UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

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for the guidance of teachers

0648 FOOD AND NUTRITION

0648/01

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 must be read in conjunction with the question papers and the report on the examination.

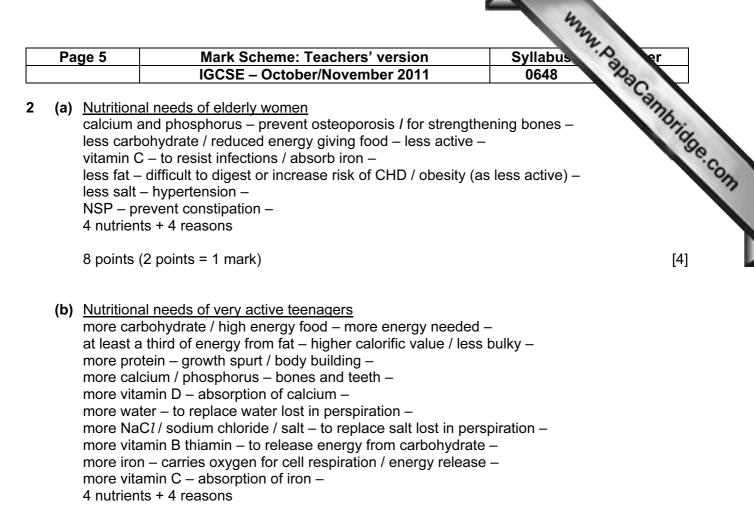
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Cambridge is publishing the mark schemes for the October/November 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

Ра	ge 2	Mark Scheme: Teachers' version Syllabus er IGCSE – October/November 2011 0648	
		IGCSE – October/November 2011 0648	
		Section A	5.
(a)	acc	Mark Scheme: Teachers' version Syllabus IGCSE – October/November 2011 0648 Section A 0648 med fats ept suitable named examples × 4 – . butter / cream / lard / suet / dripping / ghee / margarine –	100
	4 po	oints (2 points = 1 mark)	[2]
	acc e.g.	<u>med oils</u> ept suitable named examples × 4 – . fish liver oil (or a named example) / nut oil (or a named example) / ground nut / coconu e / palm / sesame / soya –	ut /
	4 po	oints (2 points = 1 mark)	[2]
(b)		<u>s as oils</u> are solid at room temperature and oils are liquid –	
	1 m	ark	[1]
	war insu prof to c to fo form	ergy – mth – ulation – tection of internal organs / shock absorber – convey fat soluble vitamin (or named examples e.g. A D E K) / contains vitamins A D E k orm a fuel reserve – ns part of structure of cell membrane – es feeling of fullness (satiety) after a meal –	<
	4 x	1 mark	[4]
(d)	(i)	<u>Saturated fat</u> hard / solid – less reactive fat – carbon atoms saturated with hydrogen / the fat molecule contains max. number hydrogen atoms – no double bonds between carbon atoms – only single bonds – usually from animals – (credit information shown on a diagram)	of
		2 x 1 mark	[2]
	(ii)	$\frac{Polyunsaturated fat}{softer fats - more reactive fat - fat molecule contains more than one double bond in the carbon chain / two or mode double bonds in the carbon chain - does not contain max. number of hydrogen atoms / can accept more H2 - the more double bonds the softer the fat - usually from plants - (credit information shown on a diagram)$	ore
		2 x 1 mark	[2]

	ge 3	Mark Scheme: Teachers' version Syllabus	
		IGCSE – October/November 2011 0648	
	(iii)	Essential fatty acids	8
		Mark Scheme: Teachers' version Syllabus IGCSE – October/November 2011 0648 Essential fatty acids 0648 must be included in the diet – because cannot be manufactured by the body – deficiency causes dry skin / poor hair / diarrhoea (allow 2 max. effects of deficiency) 2 x 1 mark	1996.
		2 x 1 mark	[2]
(e)	(i)	(fats digested in) duodenum –	
	(ii)	bile (emulsifies fats) –	
((iii)	(emulsification is necessary) to break fat into tiny droplets / to increase the total surface area of the fat –	
	(iv)	(fat is broken down by enzyme) lipase –	
	(v)	(fat is broken into) glycerol and fatty acid –	
	vi)	(1g of absorbed fat produces) 9 kcal – 9 Calories – 37 kJ –	
		6 x 1 mark	[6]
	obe	cause CHD / heart attack / stroke – sity may lead to breathlessness / lethargy / lack of self-esteem –	
	3 x	1 mark each	[3]
(g)		ne, function and source of two fat-soluble vitamins Vitamin A (retinol) 1 point	
		Functions makes visual purple – in retina of eye – to enable the eye to perceive things in dim light / at night – prevents Night Blindness – required to keep mucous membranes moist – and free from infection example of mucous membranes e.g. throat / digestive / bronchial / excretory tracts – any example – 1 point (1 only) for healthy skin – required for growth –	
		4 points	
			_

