

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MARK SCHEME for the May/June 2008 question paper

<p style="text-align: center;">0648 FOOD AND NUTRITION</p> <p>0648/01 Paper 1 (Theory), maximum raw mark 100</p>

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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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Page 2	Mark Scheme	Syllabus
	IGCSE – May/June 2008	0648

Section A

- 1 Balanced diet**
contains all nutrients (1 mark)
in correct proportion/amount (1 mark) [2]
- 2 (a)** carbon – hydrogen – oxygen – nitrogen – phosphorus – sulphur (4 × 1 point)
(2 points = 1 mark) [2]
- (b) Functions of protein**
growth/body building
repair
maintenance
energy
enzymes/hormones/antibodies (4 × 1 mark) [4]
- (c) HBV protein**
Contains **all** essential amino acid/indispensable amino acids [1]
- (d)** meat – fish – cheese – milk – eggs – soya (4 × 1 point) (2 points = 1 mark) [2]
- (e) LBV protein**
Lacks at least **one** essential amino acid/indispensable amino acid
or **one** EAA/IAA is found in poor supply [1]
- (f)** cereals – pulses – nuts (or 1 named example from group) (2 × 1 point) (2 points = 1 mark) [1]
- (g) Digestion and absorption of protein**
in stomach – rennin – clots milk – HCl – pepsin – from gastric juice
converts proteins to peptones/peptides/polypeptides –
in duodenum – trypsin – from pancreatic juice –
converts proteins to peptones/peptides/polypeptides –
in ileum – erepsin – from intestinal juice –
converts peptides to amino acids –
absorbed into blood capillaries – in villi –
(10 × 1 point – at least 1 point on absorption) (2 points = 1 mark) [5]
- 3 (a) Functions of calcium**
formation/maintenance of bones/teeth
muscle function
function of nerves
blood clotting (3 × 1 mark) [3]
- (b)** milk – cheese – bones of canned fish e.g. salmon – bread – yoghurt
hard water – green vegetables (or named example) – wholegrain cereals
(4 × 1 point) (2 points = 1 mark) [2]

Page 3	Mark Scheme	Syllabus	er
	IGCSE – May/June 2008	0648	

(c) Rickets OR Osteomalacia

(d) **Symptoms**

RICKETS

weak bones – bones bend under weight of body – bow legs –
knock knees – ends of limb bones become enlarged – skull fragile

OSTEOMALACIA

brittle bones – bones easily broken

(4 × 1 point) (2 points = 1 mark)

[2]

(e) Vitamin D

[1]

(f) liver – fish liver oils (or named example) – oily fish (or named example) – yoghurt
eggs – margarine – milk – cheese – butter – red meat – sunlight –

(4 × 1 point) (2 points = 1 mark)

[2]

4 (a) **Saturated fat**

excess fat is stored – under skin – adipose layer –
around internal organs – obesity – contains cholesterol –
deposited on artery walls – narrows – blocks – CHD – stroke –
breathlessness – hypertension etc.

(6 × 1 point) (2 points = 1 mark)

[3]

(b) **Ways to reduce fat**

less red meat – e.g. beef/pork/lamb – trim fat from meat –
do not fry foods – grilling allows excess fat to drip off –
reduce chocolate/sweets etc. – fewer cakes/biscuits/pastries –
reduce fat in recipes – choose low fat products e.g. yoghurt/cheese –
spread butter thinly – use low fat spreads – fewer crisps/nuts –
cut chips thicker – less surface area in contact with fat –
do not add butter to vegetables – skimmed milk etc.

