MARK SCHEME for the October/November 2010 question paper
for the guidance of teachers

6065 FOOD AND NUTRITION

6065/01  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,
which would have considered the acceptability of alternative answers.

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examination.

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CIE is publishing the mark schemes for the October/November 2010 question papers for most IGCSE,
GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level
syllabuses.
1 (a) (i) **Elements in fat**
carbon – hydrogen – oxygen

3 × 1 mark [3]

(ii) **Functions of fat**
energy
energy reserve
protects vital organs
insulates / preserves body heat / warmth
solvent for fat-soluble vitamins / ADEK
increases calorific value of food without adding bulk
provides texture to food
gives flavour to food
gives a feeling of fullness (satiety) after a meal
slows down digestion
formation of cell membranes etc.

3 × 1 mark [3]

(iii) **Saturated fat**
contains maximum amount of hydrogen
molecule has only single bonds / no double bonds
(may show on diagram)
solid (at room temperature)
usually from animals
contains cholesterol
3 points
e.g. butter – lard – dripping – suet – cocoa butter – coconut oil – palm oil

1 point [2]

**Monounsaturated fat**
molecule can accept more hydrogen
molecule has **one** double bond
(may show on diagram)
liquid (at room temperature)
plant origin
3 points
e.g. olive oil – avocado oil, rapeseed oil/canola

1 point [2]

**Polyunsaturated fat**
molecule can accept more hydrogen
molecule has **more than one** double bond
(may show on diagram)
liquid (at room temperature)
usually plant – or fish origin
3 points
e.g. sesame seed oil – sunflower seed oil – maize oil – palm oil – peanut oil – soya bean oil – nut oil (or named e.g.) – oily fish (or named e.g.) – fish liver oil (or named e.g.) – safflower

1 point [2]
(iv) Digestion and absorption of fat
in duodenum – bile – from liver – stored in gall bladder – emulsifies fat – increases
surface area – breaks into small droplets – lipase – from pancreatic juice – converts fat
to fatty acid – and glycerol
in ileum – lipase – from intestinal juice – converts fat to fatty acid – and glycerol
in the ileum – finger-like projections – villi – contain lacteal – connected to lymphatic
system – absorbs glycerol and fatty acid – recombine to form fats – mix with lymphatic
fluid – join blood circulation – as insoluble fat

10 × 1 point  2 points = 1 mark [5]

(v) Reasons for reducing saturated fat
contains cholesterol – deposited on artery walls – narrows – blocks – may cause CHD /
heart attack – hypertension – strokes – excess fat is stored – under skin – as adipose
tissue – around internal organs – obesity / weight gain – breathless – problems during
surgery – low self-esteem etc.

8 × 1 point  2 points = 1 mark [4]

(vi) Ways to reduce saturated fat
less red meat / beef / pork / lamb – white meat / fish instead of red meat – trim fat from
meat – do not fry foods in lard / butter / dripping – grill instead of fry – use plant oils (or
named e.g.) to fry – named food, e.g. bacon, sausages, chops – reduce consumption of
chocolate – eat fewer cakes / biscuits / pastries – avoid avocado
reduce butter / margarine in recipes – eat fewer eggs – consume less butter / cheese –
choose low-fat products e.g. yoghurt / cheese – use skimmed milk – spread butter
thinly – use low-fat spreads – do not add butter to cooked vegetables – etc.

6 × 1 point  2 points = 1 mark [3]

(b) (i) Importance of Non-Starch Polysaccharide / NSP (dietary fibre)
absorbs water – in colon – making faeces soft – and bulky – and easy to expel –
regularly – helps to clear waste – binds food residues – stimulates peristalsis – gives
muscles something to grip – prevents constipation – hernias – haemorrhoids – cancer of
colon – diverticular disease – varicose veins etc.
helps to remove toxins – reduces cholesterol – gives feeling of fullness etc.

8 points  2 points = 1 mark [4]

(ii) Sources of NSP
green, leafy vegetables – fruit skins – wholegrain cereals – bran – maize – wholemeal
oats – oranges – wholemeal flour – celery – tomato seeds etc.