Page 4	4 Mark Scheme: Teachers' version Syllabus		Syllabus of er
	IGCSE –	October/November 2011	0648 230
2.	Vitamin D (cholecalcifer	rol) 1 point	enne.
	prevents osteomalacia growth –	phosphorus – ren – rickets symptoms –	Syllabus 0648 Bracambridg
	4 points		
	sources fish liver oils – oily fish products – yoghurt – sunlight / ultra violet ray		eam – margarine – cheese – dairy
	3 points		[4]
3.	Vitamin E (tocopherol)	1 point	
	functions healthy skin – protection against heart fertility / reproduction in antioxidant –		
	4 points		
	sources eggs – nuts – seeds – c	ereal products – vegetable oil	s –
	3 points		[4]
4.	Vitamin K	1 point	
	functions clotting of blood	1 point	
	sources fruit – cereals – meat –	liver – (bacteria in large intesti	ine) –
	3 points		[4]
	For each vitamin 9 noir	nts max. (2 points = 1 mark.)	



8 points (2 points = 1 mark)

[4]

[Section A Total: 40]

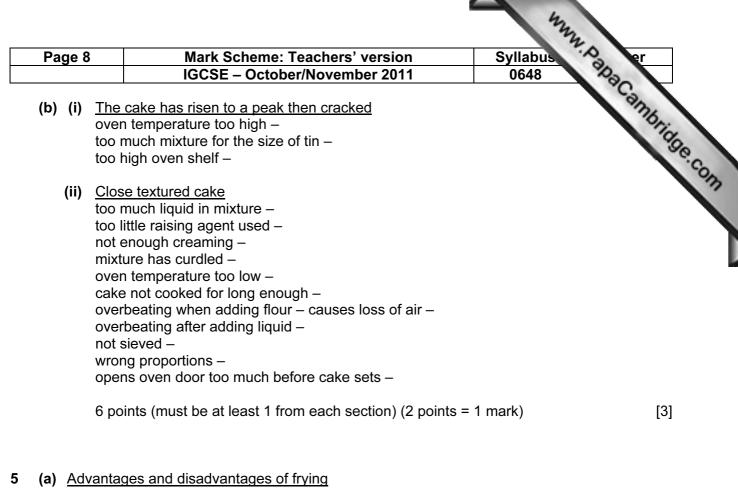
Page 6	Mark Scheme: Teachers' version	Syllabus of er
	IGCSE – October/November 2011	0648 23
	Section B	ante
thicken e.g. cus	heat - on starch - grains soften / swell - absorb	Syllabus 0648 water – some rupture – liqu
reverse chemic	ation on protein – denatures – from 40 °C – coagulation d – hardens / sets – al structure changes ed egg / egg custard / roast meat / baked bread –	begins at 60 °C – cannot b
6 points	(must include an example) (2 points = 1 mark)	[:
moistur enzyme e.g. bre	produces carbon dioxide – and alcohol / ethanol – e – warmth – es / named (e.g. maltase / invertase / zymase) ad-making –	
o pointe	(must include an example) (2 points = 1 mark)	[:
does no 72 °C / 145 °C -	lestroys harmful bacteria – and souring bacteria – it prevent decay – keeps longer – 162 °F – for 15 seconds – HTST or Flash – - for 30 minutes – Holder method – idly – to prevent bacterial growth to below 10 °C	
6 points	(must include example) (2 points = 1 mark)	[:
take up to achie	enation ed makes fat solid – from liquid oil – e.g. sunflower / hydrogen to make oil saturated– uses a nickel catalys ve degree of hardness required rgarine –	•