(4 × 1 point) (2 points = 1 mark)

[2]

5 **Special nutritional needs of young children**

protein – growth

calcium – bones/teeth

vitamin D – to absorb calcium

iron – formation of red blood cells

vitamin C – absorption of iron

fluoride – teeth

starch – energy

some fat – concentrated source of energy – less bulky

avoid sugar – tooth decay

(12 points) (2 points = 1 mark)

[6]

[Section A Total: 40 marks]

Page 4	Mark Scheme	Syllabus
	IGCSE – May/June 2008	0648

Section B

6 (a) Reasons for serving sauces

- add moisture – gravy, custard etc.
- add nutrients – custard, chocolate sauce, cheese sauce etc.
- add colour – jam sauce, chocolate sauce, parsley sauce etc.
- add flavour – cheese sauce, mint sauce, apple sauce etc.
- counteract richness – apple sauce with roast pork,
orange sauce with duck etc.
- add interest/variety – curry sauce etc.
- add contrasting texture – bread sauce with roast poultry,
parsley sauce with fried fish etc.
- accompaniment

reason (4 × 1 point) examples (4 × 1 point) (2 points = 1 mark)

[4]

- (b) melt fat – add flour – stir – with wooden spoon –
broader base/does not conduct heat – fits corners of pan –
over gentle heat – until sandy/crumbly –
do not allow to brown/prevent burning of fat/flour – spoiling colour –
and flavour – remove from heat – add milk – gradually – prevent lumps –
flour does not gelatinise – stir all the time – smooth liquid –
return to heat – bring to boil – stir all the time – boil for 3 minutes –
to cook starch – to prevent floury/raw flavour – thickens –
starch gelatinises – should coat the back of wooden spoon –
grate cheese – add cheese off heat – stir until melted
(8 points) (2 points = 1 mark)

[4]

(c) Dishes which include cheese sauce

- macaroni cheese lasagne
- cauliflower cheese pasta bake
- eggs/fish au gratin
- etc.

[1]

(d) Reasons for lumps in sauce

- milk added too quickly
- milk added on heat
- too much milk added at a time
- not stirred when milk added
- not stirred when boiling (3 × 1 mark)

[3]

(e) Ways to reduce fat in cheese sauce

- reduce margarine/use low fat spread
- use semi-skimmed/skimmed milk
- use less cheese
- choose cheese with a stronger flavour and use less
- use low fat cheese etc. (3 × 1 mark)

[3]

Page 5	Mark Scheme	Syllabus
	IGCSE – May/June 2008	0648

7 (a) **Importance of cereals**

cheap	easy to grow
easy to store	easy to transport
versatile	used for sweet and savoury dishes
starch/carbohydrate	used for energy
lasts a long time	easy to process
many varieties	filling
staple food	source of LBV protein
readily available	
etc.	

(6 points) (2 points = 1 mark) [3]

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

(c) **Storage of cereals**

cool – dry – to prevent mould –
check regularly – can be attacked by weevils –
covered containers – prevent entry of dust etc. –
sealed – keep out moisture etc. –
keep cereal bins off ground – prevent attack by rats etc. –
use in rotation – do not mix old and new supplies –
whole grain cereals do not keep long – fat becomes rancid – etc.
(8 points) (2 points = 1 mark) [4]

(d) **Types of flour**

PLAIN

white – 72–73% extraction – no raising agent – 7–10% protein – fine particles

Uses

sauces – batters – shortcrust pastry – biscuits – shortbread – very rich cakes

SELF-RAISING

70–72% extraction – soft/weak flour – low protein/gluten content –

winter wheat –

fixed quantity of raising agent added

Uses

cakes, scones

STRONG

plain – spring wheat – more than 10% protein/gluten forms
and elastic dough

Uses

bread, yeast mixtures, flaky pastry, puff pastry

WHOLEMEAL

100% extraction – light brown colour – nutty flavour –

due to presence of bran/germ – stone ground –

or roller milled – shorter shelf life – fat in germ becomes rancid

heavy/close-textured product – germ and bran reduce rise

Uses

bread, pastry, scones

Page 6	Mark Scheme	Syllabus
	IGCSE – May/June 2008	0648

BROWN FLOUR

80–85% extraction – no coarse bran particles – better rise – may be mixed with white flour

Uses

bread, pastry, scones

WHEATGERM

70% extraction – added treated wheat germ – rich in B vitamins – must contain at least 10% germ – germ cooked with salt – to prevent fat and enzymes spoiling quality –

