

**MARK SCHEME for the May/June 2011 question paper
for the guidance of teachers**

6065 FOOD AND NUTRITION

6065/01

Paper 1 (Practical), 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.

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Section A

- 1 (a) (i) Elements in fats and oils
carbon – hydrogen – oxygen
3 × 1 mark [3]
- (ii) Functions of fat
energy
stores energy for later use
warmth
insulation
protects internal organs
formation of cell membrane
stores fat-soluble vitamins (or named Vitamins A and D)
provides essential fatty acids
makes food more palatable
increases energy value of food without adding bulk
gives a feeling of fullness after a meal
adds flavour
provides texture
any 5 correct points at 1 mark each [5]
- (iii) Saturated fats
contain all the hydrogen they can hold
molecule composed of single bonds/no double bonds (can show on a diagram)
solid
3 × 1 mark [3]
- e.g. butter, lard, dripping, suet, dairy cream, coconut oil etc.
2 points 2 points = 1 mark [1]
- (iv) Polyunsaturated fats
can accept more hydrogen/do not contain maximum number of hydrogen atoms
more than one double bond in the molecule (can show on diagram)
liquid/found as oils
3 × 1 mark [3]
- e.g. corn oil, soya oil, sunflower oil, groundnut oil, sesame oil, olive oil
some fish oils e.g. mackerel
2 points 2 points = 1 mark [1]
- (v) Problems associated with a diet high in saturated fats
contains cholesterol
sticks to artery walls/arterial plaque
narrows them
blocks arteries
restricts blood flow
can lead to CHD
high blood pressure, varicose veins, haemorrhoids, angina, strokes (max. 2)

Cholesterol 1 mark
6 other facts = 6 points 2 points = 1 mark [4]

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- (vi) Digestion and absorption of fat in small intestine
 in duodenum – fats are emulsified – by bile – from the liver – stored in gall bladder – breaks fats into small droplets – to give a greater surface area – lipase from pancreatic juice – converts fats to glycerol – and fatty acids – lipase in intestinal juice – fatty acid – glycerol
 in ileum – fats are absorbed into lacteal – in villi – recombine to form fats – mix with lymphatic fluid – then join blood circulatory system – as insoluble fats
 10 points (at least 2 on absorption)
 2 points = 1 mark [5]
- (b) (i) Functions of calcium
 building of bones and/or teeth
 maintenance of bones/teeth
 clotting of blood
 functioning of muscles
 functioning of nerves
 3 × 1 mark [3]
- (ii) Sources of calcium
 milk – cheese – bread (fortified) – bones of canned fish – hard water – green vegetables
 2 points 2 points = 1 mark [1]
- (iii) Vitamin D
 1 mark [1]
- (iv) rickets – osteomalacia – osteoporosis
 1 mark [1]
- (c) Importance of iron
 forms haemoglobin – red pigment in blood – picks up oxygen – forms oxyhaemoglobin – transports oxygen around the body/to cells – oxidises glucose – to produce energy
 deficiency causes anaemia – gives a pale colour – causes tiredness/lethargy – headaches – dizziness
 8 points 2 points = 1 mark [4]
- (d) Meals for convalescents and those recovering from surgery

follow doctor's advice	may need to avoid certain foods etc
protein	repairing/body-building
low-fat diet	difficult to digest fat
low energy	not as active
iron	to replace blood lost
vitamin C	to absorb iron
calcium after fractures	repair damaged bone
vitamin D	to absorb calcium
small, frequent meals	easier to digest/breaks monotony
10 points	2 points = 1 mark

[5]

[Section A Total: 40]

Section B

2 (a) Shortcrust pastry method with reasons

sift flour	to aerate – to remove lumps
rub in fat	fingertips – coolest part of hand – hands raised to trap air
should look like breadcrumbs	
add cold water	avoid melting fat
mix with a round-bladed knife	keeps everything cool – stiff dough
knead lightly	firm dough – to avoid pressing out air
chill	allow fat to harden – cool trapped air
	allows gluten to relax – easier to roll
12 points	2 points = 1 mark

[6]

(b) Rules for rolling pastry

Do not turn pastry over.
 Roll in one direction.
 Do not use too much flour for dredging.
 Use short, forward strokes.
 Avoid pressing down on the pastry.
 Do not stretch the pastry.
 Lift pastry on rolling pin to turn.

