

**MARK SCHEME for the October/November 2009 question paper
for the guidance of teachers**

9336 FOOD STUDIES

9336/01

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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1 (a) Define and classify fats and oils

Fats and oils are esters – result from action of acids with alcohol – made up of carbon, hydrogen and oxygen – made up of glycerol and fatty acid – 1 molecule of glycerol – 3 molecules of fatty acid – 3 hydroxyl groups of glycerol molecule – each combine with a fatty acid molecule – to create a triglyceride – simplest triglyceride is formed when all fatty acids are the same – triglycerides are found in food – usually 2 or more types of fatty acid – differences between fats and oils due to different fatty acids in structure – glycerol is present in all fats – saturated fats – hold maximum number of hydrogen atoms – solid – joined by single bonds – usually from animals – butter – suet etc. – e.g. butyric acid – palmitic acid – stearic acid – mono-unsaturated fats – have one double bond – between 2 adjacent carbon atoms – they are reactive – double bond is a weak point in structure – can take up more hydrogen at double bond – e.g. oleic acid – olive oil etc. – polyunsaturated – more than one double bond – can hold more hydrogen – unsaturated fats are liquid at room temperature – usually from plants – fish oils are unsaturated – e.g. linoleic acid – linolenic acid – from vegetable oils / soya / maize / rapeseed etc. – and fish liver oils etc.

12 points

2 points = 1 mark

[6]

(b) Plasticity

Fats do not melt at a fixed temperature – melt over a range of temperatures – because they are a mixture of fatty acids – with different melting points – some triglycerides melt as temperature rises – others remain solid – allowing some triglycerides to move within the fat – making it 'spreadable' – softer fats spread more readily – shape changes with pressure – hard fats require more pressure to change shape – rolling puff pastry – plasticity of fats affects its shortening and creaming properties – pure fats have more shortening power – they contain no water – e.g. lard – creaming power measured by capacity to incorporate and hold air bubbles – fat with large plastic range is best for creaming – hydrogenated vegetable fats better than butter – butter has a narrow plastic range – hard at room temperature – difficult to spread etc.

8 points

2 points = 1 mark

[4]

(c) Difference between trans fatty acids and cis fatty acids

Trans fatty acid – two hydrogen atoms on geometrically opposite sides of the double bond.

1 point

Cis fatty acids – two hydrogen atoms on the same side of the double bond.

1 point

Credit correct information if shown on a diagram.

2 points

2 points = 1 mark

[1]

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(d) Describe the digestion and absorption of fat

Digestion

In the duodenum – bile – stored in the gall bladder – in liver – emulsifies fat – increases surface area – breaks fat into small droplets – lipase – in pancreatic juice – converts fats into glycerol – and fatty acids – in the ileum – lipase – from intestinal juice – converts fats to glycerol – and fatty acid
(credit lipase – glycerol – fatty acid once only)

8 points

2 points = 1 mark

Absorption

In ileum – villi – in intestinal wall – increase surface area – contain a lacteal – absorbs glycerol and fatty acids – which reform into fats – pass into lymphatic system – by diffusion – and active transport – now called chylomicrons.

4 points

2 points = 1 mark

[6]

(e) Explain current dietary advice to limit the amount of fat in the diet

High fat diet may cause obesity – coronary heart disease – strokes – Hypertension – poor blood circulation – obesity – results from accumulation of fat – a person is obese if about 1/3 of the body weight is fat – by overeating – more calories than required – excess fat is stored – under skin – as adipose tissue – and around internal organs – usually less active – so calories not burnt off – more weight gain – weight puts strain on heart – and blood circulation – breathing difficulties – low self esteem – problems during surgery – saturated fat contains cholesterol – deposited on artery walls – narrows – blocks – leads to heart attack – if coronary artery blocked – or stroke – if blood vessel in brain is blocked – arthritis – additional weight on joints – hypertension / high blood pressure – when arteries are narrowed – more difficult for blood to flow – may damage artery walls – etc.