4 points  2 points = 1 mark [2]
(c) **Uses of Water**

- absorbed by NSP – removes waste
- forms part of protoplasm in cells – 70% of body is water
- constituent of body fluids – saliva / blood / digestive juices / lymph
- required in metabolic reactions – all processes take place in solution
- aids absorption – nutrients dissolve in water for easy absorption
- keeps mucous membranes moist – protects body from infection
- lubricates joints – prevents ends of bones damaging each other – knees, elbows
- maintains body temperature / cools body – lost in perspiration
- needed during lactation – for milk production
- maintains water balance – continually being lost – needs replacing – prevents dehydration
- helps to eliminate waste – from kidneys as urine – makes food easier to eat / swallow
- helps to keep faeces soft – prevents constipation etc.

4 uses – 1 point each + 4 pieces of additional information

8 points 2 points = 1 mark [4]

(d) **Good eating habits in children**

- eat meals with rest of family – do not allow to leave table – cut food if necessary – to encourage independence – small portion – encourage to eat everything – regular mealtimes – should begin day with breakfast – start metabolism – no snacking between meals – will not be hungry for meal – do not use sweets as a reward – or punish by not giving certain foods – serve attractively – variety of colours – variety of flavours – easy to eat – no strong flavours – variety of foods – variety of textures – avoid sweet drinks before meals – spoils appetite – water with meal – include fresh fruit and vegetables
- should include 500mls / 1 pint milk daily – introduce new foods – for wide variety of nutrients – avoid oily foods
- so they will grow up liking different foods – and will not be fussy – may be difficult to digest – encourage to use cutlery properly – avoid overfeeding – risk of obesity in later life etc.

(may illustrate with examples)

12 points 2 points = 1 mark [6]

[Section A Total = 40]
2 (a) Points to consider when meal planning
(NB do NOT credit 'balanced' or points on nutrition.)
climate / time of year – hot meals in cold weather – e.g. soup in winter, salads in summer
equipment available – may need freezer for dessert / baking tins etc.
 vary colour – e.g. not mince and potatoes followed by chocolate dessert / tomato soup then
tomatoes in main course
 vary flavour – do not repeat flavours in courses – e.g. fish with lemon sauce followed by
lemon meringue pie
 vary texture – avoid pastry in two courses etc.
variety of cooking methods
meals should be attractive – use garnishes / decorations
consider cost – use LBV protein / eggs / cheap cuts of meat
season – use fruit and vegetables in season – cheaper
availability of food – use left-overs / garden produce / local produce
shopping facilities – may need to buy fresh produce daily
skill of cook – may not know how to make choux pastry etc.
time available – may need to use quick methods e.g. frying / grilling
likes and dislikes – avoid food not enjoyed – waste
special requirements – consider vegetarians / diets etc.
ages of people taking meal – e.g. old may need easily-digested food – manual workers may
need greater quantity of food
occasion – birthday party / packed meal / Christmas lunch
consider whole meal – not an elaborate first course then simple dessert
number to serve – quantity required – to have enough food / to avoid waste
 religion – Hindus do not eat beef / Jews do not eat pork etc.
gender – females require additional iron etc.
5 points + 5 examples = 10 points 2 points = 1 mark

(b) Dietary needs of pregnant women
sufficient protein – growth of (foetus)
calcium and / or phosphorus – building bones / teeth
vitamin D – to absorb calcium
iron – for baby’s first six months – prevent anaemia in mother – formation of haemoglobin
vitamin C – to absorb iron
vitamin A – for baby’s eyesight
NSP – prevent constipation
reduced fat – difficult to digest – baby too big – mother overweight
reduced sugar – less active so less energy used
folate / folic acid – prevent neural tube defects / spina bifida
12 points 2 points = 1 mark

(c) Problems if sugar content is too high
tooth decay – bacteria change sugar to acids – dissolve enamel
excess stored as fat – obesity – breathless – low self-esteem – baby overweight
associated with CHD – varicose veins – hypertension etc. – risk of diabetes – too much
glucose in blood for insulin produced
8 points 2 points = 1 mark
3 (a) **Choice of flour and fat for shortcrust pastry**