Uses

bread

CORNFLOUR

from maize – 100% starch – fine powder –

Uses

thickens sauces – shortbread

3 named flour types (3 x 1 point) 6 facts (6 x 1 point) 3 examples (3 x 1 point) (12 points) (2 points = 1 mark)

[6]

8 (a) Reasons for preserving

enjoy food out of season
to cope with a glut
to prevent waste
to give variety – food can be frozen, dried
new products made – jam, pickles etc.
to have a store of food
useful in emergencies etc.
(4 points) (2 points = 1 mark)

food lasts longer
prevents spoilage
easier to transport
not destroyed by micro-organisms
gives variety

[2]

(b) (i) Rules for freezing

vegetables should be blanched
air should be removed from package
open freeze soft fruit/berries/peas
allow head space for liquids
use oldest stocks first
follow storage times as directed
set freezer at 'fast freeze' 2–3 hours
before use
do not freeze too much food at once
cool before freezing
cover/seal/wrap to prevent air entry/
evaporation of moisture
etc.

- to destroy enzymes/prevent ripening etc.
- to prevent 'freezer burn'/drying of surface
- can take the amount required from pack
- liquids expand when frozen
- food still spoils but not as quickly
- some foods e.g. with fat deteriorate quicker
- to prevent formation of large ice crystals/
damage to cell wall/loss of liquid
- to allow temperature to remain low enough

4 rules (4 × 1 point) 4 explanations (4 × 1 point) (8 points) (2 points = 1 mark)

[4]

(ii) Storage temperature

–18°C

[1]

Page 7	Mark Scheme	Syllabus	er
	IGCSE – May/June 2008	0648	

(iii) Reasons why freezing delays food spoilage

bacteria are dormant (2 points) (if stated that bacteria are sleeping/resting – 1 point)

bacteria cannot multiply

water frozen therefore unavailable

temperature too low

bacteria need warmth – and moisture to multiply

(6 points) (2 points = 1 mark)

[3]

(iv) Information on frozen food label

name of food – date frozen – weight – number of portions –

special points e.g. added sugar – 'best before' date (consult chart) etc.

(4 points) (2 points = 1 mark)

[2]

(v) Types of packaging

waterproof – strong so will not tear/be easily damaged –

square shapes are easier to stack – less waste of space

tightly-fitting lids – containers must be airtight

polythene bags – Tupperware boxes – ice cream cartons – tin foil –

waxed cartons for soup – will not absorb liquids –

thin polythene/cling film/greaseproof paper to separate slices of meat etc.

can separate for quicker defrosting –

greaseproof paper/foil to protect sharp bones – avoid damage to plastic bag –

metal coated ties/plastic clips to seal bags – prevent opening/entry of air –

moisture proof tape etc.

(6 points) (2 points = 1 mark)

[3]

[Section B Total: 45 marks]

Page 8	Mark Scheme	Syllabus
	IGCSE – May/June 2008	0648

Section C

- 9 Discuss the ways in which money, time and fuel can be saved when planning, preparing and cooking food.

The answer may include the following knowledge and understanding.

Saving money

buy fruit and vegetables in season	use garden/wild produce
make use of special offers in shops	save 'money off' coupons
buy store's own brand	make a shopping list
have a fixed amount of money to spend	use cash instead of credit
shop in markets instead of supermarkets	buy in bulk/larger packages
avoid food that has been prepared	convenience foods can be expensive
only buy enough for the purpose	consider left over foods at home
cheaper cuts of meat	use LBV protein foods
buy food reduced at end of day	
carbohydrate foods are filling – and cheap	

Saving time

make use of electrical equipment – mixer/blender etc.
 microwave oven pressure cooker
 frying, stir frying and grilling are quick methods
 make use of convenience foods – e.g. frozen puff pastry
 prepare and cook food in bulk – freeze some – saves time another day
 make stews and casseroles – require little attention – fewer pans to wash
 do not peel vegetables e.g. carrots, potatoes – scrub to remove soil
 cook and serve in same dish – saves washing up
 do not overcook food – cook when required – no time spent on re-heating
 one stage method of making rich cakes
 cut potatoes etc. into smaller pieces – cook quicker
 lids on pans – cook quicker etc.