16 points

2 points = 1 mark

[8]

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2 (a) Importance of regular meals for children

Develop routine – to form good eating habits at an early age – same time every day – to learn what is expected of them at meal times – eat with family – copies / learns from other family members – eats what they eat – know the type of food to expect at certain times of the day – required amount of food spread throughout day – to prevent overfeeding / overeating – not waiting too long between meals – to avoid snacking between meals – often junk food – then not hungry at meal time – digestive system ready for meal – small stomach capacity – cannot eat large amount of food – but still need to have balanced meals etc.

8 points

2 points = 1 mark

[4]

(b) Planning and serving children's meals

At least 500 ml / 1 pint of milk per day – easily digested – contains many essential nutrients – but no iron – or vitamin C – or vitamin D – used in dishes – need not consume all as drinks – HBV protein – rapid growth – carbohydrate / starch – for energy – activities – and for growth – some fat – concentrated source of energy – small stomach capacity – full cream milk up to 5 years – because of fat content – calcium – formation of bones and teeth – blood clotting – muscle function – nerve function – phosphorus – works with calcium to form calcium phosphate – iron – formation of increased volume of blood – prevent anaemia – vitamin A – visual purple – vision in dim light – healthy skin – mucous membranes – anti-infective vitamin – vitamin D – aids absorption of calcium – prevention of rickets – vitamin C – aids absorption of iron – clear skin – vitamin B1 / Thiamine – releases energy from carbohydrate – function of nerves – prevention of beri-beri – vitamin B2 / Riboflavine – energy from carbohydrates / protein / fat – growth – vitamin B3 / nicotinic acid / niacin – energy from carbohydrate – co-enzyme – vitamin B12 / cobalamin – works with folate – to make red blood cells – folate / folic acid – manufacture of new cells – foods easy to eat – and chew – to ensure all nutrients are available – crisp – to encourage chewing – small portions – small stomach – encourage to finish everything – can give additional portion – prevent waste – small child may become over-faced by large amount of food – few sweet foods – they blunt the appetite – may cause tooth decay – not much fatty food – difficult to digest – introduce new foods – variety of colour – flavour – texture – serve attractively – to tempt appetite – snack on raw fruit and vegetables – max. nutrients – to avoid sweets – water with meals – easier to eat / digest – sweet drinks affect appetite – attractive crockery – small cutlery – to become independent.

20 points

2 points = 1 mark

[10]

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(c) (i) Marasmus

causes – too little food to eat – children usually under 1 year – intake of nutrients is less than body requires – poor diet of mother.

symptoms – thin bodies – weak – eventually die.

4 points to cover both areas 2 points = 1 mark [2]

(ii) Kwashiorkor

causes – lack of protein – of HBV – fill up on carbohydrate – after weaning usually when next baby is born.

symptoms – thin arms and legs – muscle wasting – protein not forming tissues – retarded growth – distended abdomen – caused by fluid retention in tissues / oedema – anaemia – blood is a protein – poor, thin hair – reddish colour – soft texture.

6 points to cover both areas 2 points = 1 mark [3]

(iii) Scurvy

causes – lack of vitamin C – iron cannot be absorbed efficiently – connective tissue not formed – cell walls of blood vessels weak.

symptoms – walls of blood vessels become porous – blood escapes – bruising under skin – cuts / scratches slow to heal – gums swell – teeth become weaker – teeth loosen – major blood vessels break – fatal.

6 points to cover both areas 2 points = 1 mark [3]

(iv) Rickets

causes – lack of calcium – and phosphorus – and vitamin D – lack of exposure to sun / ultra violet light – lack of milk in diet – poor diet of breast feeding mother.

symptoms

bow legs – knock knees – pigeon chest – cartilage cannot be hardened not enough calcium – phosphate from food – weight of body cannot be supported by soft cartilage – vitamin D needed to absorb calcium and phosphorus – bones set in bent shape.

6 points to cover both areas 2 points = 1 mark [3]

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(iii) Ways to increase the amount of NSP in family meals

Fruit and vegetables – skins e.g. potatoes / apples – seeds e.g. tomato – whole grain breakfast cereals – bran – wholemeal flour – brown rice – oats wholemeal bread – celery – nuts – dried fruit – pulses etc.

