

MARK SCHEME for the May/June 2008 question paper

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.

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.

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

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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]

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(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]

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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/crumby –
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]

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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

saucers – 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

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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 | food lasts longer |
| to cope with a glut | prevents spoilage |
| to prevent waste | easier to transport |
| to give variety – food can be frozen, dried | not destroyed by micro-organisms |
| new products made – jam, pickles etc. | gives variety |
| to have a store of food | |
| useful in emergencies etc. | |
| (4 points) (2 points = 1 mark) | [2] |

(b) (i) Rules for freezing

- | | |
|--|--|
| vegetables should be blanched | – to destroy enzymes/prevent ripening etc. |
| air should be removed from package | – to prevent 'freezer burn'/drying of surface |
| open freeze soft fruit/berries/peas | – can take the amount required from pack |
| allow head space for liquids | – liquids expand when frozen |
| use oldest stocks first | – food still spoils but not as quickly |
| follow storage times as directed | – some foods e.g. with fat deteriorate quicker |
| set freezer at 'fast freeze' 2–3 hours | – to prevent formation of large ice crystals/ |
| before use | damage to cell wall/loss of liquid |
| do not freeze too much food at once | – to allow temperature to remain low enough |
| cool before freezing | |
| cover/seal/wrap to prevent air entry/ | |
| evaporation of moisture | |
| etc. | |

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

(ii) Storage temperature

–18°C [1]

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(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]

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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.

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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)

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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.

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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)