted butter/margarine on pate to retain moisture - flavour/colour adds calories without adding bulk - fried food dressings – French dressing form an emulsion - mayonnaise basting - adds moisture to meat cooked by dry heat/grilled/roasted decorating - butter icing make foods easier to eat/lubricates - butter on toast prevent sticking – oiled baking tins retains moisture - rich cakes glazes - melted butter on new potatoes, carrots etc. (10 points) (2 points = 1 mark)

(c) Reasons for choosing a vegetarian diet

religious beliefs object to slaughter of animals – think it cruel – family custom expensive to rear animals – land could be used for crops – more people could be fed from same area of land dislike of animal flesh – texture/taste etc. meat is expensive to buy belief that vegetarian diet is more healthy – animal fat has cholesterol – associated with CHD recent health scares – BSE/bird 'flu etc./salmonella (10 points) (2 points = 1 mark)

[5]

[5]

[5]

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4 (a) Reasons for preserving food

enjoy food out of season buy food when plentiful to use when scarce to cope with a glut to prevent waste to give variety – food can be frozen, dried new products made – jam, pickles etc. to enjoy foods produced in other countries to have a store of food useful in emergencies etc. to prevent the growth of yeast – mould – bacteria to prevent loss of water/dehydration of fresh foods (4 points) (2 points = 1 mark)

(b) Methods of preserving

<u>Freezing</u>

water in cells frozen – unavailable for growth of bacteria – bacteria cannot grow at low temperatures – dormant – e.g. fish, vegetables , meat etc.

Jam-making

high sugar content/60% added sugar – water withdrawn from cells – too concentrated for bacteria to thrive sealed in jars – to prevent entry of micro-organisms e.g. plums, strawberries, guava etc.

Pickling

salt to cover food – withdraw water from cells (by osmosis) acid/vinegar to replace water – micro-organisms cannot thrive in high acidic conditions e.g. onions, gherkins, cabbage etc.

Pasteuristion

heated to $72^{\circ}C(162^{\circ}F) - 15$ seconds **or** $63^{\circ}C(145^{\circ}F) - 30$ minutes cooled rapidly – destroys harmful bacteria e.g. milk, fruit juice etc.

Ultra Heat Treatment (UHT)

heated to 132°C – for not more than 1 second – destroys harmful bacteria – prevents souring e.g. milk, cream etc

Bottling and Canning

heat destroys bacteria – sealed to prevent further entry of bacteria e.g. fruit, milk, vegetables, fish etc.

Drying

water removed – bacteria cannot multiply without water e.g. fruit, meat, fish, herbs, spices etc.

<u>Salting</u>

water removed by osmosis – micro–organisms need water to thrive e.g. fish, beans etc.

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[2]

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	GCE O L	EVEL – May/June 2010	6065	01
	oves water – phenol rowth of micro–orga	s from smoke deposited on foo anisms	d surface	
water su		<u>AFD)</u> structure remains same – r to thrive e.g. coffee, vegetable	es, strawberries	
no oxyge		-organisms prevented – th		
cannot d micro-or		by gamma rays –		
sulfur die	<u>additives</u> oxide – nitrates – inf ages, bacon etc.	nibit growth of micro-organisms		
Name of	method	1 point		
•	s of method	2 points		
	example	1 point		
4 points	for each method ds of preserving	3 × 4 points = 12 points		

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(c) (i) Advantages and disadvantages of convenience foods

Advantages

save time little or no preparation little or no cooking useful in emergencies less washing up no waste large variety available readily available easy to carry portion control cook may not have ability to make product - e.g. puff pastry less equipment required may cook and serve in same container consistent product easy to store longer shelf life than fresh may be fortified/have added nutrients

Disadvantages

expensive packaging may cause pollution can be high in fat can be high in sugar can be high in salt can be low in NSP contain additives small portions loss of vitamins B and C during processing loss of skills 6 points – at least 2 points from each area 2 points = 1 mark

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	give nam desc bran add ingr cool stor serv picto weig spec veg whe recy nutr	elling convenience food information to consumer ne of product cription nd ne of manufacturer ress of manufacturer edients king instructions age instruction ving suggestion ure of product ght cial claims etarian society symbol eat ear symbol vcle symbol itional information calorie content		al requirement t is being bought brine/identify vs what to expect seen before t ight – consumer f ct/inexperienced r w products unit cost/make co gar/added vitami is suitable consume dispose hal value per 100 e counting, trying ed fat –	omparisons n C etc.
	may price	itives identified / include nuts e oints) (2 points = 1 mark)	 diet consumer can control sal hypertension consumer may wish to av important information for if on special offer/can cor 	void/allergies etc people with aller	gies etc.
5	readily a carbohy		rt – easy to grow – cheap – energy – staple food – filling	g – easy to stol	re – source of

(LBV) protein – NSP in wholegrains –
versatile – can be used for sweet and savoury dishes –
easy to prepare – easy to eat etc.
(6 points) (2 points = 1 mark) [3]

(b) Named cereals

wheat – oats – barley – rye – corn/maize/mealie meal – millet – rice – sorghum (4 points) (2 points = 1 mark)

[2]