6 points (avoiding repetition) 2 points = 1 mark

[3]

4 (a) Classify carbohydrates and describe the structure of each type identified

Monosaccharides

Simple sugar – single molecules – $C_6H_{12}O_6$ – sweet taste – water soluble – end product of digestion – absorbed into bloodstream – e.g. glucose – fructose – galactose. (max. 2 examples)

Disaccharides

Double sugars – 2 molecules of monosaccharide – 1 molecule of water lost in the reaction – condensation – $C_{12}H_{22}O_{11}$ – water soluble – e.g. sucrose – maltose – lactose. (max. 2 examples)

Polysaccharides

Simple polysaccharides – long chains of glucose molecules – e.g. starch – glycogen – **either** available polysaccharide – digested into simple sugars – and absorbed – complex carbohydrate – long chains of more than one type of monosaccharide – e.g. hemicellulose water lost in reaction – condensation

or unavailable carbohydrates – indigestible – insoluble in water – can be linear – e.g. amylose – cellulose – dietary fibre / NSP – or can be branched – more than one type of monosaccharide joined together – amylopectin – e.g. pectin – gum – mucilage. (max. 2 examples)

20 points for types and any other information as indicated

2 points = 1 mark

[10]

(b) Functions of carbohydrates

Sugar – energy – for BMR – mechanical – electrical – chemical – for growth etc. – starch – energy – released more slowly – NSP / dietary fibre – peristaltic – action – health of gut – high satiety value – reduces calorie intake – glycogen – in blood – or liver – energy store – converted to glucose – oxidised to give energy when required.

10 points

2 points = 1 mark

[5]

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5 (a) Availability of food

Depends on where people live – type of land – climate – hurricanes – droughts – how they affect the cultivation of particular foods – foods grown locally – land may not favour animal rearing – or growing particular crops – availability of transport to bring foods grown elsewhere – different foods grow / are available in different countries – those in developing countries may have little choice of food – no trade with others – poor countries cannot afford to import foods – depends mainly on staple food – rice / maize etc. – cannot afford agricultural developments therefore little variety – wealthy countries import food – e.g. bananas / coffee / oranges etc. – wealthier countries have developed technologically – new preservation methods – canned / dried etc. – ownership of home freezers – new storing methods – previously unknown – e.g. AFD – creation of new foods – e.g. TVP – increases availability of convenience foods – more expensive – depends on income – more people work outside the home in developed countries – more disposable income – foods in season – home-grown produce – proximity to local markets – storage facilities – left-over food to use etc.

10 points

2 points = 1 mark

[5]

(b) Culture and Religion

Choose foods liked by families – habits – conditioning – family likes / dislikes – each culture has its own eating patterns – and styles of cooking – may be influenced by availability of low-priced, locally-grown food – e.g. rice in China and India / potatoes in Britain – wheat used for pasta in Italy – and for bread in the UK – vegetarian families – children must follow – absorb same attitude towards foods – may not be able to change until old enough to make own food choices – each culture has its own foods – often based on religious beliefs – e.g. cow sacred to Hindus – Jews and Muslims must have animals slaughtered in a particular way – to conform with religious teachings – Roman Catholics eat fish on Fridays – some dishes associated with festivals – christmas cake – turkey for Thanksgiving in the USA – dishes associated with occasions – wedding cake / birthday cake with candles etc.

10 points

2 points = 1 mark

[5]

(c) Advertising and Packaging

Choice can be affected by how foods are shown to consumers – television / newspaper adverts – displays in stores – taste-testing – some advertisements appeal to children – sweets / McDonald's – children more easily persuaded than adults – pester power – sweets at till – tempted by free gifts / money off coupons / special offers – to introduce new foods – attracted by colours of packaging – endorsements – health claims – peer pressure advertising convinces people that they 'should' buy certain foods – art of persuasion packaging gives information – what is in package – some may be poor readers – serving suggestions – make food look appealing – may give nutritional information manufacturers consider their role as educators – some people choose foods with the least packaging – environmental issues – waste of resources – others find packages foods easier to store – boxes easy to stack – saves time – can be stored as soon as food is brought home protects food from damage – contamination – tampering etc.