**Flour**
- not SR flour – has a chemical raising agent
- plain – air is raising agent
- white – lighter texture – rises more easily
- soft – low gluten content – for more crumbly pastry
- wholemeal flour – or mix with white flour – adds NSP – iron – rougher texture – produces a heavier result – nutty flavour

**Fat**
- hard fat – does not melt when rubbing in – fat should be cold / chilled – not easily melted before baking – margarine – butter – good colour – and flavour – butter is more expensive – lard – crumbly / short result – because it does not contain water – poor colour – and flavour – mixture of lard and margarine – has qualities of both fats etc.

10 points to cover both ingredients  
2 points = 1 mark \[5\]

(b) **Method of making shortcrust pastry**
- sieve flour – trap air – remove lumps – impurities
- cut fat into small pieces – easier to rub in
- rub fat into flour – thumbs over fingertips – coolest part of hand
- lift hands high – to incorporate air – keep mixture cool
- mixture should look like fine breadcrumbs – add cold water – all at once – measure accurately – mix with round-bladed knife – cool – draw pastry together with fingertips – stiff dough – not sticky – knead lightly – to avoid pressing out air – to form a smooth dough – leave in a cool place before rolling – to allow gluten to relax

12 points  
2 points = 1 mark \[6\]

(c) **Named dishes**

4 points  
2 points = 1 mark \[2\]
(d) (i) Pastry shrinks during baking
    pastry stretched during rolling out
    stretched during shaping / lining flan ring etc.
    not allowed to rest before baking
    2 points

(ii) Hard, tough pastry
    conditions for making pastry not cool enough
    fat not hard enough
    fat melted during rubbing in
    not enough air incorporated during preparation
    heavy handling / kneading heavily / pressed too much when rolling
    too much kneading developed gluten
    pastry re-rolled too many times
    too much water added to rubbed-in mixture / wrong proportions
    too much flour for rolling out
    pastry turned over during rolling etc.
    2 points

4 (a) Reasons for cooking
    to make it safe to eat – bacteria in meat killed by heat
    to destroy toxins – in red kidney beans
    improve appearance
    give hot food in cold weather – soup in winter etc.
    reduces bulk of food – cooked green vegetables etc.
    makes food more digestible – cooked starch digested more readily than raw
    changes colour of food – meat from red to brown / brown crust
    changes texture – egg sets on heating etc. – tenderises meat
    change of flavour – meat extractives developed during cooking
    add variety of foods – eggs can be poached, fried, boiled etc.
    make new products – jam, pickles, condensed milk etc.
    mix together different foods – cakes, sauces, casseroles etc.
    preserves food – milk scalded, fruit made into jam etc.
    smell stimulates digestive juices – curry, fried bacon etc.
    removes excess fat
    develops aroma
    10 points

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(b) **Advantages and disadvantages of frying**

**Advantages**
- quick method of cooking
- food browns
- deep frying gives even colour to foods
- crisp surface
- flavour developed
- appetising smell
- different types of frying – 2 methods – 1 point
  - sautéing
  - dry
  - shallow
  - deep
  - stir-frying
- if foods are coated juices are sealed in – prevents absorption of fat
- coating holds fragile foods in shape – prevents breaking up etc.
- high satiety value

**Disadvantages**
- adds fat to product
- increases calorific value of food
- needs constant attention during cooking
- can be a dangerous process
- can be expensive to buy enough oil for deep fat pan
- cannot cook large amounts at once
- cannot leave unattended
- fried food difficult to digest
- unhealthy method of cooking – linked to CHD / obesity
- can be difficult to judge temperature of fat
- if too hot food will be overcooked on outside – raw inside
- if too cool food will absorb oil – unappetising
- needs skill for successful results
- must strain oil when cool to remove crumbs of food
- decomposing / burnt food gives bitter flavour to fried foods
- burnt crumbs leave dark specks on food

