

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
GCE Ordinary Level

**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 – 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]

|               |                                       |                 |              |
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### 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**

|                                                         |                                                                                         |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------|
| buy foods in season                                     | cheaper – better quality – good quality food –<br>to last until needed – prevents waste |
| buy in bulk                                             | economies of scale                                                                      |
| do not buy too much at once                             | may be wasted – may not have suitable storage                                           |
| grow own fruit and vegetables                           | cost of seeds only                                                                      |
| reduce use of ready-prepared food/<br>convenience foods | no added labour costs                                                                   |
| use cheaper protein food                                | cheap cuts of meat – use eggs, milk and cheese                                          |
| use pulses                                              | mix with other LBV protein to give HBV                                                  |
| only cook the amount required                           | saves waste                                                                             |
| have a shopping list                                    | reduces impulse buys                                                                    |
| use left-overs                                          | to prevent waste                                                                        |
| look for special offers                                 | check 'sell by' dates etc                                                               |
| do not have fixed meal plans                            | look for bargains                                                                       |
| supermarket's own brands are<br>cheaper                 | can bulk buy and pass savings to customer                                               |
| use 'money off' coupons                                 |                                                                                         |
| compare prices between shops for<br>'best buy'          |                                                                                         |
| compare prices per 100g/unit                            | to get best value                                                                       |
| shop locally                                            | save transport costs etc                                                                |
| 10 points                                               | 2 points = 1 mark                                                                       |

[5]

**(ii) Saving fuel**

|                                                                                              |                                               |
|----------------------------------------------------------------------------------------------|-----------------------------------------------|
| use microwave                                                                                | less time (less fuel)                         |
| use quick methods                                                                            | e.g. frying/grilling                          |
| steam foods                                                                                  | low heat – several dishes at once             |
| use only the oven for meal                                                                   | several dishes at once                        |
| batch bake                                                                                   | can use some and freeze some                  |
| use only the hob for meal                                                                    | no need to heat oven                          |
| reduce size of flame                                                                         | wastes fuel if flames reach up sides of pans  |
| use pressure cooker                                                                          | quicker – several items at once               |
| use convenience foods                                                                        |                                               |
| keep lid on pan                                                                              | prevents loss of heat                         |
| do not overcook food                                                                         |                                               |
| cut potatoes into smaller pieces                                                             | less cooking time (less fuel)                 |
| do not preheat oven too long                                                                 | switch off burners when not using             |
| cook only the amount of food<br>required                                                     | to avoid reheating                            |
| turn off electric cookers before end<br>of cooking time                                      | use residual heat                             |
| have flat-based pans                                                                         | to have good contact between hotplate and pan |
| boil only the amount of water<br>required for tea etc                                        |                                               |
| choose materials which are good<br>conductors of heat for pans e.g.<br>cast iron, copper etc |                                               |
| match size of pan base to hotplate<br>size etc                                               |                                               |
| 10 points                                                                                    | 2 points = 1 mark                             |

[5]

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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 traffic 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]

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- 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  
store in clean containers so bacteria in container cannot contaminate milk  
do not mix old and new milk if older milk is beginning to sour, will affect  
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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**6 (a) Reasons for cooking food**

to give hot food in cold weather – e.g. soup  
 to improve attractiveness/colour – e.g. to change red haemoglobin to brown  
 smell stimulates appetite – e.g. curry  
 makes food digestible by cooking starch – e.g. potatoes  
 reduces bulk so that more nutrients can be absorbed – e.g. cabbage  
 adds variety – e.g. cakes and casseroles  
 makes food safe to eat/kills bacteria – e.g. milk and chicken  
 destroys toxins – red kidney beans must be boiled for 15 mins  
 prevents spoilage – meat etc  
 tenderises – e.g. meat improves flavour – e.g. roast meat  
 necessary for some processes – e.g. thickening sauces  
 improves flavour – e.g. meat extractives, toast, fried food etc  
 easier to eat – meat etc  
 creates new dishes – cakes, casseroles etc  
 10 points – 5 reasons + 5 examples 2 points = 1 mark

[5]

**(b) Herbs and spices**

herbs – edible grasses, leaves  
 e.g. parsley, sage, thyme, rosemary, tarragon, coriander, mint, chives  
 (1 point for each pair) – allow no more than 2 points (4 e.g.)  
 spices – from root, stem, flower or seed, bark  
 e.g. nutmeg, cinnamon, cloves, ginger, mace, pepper, mustard  
 (1 point for each pair) – allow no more than 2 points (4 e.g.)  
 can be use dried or fresh  
 store dried herbs in dark places – to preserve colour  
 e.g. of use – fish in parsley sauce, sage in stuffing, mint sauce with roast lamb  
 e.g. of use – gingerbread, mustard in cheese sauce, pepper in soup  
 (not more than 2 examples of use of each to be credited)  
 stimulate flow of digestive juices – aids digestion  
 give colour – flavour – aroma to dishes – use in small amounts  
 may be used in infusions – herbal teas, tarragon vinegar etc  
 DO NOT credit medicinal uses  
 freshly ground spices have a superior flavour  
 etc  
 10 points 2 points = 1 mark

[5]

**(c) Uses of eggs in cookery**

as a main dish – omelette, eggs au gratin  
 snack – egg sandwich, scrambled or poached eggs  
 thickening – protein coagulates at 60°C – custard, sauces, lemon curd  
 binding – protein sets, holding ingredients together – stuffings, beefburgers  
 setting – protein sets and holds filling – quiche  
 coating – protein sets around food keeping out fat and protecting from heat – Scotch eggs, fried fish  
 enriching – adds nutrients to a dish – cakes (also adds moisture and shortness)  
 lightening – traps air – whisked sponge, soufflé  
 glazing – brown, shiny surface on pastry dishes  
 garnishing – chopped white and sieved yolk on dressed crab, savoury flan  
 emulsifying – holds oil and vinegar in suspension – mayonnaise  
 clearing – whisked egg white folded into consommé  
 etc  
 10 points (5 uses + 5 examples) 2 points = 1 mark

[5]

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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 [3]
- (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]**