10 points

2 points = 1 mark

[5]

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(d) Cost

Depends on money available to spend on food – need to budget – poorer people must spend a higher proportion of income on food – staple foods cheap – filling – can be basis of meals – local recipes etc. – may be a status symbol for rich people – spend more than they can afford – e.g. smoked salmon / caviar – may wish to impress – cost is not related to nutritional value – may depend on supply available – or demand for the food – cheaper foods can have high nutritive value – e.g. milk / cheese / eggs – can choose cheaper sources of HBV – pulses / cereals etc. – protein complementation – grow own produce – keep chickens for family consumption – use food in season – special offers – buy locally – reduce transport cost – foods in season are usually cheaper – make rather than buy ready-made food – careful use of convenience foods – nutritious diet may need not be expensive – reduce purchase of junk food – judge amount requires – to avoid waste – use left-over foods – poor people may receive government help – free school meals – food aid – poverty limits choice of food – those with unlimited income may make poor choices processed / convenience foods are expensive – but usually contain high fat – high sugar – high salt – risk of obesity – CHD – hypertension – low in NSP etc.

10 points

2 points = 1 mark

[5]

(e) Nutritional knowledge and skill

Food choice may be affected by its nutritional value – knowledge from school / home may depend on level of education – differs between countries – nutrition may not be taught to everyone in school – level of knowledge varies – packaging may provide nutritional information – or magazines / television – publicity campaigns in media – to increase awareness – and knowledge – need to know the functions – and dangers of food – sources of nutrients – in order to choose wisely – well publicised dangers of excess fat / sugar / salt – campaigns to encourage daily consumption of fruit and vegetables – danger of CHD / obesity / hypertension – greater in affluent countries – cheaper sources of HBV protein are just as valuable in diet – milk / cheese / eggs – cheaper cuts of meat can be tenderised – complementary proteins used – cereals / pulses / nuts in same meal – improve quality of HBV protein – skill may depend on teaching in school – or at home – younger people may lack – less time spent at home – paid work outside home – more use of processed food – reduces preparation and cooking skills – may avoid certain meat / fish / fruit etc. – do not know how to prepare and cook – may buy convenience foods – e.g. puff pastry – because cannot make it – do not see skills used at home – or may be skilled at limited dishes – choose foods to make those – lack variety – may cook as a pastime – cake decoration etc. – learn how to choose accordingly – expect success – to avoid waste – if dishes do not turn out well, will not repeat – more costly to buy ready made food – but know the result to expect – to pay for reliability – or for dishes they could not make – due to lack of skill – e.g. choux pastry etc.

10 points

2 points = 1 mark

[5]

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6 (a) (i) Advantages and disadvantages of cooking in a microwave oven

Advantages

Quick – fuel saved – no pre-heating necessary – no mess in oven – sides stay cool so spills do not burn on – saves cleaning time – same dish can be used for cooking and serving – less washing up – micro-organisms destroyed – by heating of water molecules – minimum loss of water-soluble vitamins – little or no cooking liquid – maintains colour of vegetables – quick cooking – heat produced immediately – can be used for defrosting – safer than leaving food on a warm kitchen for hours – re-heats food very quickly – less destruction of nutrients etc.

Disadvantages

No browning – no crispness of outside – no dry heat – no cooking smells – food enclosed by hermetically sealed door – not suitable for large pieces of food / joints of meat / chicken etc. – depend on an appropriate electricity supply – rays only penetrate 4 cm – no metal dishes or metal decorations on china – causes arcing – can damage magnetron – easy to overcook – because of speed of cooking – cannot easily judge when cooked – not brown / crisp to guide – standing time allows cooking to continue – therefore may overcook – bones may conduct heat – different thickness of food cook unevenly – may get dry areas – food needs to be turned / moved round frequently – may need more attention than other methods of cooking – liquids need to be stirred – for even cooking – otherwise 'hot spots' occur – only small amounts of food can be cooked at once – usually only 1 shelf – when cooking for a group of peoples other methods may be required in addition etc.