10 points 2 points = 1 mark [5]

(c) **Saving time when preparing and cooking family meals**
- collect ingredients and equipment required before starting to cook
- read recipe carefully – wastes time constantly referring to books
- use some raw dishes / courses – fruit salad / vegetable salad
- make use of electrical equipment – mixer / blender etc.
- microwave oven – pressure cooker – frying and grilling are quick methods
- make use of convenience foods – e.g. frozen puff pastry
- use soft margarine for creaming – quicker and easier
- tenderise meat before cooking – use tender cuts – less cooking time – 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 cook too much 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]
5 (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
sieveing – 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
rolling and folding – flaky pastry, puff pastry etc.
whipping – cream
5 methods 5 × 1 point
5 examples 5 × 1 point
10 points 2 points = 1 mark [5]

(c) Rules to follow 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
shape before proving – oxygen to encourage yeast growth
prove in a warm place – or gas will be lost
leave until double size – open texture to loaf / if over-proved may collapse
bake in a hot oven – to kill yeast / stop fermentation / stop rising
5 rules + 5 explanations 2 points = 1 mark [5]

(d) Baking powder
dry – store 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 2 points = 1 mark [3]
6 (a) meat is cooked by a moist method
fat melts – meat shrinks – muscle fibres contract – protein denatures

10 points 2 points = 1 mark [5]

(b) a loaf of bread is baked
rises – warmth of oven encourages fermentation – carbon dioxide produced
forms crust – browns – crust lifts off / ‘oven spring’ – framework formed
as carbon dioxide continues to expand after shape has set – air replaces gas which has escaped – open texture – starch gelatinises – Maillard browning – reaction between protein and sugar etc.

10 points 2 points = 1 mark [5]

(c) Changes taking place when a roux sauce is made

10 points 2 points = 1 mark [5]
7 (a) Choice and care of kitchen surfaces
worktops needed on either side of sink – and hob – to give a continuous work surface – avoid carrying hot pans etc. – sinks and hobs can be fitted into worktops – for smooth flow of surface – should be at a comfortable height for working – to avoid stretching – or stooping – should be no gaps between surface and equipment – behind sink – or where work surface meets walls – which would trap food – and attract bacteria – contaminates food – can be made of plastic / Formica covering chipboard / wood – wood – marble – granite – stainless steel – ceramic tiles etc.
smooth – hard-wearing – easy to clean – heat-resistant – stain-resistant – resistant to household cleaning agents – and grease – often made with a rolled edge – more comfortable to lean against – less likely to chip – colour to suit décor of kitchen etc.
use (wooden) chopping board – to protect surface from damage – pan stand – to avoid burning plastic / scorching wood – walls must be easy to clean – withstand moisture / condensation – avoid gloss paint to reduce condensation – plastic / vinyl coated wallpapers – attractive – easy to change – floor should not be slippery – not damaged by water – clay tiles – linoleum – etc.
wash surfaces with hot, soapy water – to remove food and grease – and prevent attracting insects etc. – sugar attracts ants – remove food which could stain quickly – e.g. curry sauce etc.
10 points 2 points = 1 mark [5]

(b) Choice and care of saucepans
10 points 2 points = 1 mark [5]
(c) Choice and care of electric food mixers

consider amount of use – free-standing mixer takes larger quantities – does not need constant attention – may have additional attachments – whisk for meringues – dough hook for bread etc. – hand mixer must be held throughout use – small quantities – few attachments available – but quick and easy to use – easy to store – free-standing mixer may be difficult to store – may be a problem to get out of storage space – so may not use often – should be space on work surface if it is used often
more robust than hand mixer – but more expensive – consider cost – look at reports in magazines / from other users – guarantee – colour – availability of attachments – e.g. blender – do not immerse in water – do not touch with wet hands – switch off before removing beaters – do not try to mend – professionals have expert knowledge – safer – avoid stretching flex – no frayed wire-covering – replace – wipe body of mixer with damp cloth – beaters in hot soapy water etc.

10 points

2 points = 1 mark

[Section B Total = 60]