Saving fuel

use steamer – several layers share one hot plate
 pressure cooker – cooks quicker so less fuel
 cut food into smaller pieces – cooks quicker
 lid on pan – retain heat – cooks faster
 small amount of water in kettle/pan – only heat what is needed
 do not overcook – cook when needed so no need to reheat
 microwave oven – faster – less fuel
 size of pan should fit hot plate – to avoid wasting fuel around base of pan
 gas flames should not come around base of pan – heat is wasted
 cook the whole meal in the oven or on top of the stove –
 batch bake to use all oven shelves – cook several different items at once
 preheat for no more than 10 minutes
 turn off heat before cooking finished – use residual heat etc.

Page 9	Mark Scheme	Syllabus	er
	IGCSE – May/June 2008	0648	

Band	Descriptor	Pa
High	<ul style="list-style-type: none"> – Candidate can name many methods of economising when planning, preparing and cooking food – Can give examples to illustrate methods – Uses correct terminology to explain how economies are made – All areas of the question are considered – Comments are precise and are related to specific examples – Little or no repetition – Information given is accurate – A clear understanding of the topic is apparent 	(11–15)
Middle	<ul style="list-style-type: none"> – Can give a range of ways to save money, time and fuel when preparing and cooking meals – May not consider all areas in equal depth – Can give some examples to illustrate points made – Several gaps in range of methods and examples – Terminology not always accurate – Information is not always precise – Tends to concentrate on one or two areas – Some repetition in answers – Many facts unsupported by examples or explanations – Candidates shows a general understanding of the topic 	(6–10)
Low	<ul style="list-style-type: none"> – Can give a few methods of economising – Examples not always given – Will probably consider one area in detail – Information is general – Tends to be in the form of lists of ways to economise – Not always accurate – Poor knowledge of reasons for methods – Limited knowledge of the topic will be apparent 	(0–5)

Page 10	Mark Scheme	Syllabus
	IGCSE – May/June 2008	0648

- 10 Discuss the advantages and disadvantages of convenience foods and suggest how they can be included in family meals.

The answer may include the following knowledge and understanding.

Advantages of convenience foods

quick to prepare
easy to prepare
save fuel
easy to store
easy to transport
can be kept for emergencies
wide variety available
little waste
may have extra nutrients added
cook may have limited skill
can use foods from other countries/out of season
examples to illustrate the above points may be given

Disadvantages of convenience foods

more expensive than fresh equivalent
small servings
nutrients lost during processing
low in dietary fibre
high in fat
high in salt
high in sugar
artificial colourings and flavourings may be added
use of additives
long-term effects not known

Use in family meals

frozen desserts – ice cream
dried herbs, stock cubes
frozen puff pastry for pies etc.
cake mixes, pastry mix
canned fruit in desserts e.g. pineapple upside down pudding
dried fruit – currants, sultanas – in cake making
frozen fish
bottled sauces, flavourings
custard powder, blancmange

Uses in family meals should be expected for named examples of convenience foods.

A list of convenience foods is not acceptable since the question asks how they can be included in family meals.

Page 11	Mark Scheme	Syllabus	er
	IGCSE – May/June 2008	0648	

Band	Descriptor	Pa
High	<ul style="list-style-type: none"> – The candidate is able to give many advantages and disadvantages of convenience foods – The candidate demonstrates a clear understanding of the nature and types of convenience foods – Comments are precise and are related to named examples – Specific terminology is used where appropriate – Most advantages and disadvantages considered – Many different examples are given to show the use of a variety of named convenience foods 	(11–15)
Middle	<ul style="list-style-type: none"> – The candidate can give a few advantages and disadvantages of convenience foods – Factual content is sound but is not always linked to examples to illustrate points – Information given may be accurate but not all issues are considered – Some examples are given to show the use of convenience foods 	(6–10)
Low	<ul style="list-style-type: none"> – The candidate can give some advantages and disadvantages of convenience foods but does not consider a wide range – The information will be general and lacking specific detail – Few examples of the uses of convenience foods in family meals will be given – Limited knowledge of the topic will be apparent 	(0–5)