	Pad	ge 11	Mark Scheme: Teachers' version	Syllabus	Paper
		<u>je 11</u>			01
		cool – dr to prever check re covered sealed – keep bin use in ro decay co wholegra (6 points	GCE O LEVEL – May/June 2010 of cereals ry – to prevent germination/growth – away from smells nt mould – and formation of lumps – gularly – can be attacked by weevils – containers – to prevent entry of dust etc. – to keep out moisture etc. – s off the ground – prevent attack by rats etc. – tation – do not mix old and new supplies – build spread from old to new – wasteful – ain cereals do not keep as long – fat becomes rancid e (2 points = 1 mark) of flour for making bread	tc.	[3]
		- stretche gives firm white flou plain flou wholeme not SR fl	ard flour – high gluten content – becomes stretchy/elasti es to hold gases – n structure – ur – lighter – so rises better – ur – no chemical raising agent required – eal flour – contains NSP – follows dietary guidelines – our – contains baking powder – yeast is raising agent) (2 points = 1 mark)	c with moisture -	- and kneading
	(e)	rises/incl warmth o carbon d alcohol e yeast is l gas in do shape se crust lifts as carbo air replao Maillard	s taking place when a loaf of bread is baked reases in size – of oven encourages fermentation of yeast – lioxide produced – gives open texture – evaporates – water evaporates – pushes up dough – killed by heat – no more carbon dioxide produced – ough expands when heated – protein/gluten coagulates ets – starch dextrinises – forms crust – browns – s off/'oven spring' – light texture – fat melts in dioxide continues to expand after shape has set – ces escaped gas – flour gelatinises – browning – action of protein and sugar – etc.) (2 points = 1 mark)	S —	[4]
6	(a)	equal qu until light butter or caster su	ng oria sandwich cake, queen cakes, Eve's pudding etc. antities – fat and sugar – with wooden spoon/electric r t and fluffy – traps air – to help raise the mixture – soft margarine – good colour – and flavour – ugar – finer grains – easier to cream to include 1 example) (2 points = 1 mark)	nixer –	[3]
	(b)	pour – or to prever and extra	et beef, grilled steak etc. r spoon – hot fat – over surface of food – from time to t nt drying – or burning – adds flavour of fat – actives to include 1 example) (2 points = 1 mark)	ime	[3]

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		GCE O LEVEL – May/June 2010	6065	01
(c)	equal qu for colou resemble stir const looks 'sa	a roux e for sauce, soup or named e.g. – cheese sauce antities – fat and flour – usually margarine/butter/drip r – and flavour – melt fat – do not brown – stir in flour es a paste – cook over gentle heat – for 1 minute – tantly – to prevent sticking/burning – starch absorbs f indy'/like marzipan (or other description) to include 1 example) (2 points = 1 mark)	– wooden spoon	[3
(d)	toss – sn in small a quick me	g hrooms, potatoes, onions nall/thin pieces of food – or cooked food – amount – of hot fat – over low heat – type of frying – ethod – browns food to include 1 example) (2 points = 1 mark)	lid on pan – until f	at absorbed – [3]
(e)	boil – bo to gain fl instead c	a stock etable, chicken, beef, fish nes/small pieces of food – for a long time – strain avour/extractives – to add to soup/sauces/casseroles of water – can use commercial stock cube to include 1 example) (2 points = 1 mark)	3 —	[3]
(a)	Choice reliable b variety of serrated strong ha wood, pla some ha sharp – I need to b stainless large kni blade ab Care store with or with sl use on a wash in I do not us wash imi	and care of kitchen knives prand – may have a guarantee – f sizes for different purposes – peeling, chopping etc. edge useful for slicing fruit and vegetables finely – andle – comfortable to hold – handle firmly fixed – astic etc. – easy to grip – no cracks/joins for dirt to co ve blade and handle as one piece of metal – easy to blunt knives slip – rigid blade – does not bend when be flexible – s steel – hard wearing – ves not usually stainless unless permanently sharp – le to be sharpened – for efficient cutting etc. h blades pointing downwards – in a knife block – heath over blade – or point protected by cork – hot soapy water – dry thoroughly – to prevent rusting se to cut frozen meat etc. unless specially for purpose mediately after cutting lemon – to prevent staining me ts to cover choice and care) (2 points = 1 mark)	llect clean – cutting, except pa –	alette knives –

 (b) The disposal of kitchen waste empty bin daily – wash daily – dry thoroughly- do not leave water in bin – attracts mosquitoes line with plastic bin liner – easier to empty – ke disinfect regularly – wrap all waste – tie bags – pour away liquid – clear up spills and mess around bin – prevent cover bin tightly – prevent flies etc. – rinse and removes smell of food – takes up less space – recycle paper, glass, aluminium cans etc. if po stand bin outside on bricks – allows air to circu keep outside bin away from house – and from so flies do not get into house easily – do not pour fat down drains – blocks drains wh make sure U-bend contains clean water – disin leave no scraps lying about on work surfaces of encourages vermin – do not allow bin to overflow – encourages anii (10 points to cover choice and care) (2 points = (c) Hygiene in shops and markets shop assistants should have clean overalls/ap bacteria from clothing can be transferred to foo hair tied back from face/covered – prevent hai clean short fingernails – bacteria thrive in dirt of no nail varnish – chips and contaminates food do not lick fingers when picking up wrapping p bacteria in mouth passes to paper then food – do not blow into paper bags to open them – different knives and chopping boards for raw at to prevent cross–contamination – should be had do not handle food and money – dirt on money sell food in rotation – check dates on package refrigerators and freezers should display temp if not cold enough bacteria will not be inactive food will spoil more quickly in refrigerator if not keep premises free from vermin/flies – they can deapted the spoil more quickly in refrigerator if not keep premises free from vermin/flies – they can 		Paper
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which pass to food – no rubbish lying around s smells when rotting – food in freezers should b food should not be stored above safety line in do not sell out-of-date food – number of bacter	facilities in shop – od – - s – ell –	
risk of food poisoning etc. (10 points to cover choice and care) (2 points		