6 points (must include example) (2 points = 1 mark)	[3]
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	Page 7				Syllabus 🔗 e	r	
			IGCSE – Octo	ber/No	vember 2011	0648	
4	(a)	<u>Purp</u>	ose of ingredients in Vio	ctoria sa	andwich cake	Cal	nor:
	(i)	adds carbo glute conta traps	raising Flour bulk ohydrate ains baking powder air during sieving ints (2 points = 1 mark)		main ingredient provides energy forms framework / set raising agent raising agent	Syllabus 0648 s on heating	[3]
	(ii)	cara	ar s air when creamed melises erves	- - -	raising agent / lightens dry heat during baking		ure
		6 poi	ints (2 points = 1 mark)				[3]
	(iii)	retain high traps adds adds	<u>arine</u> ns moisture energy air when creamed colour flavour nutrients		keeps cake fresh long fat concentrated source raising agent / lightens	ce of energy	
			ints (2 points = 1 mark)				[3]
	(iv)	Eggs prote iron gives colou emul	s shape ur Isifies air when beaten ur		growth / repair haemoglobin protein coagulates on depends on brightnes holds fat and water se raising agent / lightens (steam) raising agent	s of yolk eparate / prevents curdling	
		6	into $(2 \text{ nointo} - 1 \text{ mork})$				101

6 points (2 points = 1 mark)

[3]



advantages

quick – food browns / colour – crisp surface – adds nutrients without adding bulk – develops flavour – develops aroma – fat / vitamins A / D added –