4 points

2 points = 1 mark

[2]

(c) Dishes using shortcrust pastry

fruit pies, meat pies, Cornish pasties, quiches, jam tarts, curry puffs etc
 4 points (without repetition e.g. only 1 fruit pie)

2 points = 1 mark

[2]

(d) Choice of flour and fat

plain flour	air is raising agent
not self-raising flour	contains baking powder
	air is raising agent in shortcrust pastry
wholemeal/brown flour	adds fibre – fat – colour – flavour
	vitamin B – calcium
margarine	for colour – flavour
butter	for colour – flavour
lard	good shortness – lacks flavour – and colour
mixture of lard and margarine	combines shortening power with colour and flavour
10 points (names of ingredients or qualities)	
	2 points = 1 mark

[5]

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- 3 (a) (i) Saving money
- | | | |
|--|---|------------|
| <p>buy foods in season</p> <p>buy in bulk</p> <p>do not buy too much at once</p> <p>grow own fruit and vegetables</p> <p>reduce use of ready-prepared food/ convenience foods</p> <p>use cheaper protein food</p> <p>use pulses</p> <p>only cook the amount required</p> <p>have a shopping list</p> <p>use left-overs</p> <p>look for special offers</p> <p>do not have fixed meal plans</p> <p>supermarket's own brands are cheaper</p> <p>use 'money off' coupons</p> <p>compare prices between shops for 'best buy'</p> <p>compare prices per 100g/unit</p> <p>shop locally</p> <p>10 points</p> | <p>cheaper – better quality – good quality</p> <p>to last until needed – prevents waste</p> <p>economies of scale</p> <p>may be wasted – may not have suitable storage</p> <p>cost of seeds only</p> <p>no added labour costs</p> <p>cheap cuts of meat – use eggs, milk and cheese</p> <p>mix with other LBV protein to give HBV</p> <p>saves waste</p> <p>reduces impulse buys</p> <p>to prevent waste</p> <p>check 'sell by' dates etc</p> <p>look for bargains</p> <p>can bulk buy and pass savings to customer</p> <p>to get best value</p> <p>save transport costs etc</p> <p>2 points = 1 mark</p> | <p>[5]</p> |
|--|---|------------|
-
- (ii) Saving fuel
- | | | |
|---|--|------------|
| <p>use microwave</p> <p>use quick methods</p> <p>steam foods</p> <p>use only the oven for meal</p> <p>batch bake</p> <p>use only the hob for meal</p> <p>reduce size of flame</p> <p>use pressure cooker</p> <p>use convenience foods</p> <p>keep lid on pan</p> <p>do not overcook food</p> <p>cut potatoes into smaller pieces</p> <p>do not preheat oven too long</p> <p>cook only the amount of food required</p> <p>turn off electric cookers before end of cooking time</p> <p>have flat-based pans</p> <p>boil only the amount of water required for tea etc</p> <p>choose materials which are good conductors of heat for pans e.g. cast iron, copper etc</p> <p>match size of pan base to hotplate size etc</p> <p>10 points</p> | <p>less time (less fuel)</p> <p>e.g. frying/grilling</p> <p>low heat – several dishes at once</p> <p>several dishes at once</p> <p>can use some and freeze some</p> <p>no need to heat oven</p> <p>wastes fuel if flames reach up sides of pans</p> <p>quicker – several items at once</p> <p>prevents loss of heat</p> <p>less cooking time (less fuel)</p> <p>switch off burners when not using</p> <p>to avoid reheating</p> <p>use residual heat</p> <p>to have good contact between hotplate and pan</p> <p>2 points = 1 mark</p> | <p>[5]</p> |
|---|--|------------|