12 points to cover both parts 2 points = 1 mark

[6]

(ii) Advantages and disadvantages of using convenience foods

Advantages

Great variety available – many types available – tinned / frozen / dried / ready to eat – readily available in many stores – can increase the range of dishes served at home – many are prepared – some are partly or fully cooked – some ingredients may not be available – e.g. canned pineapple / frozen fish / dried spices – save preparation time – many women work outside the home – save cooking time – children can use – little skill required – cooking instructions on packaging – serving suggestions – consistent results – may not be able to cook well – or have required skills – may not have equipment to prepare – more economical than buying equipment – saves storage space – no need to buy each individual ingredient – prevents waste of unused ingredients – easy to store – longer shelf-life than fresh – can shop less often – increased freezer ownership – and microwave use – more young people eat outside the home – fast food – peer pressure – may want same types of food at home – can prepare individual meals etc.

Disadvantages

Expensive – to cover cost of marketing / packaging – over-packaged – environmental issues – portion size small – may have a high fat content – often saturated fat – associated with obesity – CHD – overweight children – high in sugar – obesity – dental caries – diabetes – high in salt – hypertension – low in NSP – more risk of constipation etc. – may contain additives – long-term effects not known – possible allergic reactions – lack of vitamins – destroyed during processing – may be addictive – loss of skills – dependency on ready prepared / cooked food – tastes change – store of food readily available – snacking – overeating – fewer family meals – loss of social skills – some people eat individually rather than as a family etc.

12 points to cover both parts 2 points = 1 mark

[6]

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(iii) Advantages and disadvantages of home freezing

Advantages

Supply of food always available – in case of illness – bad weather etc. – suitable for almost all foods – can freeze when plentiful for times of shortage – retains nutritive value – flavour – and texture – can store a wide variety of commercially frozen food – prepared before freezing – sometimes cooked – saves time – prevents waste – left-over food can be stored for later use – can batch bake – when time is available – use when short of time – but enjoy home-made products – can buy in bulk – often cheaper – food has a long storage life – shop less often – can prepare in advance for special occasions.

Disadvantages

Cost of buying freezer – need to budget for running costs / increased electricity used cost of packaging materials – space for freezer – food wasted in case of power cuts freezer burn if packaging not adequate / or damaged – high value of stored food – may not be able to afford to buy food for later use – freezer needs to be full in order to run efficiently – some foods change texture – e.g. cheese – may spend more money on meals – know that food is available – less likely to plan and prepare cheaper meals from scratch – children snack – on ice-cream and lollies etc. – high fat / sugar content – need to allow time to thaw frozen meat etc. before cooking – to allow thorough cooking – and prevent risk of food poisoning – when food is not heated to a high enough temperature to destroy bacteria – 72°C in centre – must know theory of freezing – if food is not frozen at a low enough temperature – -27°C – large crystals form within cells – rupture cell walls – loss of cell contents – e.g. strawberries become soft – must store at -18°C – to prevent multiplication of bacteria – should spend time labelling food – date / contents / weight etc. – so food is used at its best – can easily forget food at the bottom – wastes food and money – may not be packaged in useful quantities – risk of defrosting more than needed – temperature for bacteria to thrive etc.

12 points to cover both parts 2 points = 1 mark

[6]

(b) Importance of traditional methods of preparing, cooking and storing food

Knowledge of local methods – passes down through generations – become part of culture – way of showing belonging to a community / area – awareness of locally grown food – preparation of food without any cost – economical dishes – plentiful supplies – preservation by drying etc. – design of storage shelters – reasons for designs – help local understanding – often concerned with foods, which grow wild – or can easily be cultivated – understanding of use of available resources for preparing – traditional tools – local methods of cooking – wood collection – making fires etc. – important to remember roots of communities – traditional cooking may be used at times of celebration – family events – important to know how to play a part – different from local food – which is food available to buy locally – indigenous foods are nutritious – and economical – could refer back to them in times of need – make distinctions between different ethnic groups – show creative use of natural resources – traditions / rituals – group cohesion – may use foods gathered from uncultivated land – e.g. melons – use basic methods like burying food in fires in some communities – often simple methods – to show there is no need to rely on modern methods of preservation – or use of modern equipment – some people research old methods – good to be able to see them in use – to show the development of methods of preparation, cooking and storing – young people should be made aware of starting points and understand reasons for development – e.g. education – trade etc.