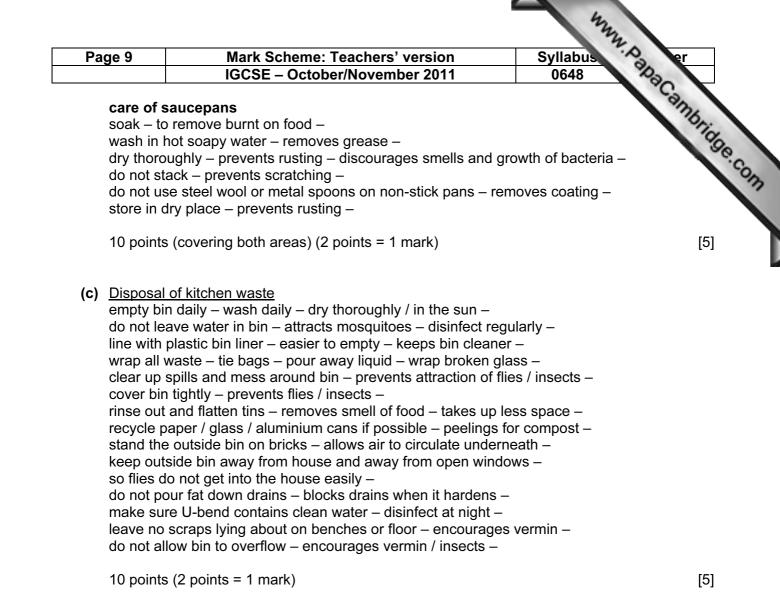
disadvantages

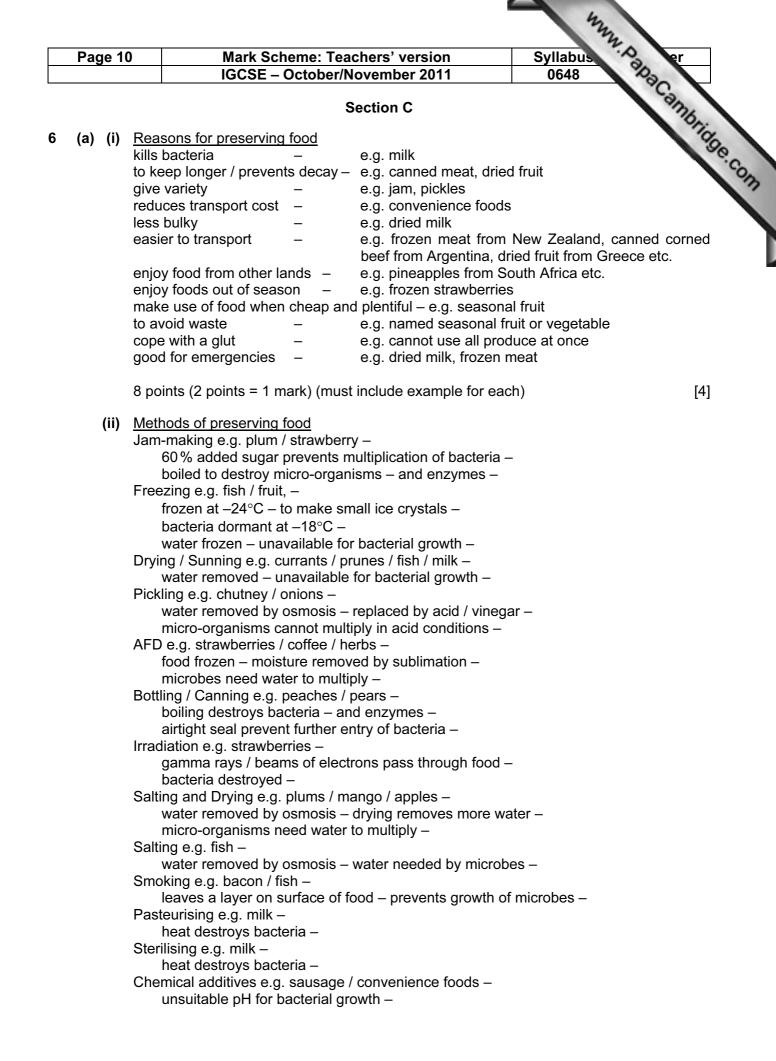
uses a lot of fat – expensive outlay – against 'healthy eating' guidelines – fat may be difficult to digest – dangerous method of cooking – if overheated could cause fire – needs constant attention – food could be greasy and unappetising – heat sensitive nutrients lost –

10 points (covering both areas) (2 points = 1 mark)

(b) Care and choice of saucepans

choice of saucepans must suit cooking stove – thick base for electric cooker – retain heat – well balanced – to prevent tipping over – insulated handles and knobs – to prevent burning – well-fitting lids – to prevent loss of heat and steam – base should cover hotplate – prevents waste of heat – more economical – non-stick coating – easier to clean – enamel outside – to match kitchen decor – buy the best that can afford – less need to replace frequently – copper bases – good conductor of heat – more efficient – glass – can see what is cooking – stainless steel – hard wearing / easier to clean – iron – cheaper – stains – aluminium – lightweight – dents when dropped – not balanced on stove – choose a variety of sizes – to suit uses / size of family – [5]





Page 11		eachers' version	Syllabus Syllabus
	IGCSE – Octobe	r/November 2011	0648 73
/:::)	Storage of food in a refrigerate		Syllabus 0648 eirculate – er food / cross-contaminat to fresh food – hing food/prevent absorptio
	<u>Storage of food in a refrigerato</u> do not overload –	must allow cold air to c	sirculate -
	raw meat at bottom –		er food / cross-contaminat
	do not mix raw and fresh foods		
	clean containers –	no bacteria to transfer	to fresh food –
	cover –		ning food/prevent absorption
		smells e.g. fish –	
		prevent surface of the	food from drvina —
1	note 'use by' date –	so food is used when s	, ,
	food should be clean –	avoid contamination of	other foods –
I	use food in rotation –	to prevent waste –	
(do not mix old and new milk –	bacteria from old pass	to new –
1	fresh foods at back –	use oldest first to preve	ent waste –
(eggs in egg rack / egg box –	to prevent falling –	
1	milk away from cheese etc. –	to prevent tainting –	
I	no hot food –	raises temperature –	
		causes bacteria to mul	
	keep temperature at about 4°C	•	on of bacteria –
	clean regularly –	remove spills –	
	defrost regularly –	remove build ice / more	
I	keep door closed –	prevent warm air enter	-
		raises temperature / ba	acteria multiply –