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(b) Convenience foods

Advantages:

- saves time (quick to prepare)
- saves energy (not tiring)
- easy to prepare
- easy to store
- easy to transport
- little waste
- can be kept for emergencies
- consistent result
- wide variety available
- may have extra nutrients added e.g. vitamin C to dried potato
- cook may not have the ability to prepare the product well e.g. puff pastry
- easy to use

Disadvantages:

- more expensive than fresh
- must follow instructions carefully for good results
- small servings
- nutrients lost during processing not replaced
- low in dietary fibre
- high in fat
- high in sugar
- high in salt
- artificial colourings and flavourings may be added
- use of additives – long-term effects not known etc

10 points covering both areas

2 points = 1 mark

[5]

4 (a) (i) Causes of food spoilage

- yeast – moulds – bacteria
- 3 points

(ii) Conditions for growth of micro-organisms

- warmth – moisture – food – time – oxygen – pH
- 3 points
- 1 mark for each 2 points

[3]

(b) Reduce risk of food contamination when:

(i) **Shopping**

- clean shops
- no pets
- no insects
- insect electrocutor
- food covered
- clean garments/aprons
- no nail varnish
- no licking fingers
- no blowing into bags
- use tongs for handling
- different equipment for raw and cooked foods
- raw and cooked foods stored separately
- assistants not handling money and food
- gloves/hair nets at meat counters
- date stamps on fresh foods

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careful choice of fresh foods e.g. meat and fish
 beware at market stalls – customers touching – insects – near dust and
 pollution
 staff should have hand-washing facilities – food not near waste etc.
 8 points 2 points = 1 mark [4]

(ii) Storing food

store perishables e.g. meat, fish, milk in refrigerator – temperature 1°C – 5°C – slows
 bacterial growth
 use food in rotation – observe date stamps – do not mix old and new foods e.g. milk
 store raw meat at bottom of refrigerator – so liquid does not drip onto food below
 do not overpack refrigerator – must allow air to circulate – to maintain temperature –
 check regularly
 cool left-overs rapidly – use within 24 hours – or freeze – prevent bacterial growth –
 do not keep food warm – bacteria multiply quickly at around 37°C
 store food in clean containers – cover – dry food in airtight containers – prevent
 moisture causing moulds
 check dry goods regularly – for weevils – clean shelves regularly – check for
 cockroaches – store food away from open windows and bins – avoids flies etc –
 clean storage area regularly – check for inedible food, crumbs, spills etc
 check dents, 'blown' cans etc.
 8 points 2 points = 1 mark [4]

(iii) Preparing and cooking food

frozen food must be thawed before cooking – Salmonella in poultry, eggs etc –
 food must reach 70°C in centre for 2 minutes – to kill bacteria – use different
 equipment for raw and cooked food – thaw thoroughly
 wash up in very hot soapy water – to remove grease and to kill bacteria – use clean
 tea towels or drain utensils – reduce risk of introducing bacteria to clean utensils
 wipe up spills and crumbs – to avoid attracting insects – clean surfaces
 do not use dish clothes for floor
 get rid of waste quickly – wrap up – pour away liquids – waste bin outside kitchen –
 so vermin/mosquitoes are not attracted
 wear clean overall – short nails – so bacteria not passed to food
 no coughing or smoking near food – bacteria transferred to food
 no pets in food preparation area – carry fleas etc. on bodies – keep animals' dishes
 separate from those for the family – bacteria from animals to humans
 sick people should not cook – bacteria passed via food to others
 bleach dish cloths – boil frequently – to sterilise – use disposable cloths – avoid
 spreading bacteria
 cover cuts with waterproof plaster – avoid passing bacteria via food
 don't leave food uncovered – flies bring diseases etc

N.B. Avoid repetition. Do not allow 'to prevent contamination' (in question).
 Only allow 'cross-contamination' once if relevant in the answer.
 8 point 2 points = 1 mark [4]

