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.

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

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

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Section A

1 (a) (i) **Elements in fats and oils**
- carbon – hydrogen – oxygen
  
  3 × 1 mark  

(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  

(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  

  e.g. butter, lard, dripping, suet, dairy cream, coconut oil etc.
  
  2 points  2 points = 1 mark  

(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  

  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  

(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  

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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

(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

(ii) *Sources of calcium*
- Milk – cheese – bread (fortified) – bones of canned fish – hard water – green vegetables

2 points = 1 mark

(iii) *Vitamin D*
1 mark

(iv) *Rickets – Osteomalacia – Osteoporosis*

1 mark

(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 = 1 mark

(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 = 1 mark

[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
- wholemeal/brown flour adds fibre – fat – colour – flavour
- margarine vitamin B – calcium
- 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]
3 (a) (i) **Saving money**

- buy foods in season
- cheaper – better quality – good quality food – 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/ 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 cheaper
- use ‘money off’ coupons
- can bulk buy and pass savings to customer
- compare prices between shops for ‘best buy’
- 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
- keeps 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
- match size of pan base to hotplate size etc
- boil only the amount of water required for tea etc
- choose materials which are good conductors of heat for pans e.g. cast iron, copper etc
- turn off electric cookers before end of cooking time
- use residual heat
- have flat-based pans
- to have good contact between hotplate and pan

10 points 2 points = 1 mark [5]
(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
  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 electrocuter
- 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
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]
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]

(b) (i) **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
- when reconstituted, use and store as fresh milk: suitable food for bacterial growth

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
  - cooled rapidly – to discourage growth of remaining bacteria
  - bottled as soon as possible
  - harmful bacteria (causing Tuberculosis) destroyed
  - flavour not affected

- **or**
  - milk heated to 63°C (145°F) – for 30 minutes

(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

8 points 2 points = 1 mark [4]
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 = 1 mark

(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 used 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

(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
7 (a) **Nutritional value of pulses**
- 6 points = 2 points = 1 mark [3]

(b) **Examples of pulses**
- 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]