

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
GCE Ordinary Level

MARK SCHEME for the May/June 2008 question paper

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.

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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Section A

- 1 (a) **Balanced diet**
contains all nutrients (1 mark)
in correct proportion/amount (1 mark) [2]
- (b) (i) carbon – hydrogen – oxygen – nitrogen – phosphorus – sulphur (4 × 1 point)
(2 points = 1 mark) [2]
- (ii) **Functions of protein**
growth/body building
repair
maintenance
energy
enzymes/hormones/antibodies (4 × 1 mark) [4]
- (iii) **HBV protein**
Contains **all** essential amino acid/indispensable amino acids [1]
- (iv) meat – fish – cheese – milk – eggs – soya (4 × 1 point) (2 points = 1 mark) [2]
- (v) **LBV protein**
Lacks at least **one** essential amino acid/indispensable amino acid
or **one** EAA/IAA is found in poor supply [1]
- (vi) cereals – pulses – nuts (or 1 named example from group) (2 × 1 point)
(2 points = 1 mark) [1]
- (vii) **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]
- (c) (i) **Functions of calcium**
formation/maintenance of bones/teeth
muscle function
function of nerves
blood clotting (3 × 1 mark) [3]
- (ii) 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]
- (iii) Rickets OR Osteomalacia [1]

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(iv) 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]

(v) Vitamin D

[1]

(vi) liver – fish liver oils (or named e.g.) – oily fish (or named e.g.) – yoghurt

eggs – margarine – milk – cheese – butter – red meat – sunlight –

(4 × 1 point) (2 points = 1 mark)

[2]

(d) (i) 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]

(ii) 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]

(e) 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

2 (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.

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 –
 - add cheese off heat – stir until melted
- (8 points) (2 points = 1 mark)

[4]

(c) Dishes which include cheese sauce

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

[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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3 (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

Uses

thickens

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

[6]

4 (a) Conserving vitamin C

wash before cutting

tear instead of cutting

do not shred thinly

use a sharp knife

prepare just before cooking

do not soak

small amount of water

boil water first

add veg. in small amounts

lid on pan

do not overcook

use cooking liquid in sauces

do not add bicarbonate of soda

serve immediately

(10 points) (2 points = 1 mark)

– so vitamin C does not leech from cut cells

– tear follows cell walls and does not damage

– less cell damage

– to prevent bruising cells

– vitamin C destroyed by enzymes from cell walls and by oxidation

– vitamin C is water soluble

– vitamin C is water soluble

– enzyme/ascorbate denatured at 70°C

– so temperature stays above 70°C

– prevents oxidation

– vitamin C destroyed by heat

– contains dissolved vitamins

– alkaline, so destroys vitamin C (acid)

– heat/oxidation destroys vitamin C

[5]

(b) Different uses of sugar in cooking

sweetener

increases energy value

preservative

improves colour of baked goods

retains moisture/

prevents baked products drying

helps fat to incorporate air

prevents development of gluten/

gives a crumbly result

food for yeast

delays coagulation of protein

in eggs and gluten

– drinks, sauces, desserts, cakes

– beverages etc.

– high concentration of sugar prevents growth of micro-organisms in jam

– cakes with brown sugar

– sugar caramelises in dry heat of oven

– rich cakes

– creamed cake mixtures

– cakes and rich pastries

– fermentation of bread dough

– more time for gases to expand

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- strengthens protein in beaten egg white/helps to retain air
retards enzyme action
cake icing / decorating
glaze
caramel
confectionery
(10 points) (2 points = 1 mark)
- meringues
 - frozen foods
 - marzipan, royal icing, butter cream etc.
 - sugar and water glaze gives sticky layer on yeast buns etc.
 - desserts e.g. crème caramel, crème brulee, toffee, sweets, fudge etc.
- [5]

(c) Food Labelling

- give information to consumer
name of product
description
brand
name of manufacture
address / 'phone / website of manufacturer
in case of need to contact
ingredients – descending order
may have allergies etc.
cooking instructions
storage instruction
serving suggestion
picture of product
weight
special claims
vegetarian society symbol
wheat ear symbol
recycle symbol
nutritional information
kilocalorie content
sugar
fat
salt
additives identified
price
etc.
(10 points) (2 points = 1 mark)
- some information is a legal requirement
 - so consumer knows what is being bought
 - further details e.g. tuna in brine
 - reliability, knows what to expect etc.
 - recognise a s something seen before
 - by weight
 - for best result
 - to maintain best condition
 - to give ideas to consumer
 - to give information on new products
 - can calculate unit cost/make comparisons
 - reduced fat/no added sugar/added vitamin C etc.
 - so vegetarians know food is suitable
 - gluten free/coeliacs can consume
 - consumer knows how to dispose
 - consumer knows nutritional value per 100g
 - may be calorie counting, trying to lose weight etc.
 - useful for diabetics
 - states amount of saturated fat –
 - may have CHD – or wish to follow a healthier diet
 - control salt intake if suffering from hypertension
 - may wish to avoid/allergies etc.
 - if on special offer/can compare with other products
- [5]

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5 (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 | |
| new products made – jam, pickles etc. | |
| 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 before use | – to prevent formation of large ice crystals/
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]

(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

6 (a) 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	

(10 points) (2 points=1 mark)

[5]

(b) 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.

(10 points) (2 points=1 mark)

[5]

(c) 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.

(10 points) (2 points=1 mark)

[5]

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7 (a) **Importance of raising agents**

introduces gas – or substances from which gases evolve – during preparation –
 gas expands – on heating – mixture rises –
 makes mixtures light – open texture –
 easier to digest – more attractive – etc.
 (4 points) (2 points = 1 mark)

[2]

(b) **Air as a raising agent**

sieving – flour for shortcrust pastry, scones etc.
 creaming – fat and sugar for rich cakes
 rubbing in – fat and flour for shortcrust pastry
 whisking egg white – meringue, soufflé
 whisking eggs and sugar – Swiss roll, sponge cake
 beating – eggs before adding to creamed mixtures
 rolling and folding – flaky pastry, puff pastry etc.
 5 methods (5 × 1 point) 5 examples (5 × 1 mark)
 (10 points) (2 points = 1 mark)

[5]

(c) **Rules when making bread with yeast**

soft dough – so gas can push up the mixture
 knead thoroughly – develop gluten
 rise in warm place – encourage fermentation
 knead for second time – break large bubbles of gas
 oxygen to encourage yeast growth
 shape before proving – or gas will be lost
 prove in a warm place – replace carbon dioxide lost during kneading
 leave until double size – open texture to loaf/if overproved may collapse
 bake in a hot oven – to kill yeast/stop fermentation/stop rising
 5 rules (5 × 1 point)
 5 explanations (5 × 1 point)
 (10 points) (2 points = 1 mark)

[5]

(d) **Baking powder**

Composition

bicarbonate of soda – alkali – cream of tartar – acid – gives a tasteless –
 colourless residue – with moist – heat – contains a starch filler – to absorb moisture –
 will give off a fixed amount of gas – suitable for general use –
 and prevent substances reacting

Uses

in creamed cake mixtures, scones, suet pastry etc.

Storage

in an airtight container – dampness encourages a reaction between components –
 carbon dioxide would be given off – resulting in a poor reaction when used in mixtures
 (6 points – at least 1 point from each area) (2 points = 1 mark)

[3]

[Section B Total: 60 marks]