- 5 (a) (i) Nutrients in milk
 protein – fat – calcium – phosphorus – vitamin A/retinol – vitamin D/cholecalciferol
 – vitamin B1/thiamine – riboflavin/B2 – carbohydrate/sugar
 vitamin B (allow once if specific examples not given)
 8 points 2 points = 1 mark [4]
- (ii) Advice, with reasons, on storage of milk
 keep in a cool place/refrigerate bacteria reproduce more slowly
 so bacteria in container cannot contaminate milk
 store in clean containers if older milk is beginning to sour, will affect
 new milk
 do not mix old and new milk
 cover prevent dust, insects
 do not store near strong-smelling foods milk becomes tainted; it absorbs the smell
 e.g. cheese, onions
 store in a dark place/away from sunlight riboflavin destroyed by exposure to sunlight
 use within two or three days souring begins
 store and use UHT as fresh if opened exposed to bacteria from air
 dried milk in airtight containers to prevent absorption of moisture
 when reconstituted, use and store as suitable food for bacterial growth
 fresh milk
 6 points 2 points = 1 mark [3]
- (iii) (a) souring of milk
 lactic acid bacteria – act on lactose – changing it to lactic acid – curdles – sour
 flavour
 4 points 2 points = 1 mark
- (b) milk boils over
 protein coagulates on heating – forms a skin – water in milk turns to steam –
 cannot evaporate – builds up under skin – pushes up skin – boils over when
 skin reaches top of pan
 4 points 2 points = 1 mark [4]
- (b) (i) Pasteurisation
either milk heated to not less than 72°C (162°F) – for at least 15 seconds
or milk heated to 63°C (145°F) – for 30 minutes
 cooled rapidly – to discourage growth of remaining bacteria
 bottled as soon as possible
 harmful bacteria (causing Tuberculosis) destroyed
 flavour not affected (4 points)
- (ii) UHT
 heated at 132°C – for 1 second
 rapidly cooled – packed into foil-lined containers – sealed
 does not affect colour – or nutritional value
 kills harmful bacteria – kills souring bacteria (4 points)
 8 points 2 points = 1 mark [4]

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- 7 (a) Nutritional value of pulses
 LBV – protein – (soya HBV) – fat – carbohydrate/starch – dietary fibre (NSP)
 iron – thiamine – nicotinic acid – calcium
 6 points 2 points = 1 mark
- (b) Examples of pulses
 butter beans – haricot beans – mung beans – adzuki beans – borlotti beans – split
 peas – lentils – soya beans – chick peas – flageolet beans – black-eyed beans –
 dhal – peanuts/ground nuts
 4 points 2 points = 1 mark [2]
- (c) Importance of pulses
 easily produced
 dry so easily stored
 cheap to produce
 can be mixed with another LBV food – to give HBV protein – complementation
 filling
 give variety to meals
 valuable in vegan diet
 4 points 2 points = 1 mark [2]
- (d) TVP
 Textured Vegetable Protein
 made from soya beans – HBV protein
 (must give these 2 points – asked in question)
 textured and flavoured to resemble meat
 shaped into cubes or granules
 cheaper alternative to meat
 used as a meat substitute – in sausages , pies, curries etc
 can be used as an extender by mixing with meat
 no waste
 low in fat
 conforms with dietary guidelines – reduction in saturated fat
 useful for vegetarians
 iron, thiamine and riboflavin can be added
 can be used in canteen meals
 used in convenience foods e.g. Pot Noodles
 needs little cooking etc
 8 points 2 points = 1 mark [5]
- (e) Preparing and cooking dried red kidney beans
 soak – to take up water lost during drying – to allow them to soften – swell – cook more
 quickly
 boil – for 15 minutes during cooking time – destroys toxins – which occur naturally in
 kidney beans – prevents food poisoning
 6 points 2 points = 1 mark [3]

[Section B Total: 60]