14 points

2 points = 1 mark

[7]

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7 (a) Causes of food spoilage and the conditions which favour spoilage

Enzymes – bring about ripening then decay – autolysis – oxidative rancidity in fats – enzymic browning – loss of vitamins C and B group micro-organisms – yeast – causes fermentation – moulds – change appearance and flavour – bacteria – contaminate food – can be toxic – require a source of food – moisture – warmth – around 37°C is ideal – time to multiply – some require oxygen – suitable pH – may be spoilt by damage during harvesting – and transportation – incorrect storage – kept too long – at unsuitable temperature – infestation by pests / weevils / rodents / birds – contamination by insecticides etc.

10 points

2 points = 1 mark

[5]

(b) Preparing, cooking and storing food so it is safe to eat

Make sure to avoid conditions required for growth of micro-organisms.

Preparing

Clean surfaces – free from bacteria – wash with hot soapy water – clean equipment – dry in open air – or with clean tea towel – wash / clean thoroughly before cooking – different equipment for raw and cooked food – to prevent cross-contamination – different coloured chopping boards etc. – high standard of personal hygiene – wash hands after visiting toilet / handling raw meat / rubbish etc. – clean apron – hair tied back / covered short / clean fingernails – no nail polish – cut covered with waterproof plaster – do not cook if suffering from infectious illness – no smoking – coughing / spitting over food – do not lick fingers – wash tasting spoon before using again – no flies in kitchen – but do not use fly spray – do not allow animals in kitchen – dogs to have own bowls, not family's – no cracked or chipped equipment – no left-over food lying around – wrap food waste – dispose of regularly – cover bin – disinfect – boil / sterilise dish cloths and tea towels – make sure frozen food is thoroughly thawed – so bacteria are destroyed by heat – do not defrost then re-freeze food – cover food – etc.

Cooking

Temperature in middle of food must reach 72°C – for 2 minutes – use probe to ensure bacteria are destroyed – e.g. salmonella in poultry – stir liquids in microwave oven – to ensure even distribution of heat – hot food, which is to be eaten raw, should be cooled as soon as possible – so it passes through dangerous temperature zone as quickly as possible.

Storage

Short term storage in cool / refrigerated place – 1–7°C – micro-organisms reproduce slower in cold conditions – clean container – covered – to prevent cross contamination – raw meat at bottom of refrigerator – so drips do not fall onto cooked food – egg points end down – to keep yolk in centre – use in rotation – observe 'use by' dates – long term storage in freezer – 18°C – bacteria dormant – water unavailable – drying – remove water – jam-making – high temperature sterilises – vacuum so no further entry of micro-organisms – high sugar concentration – use of chemicals – e.g. salt – acid – effect of osmosis – most bacteria like pH 7.4 etc.

30 points to cover all areas 2 points = 1 mark

[15]

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(c) Reasons for the increased number of cases of food poisoning

Meals eaten away from home – restaurants / fast food outlets – kept warm in catering establishments – canteens / restaurants – more take-away foods / hawker centres etc. – curries / sandwiches / pizza etc. – increased factory farming – eggs / chickens / fish – increased use of convenience foods – e.g. soups / sauces / sausages – changes in shopping habits – more food storage at home and in food stores – people shop less often – homes are often very warm – ideal temperature – poor storage temperatures and unsuitable conditions at home – lack of knowledge of safe storage conditions – untrained staff handling food in shops / restaurants / stalls – poor / no hand washing facilities – dirty clothes etc. – more mass-catering – in schools / hospitals etc. – shopkeepers want to sell all food to prevent waste – and make more profit – large supermarkets cater for large population – one batch of contaminated food will affect many people etc.