age 12	Mark Scheme: Teachers' version	Syllabus	· A er
	IGCSE – October/November 2011	0648	1020
Band	Descriptor		Sannb.
High	 Can identify many reasons for preserving food Suggests ways to use refrigerator Is able to identify and discuss several methods of p Gives examples to illustrate points made Understanding of the topic is apparent Information is specific and generally accurate All areas of question addressed Answers are detailed where appropriate 		(22-30 point
	- Some specific facts included and the topic is addre	ssed in its wide	st application
Middle	 Some reasons for preserving food May give some advice on use of refrigerator Is able to identify a few methods of preservation Some discussion or explanations given Gives a few examples to illustrate points made Shows a basic understanding of the topic Information is basic and generally accurate Some areas of question addressed Gaps in knowledge will be apparent May be a few specific facts Answer will be detailed in parts and superficial in of 	thers	6–10 (12–20 points)
Low-	 May give a few reasons for preserving food Little information on use of refrigerator Mentions some methods of preservation May give examples to illustrate Answer tends to be a list of statements Not always accurate Information is brief Superficial treatment of topic Answers not specific Little or no detailed information Emphasis on one part of the question Lack of knowledge will be apparent 		0–5 (0–10 points)

Page 13	Mark Scheme: Teachers' version	Syllabus	· A er
	IGCSE – October/November 2011	0648	100
(i) Nut	ients in red meat and their functions		orido
	ients in red meat and their functions / – protein – growth / repair / maintenance / energy	/ hormones –	orida
HB	ients in red meat and their functions / – protein – growth / repair / maintenance / energy - saturated – energy / protection / insulation –	/ hormones –	ambridge
HBV Fat Vit.	/ - protein - growth / repair / maintenance / energy	branes / visual pu	urple –

(ii) <u>Reasons for toughness</u> long muscle fibres – thick muscle fibres – meat from an old animal – muscles which have had most movement – e.g. neck / leg – muscles well developed – contains a large amount of collagen / connective tissue – and gristle – incorrect cooking method used – e.g. dry method for tough cut – frozen meat not defrosted thoroughly before cooking –

Water - body fluids / lubrication of joints / maintains body temperature -

<u>Methods of tenderising meat before cooking</u> mince – cut into small pieces – score – to shorten muscle fibres – beat – with hammer / rolling pin – to separate fibres – slice against grain – hang – marinade / soak – in wine / acid / lemon juice / vinegar – use of enzymes / papain (from papaya) / bromelin (from pineapple) / ficin (from figs) –

(iii) <u>Changes during moist method of cooking</u> collagen – insoluble – converted to gelatine – soluble – moisture penetrates between muscle fibres – e.g. stewing / braising – elastin softens slightly – protein coagulates – at 40 °C to 60 °C – meat becomes firmer – fibres fall apart – meat becomes tender – easier to chew – muscle fibres shrink – extractives squeezed out – fat melts – colour changes from red to brown –

Riboflavin / Vit. B2 – release of oxygen from fat / protein – Iron – haemoglobin / transport oxygen / prevents anaemia –

Phosphorus – bones and teeth / release of energy –

Page 14	Mark Scheme: Teachers' version	Syllabus	er er
~~	IGCSE – October/November 2011	0648	No.
Band	Descriptor		amb
High	 Can identify at least 4 nutrients in meat, some reasons and many changes during cooking Can describe changes logically Discusses points in detail Uses scientific terms correctly Understands the effect of moist heat on meat Understands the functions of nutrients mentioned Knows several ways to tenderise meat Can give some explanations on tenderising Sound knowledge of the topic is apparent All areas of the question addressed 	for toughne	ess (22–30 point
Middle	 Details given in all parts of the question Can identify 2 or 3 nutrients in meat, a few reasons for and some changes during cooking Some of changes logically described Knows some functions of nutrients Detail in some areas but not all Answers lack precision Not all terms used accurately Some scientific information given Not all parts of question addressed in same amount of Knows a few ways to tenderise meat Does not always explain methods of tenderising Some knowledge evident but with gaps Superficial answers in some areas 		6–10 (12–20 points)
Low-	 Can identify 1 or 2 nutrients in meat, 1 or 2 reasons for and possibly changes during cooking General points made Little precise information in any area Little or no scientific information Answer may consist of a list of facts Information not always accurate Some parts of question have brief or no response Answer short and superficial May give 1 or 2 examples to illustrate points Limited knowledge of subject will be apparent 	toughness	0–5 (0–10 points)

[Paper Total: 100]