10 points

2 points = 1 mark

[5]

8 (a) (i) Types of fat and flour for shortcrust pastry

Plain flour – air is raising agent – SR flour has chemical raising agent – soft flour – low gluten content – crumbly result – white flour – wholemeal flour is heavy – not so much rising – but contains NSP – hard fat – chilled – so it does not melt easily – butter – gives colour and flavour – but is saturated fat – with cholesterol – margarine – colour – and flavour – usually from plant source – lard – no water – gives short / crumbly result – but lacks colour – white vegetable fat – suitable for vegetarians – and flavour – mixture of lard and margarine preferred – qualities of both etc.

8 points

2 points = 1 mark

[4]

(ii) Types of fat and flour for puff pastry

Plain flour – air is raising agent – hard / strong flour – high gluten content – to develop structure / layers – gluten developed during rolling and folding – traps air between layers – not wholemeal flour – too low gluten content – heavier – poor rise – hard fat – will not melt easily – plastic – changes shape when rolling and folding – hard margarine – butter – colour – flavour – does not melt easily – lard – or white vegetable fat – less than half – no water.

8 points

2 points = 1 mark

[4]

(b) (i) Changes which take place when preparing and cooking shortcrust pastry

Air incorporated – by sieving – and rubbing in – flour particles coated with fat – during rubbing in – some flour uncoated – uncoated flour absorbs water – gluten strands formed – sticky – binds dough together – bound evenly – by kneading – rolling stretches gluten – allows pastry to be rolled thinly – cooling / resting before cooking – allows gluten to relax – stops shrinkage – fat melts during cooking – absorbed by starch granules – starch granules gelatinise – air expands – water changes to steam – and expands – separate pastry into crumbly layers – become crisp – dry – as gluten coagulates – starch dextrinises on surface – browns etc.

10 points

2 points = 1 mark

[5]

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(ii) Changes which take place when preparing and cooking puff pastry

Flour particles hydrated when water added – gluten strands formed – gluten developed when dough is kneaded – forms smooth dough – gluten stretched when dough is rolled – air is trapped when fat added – and edges are sealed – air enclosed between layers – when rolling and folding – more layers are formed with each rolling and folding – air trapped between layers – and gluten developed by kneading and rolling – fat hardens – when chilled between each rolling – gluten relaxes – so pastry does not shrink during cooking – cold air expands more than warm air – fat melts on heating – absorbed by starch granules – steam produced from water – expands – air expands – forces layers apart – starch gelatinises – gluten coagulates – framework of pastry formed – dextrin forms on surface browns – crisp layers – dry – by water evaporation in hot oven etc.

10 points

2 points = 1 mark

[5]

(iii) Problems when making and baking shortcrust pastry

Fat too hard to rub in – lumps of fat remain – too much flour left uncoated – too much water needed to mix pastry overhandled – fat becomes soft and sticky – pastry difficult to roll too little water added – pastry will not become smooth when kneaded – cracks when rolled – dry and crumbly when cooked too much water added – too much gluten developed – hard, tough pastry water added unevenly – streaky pastry when rolled out – pastry blisters – steam produced unevenly – pastry kneaded heavily – too much gluten developed – tough pastry – too much flour for rolling – dough becomes dry – proportions altered – pastry may crack on rolling – over-stretching dough when rolling – long strands of gluten formed – pastry shrinks when baked – will be hard and tough – not allowed to rest – in a cool place before baking – re-rolling – gluten strands toughened – air lost – oven not hot enough – melted fat runs out – pastry pale in colour – soft and oily to taste – oven too hot – pastry too dark – may have a bitter taste – will not separate into crisp layers.

Problems when making and baking puff pastry

Fat too soft – blends with flour instead of remaining in layers – poor volume – close texture – because air is lost – not held with pieces of fat – fat too hard – forced through layers of pastry when pastry is rolled – difficult to handle – sticks to board and rolling pin – too little liquid used – dough not elastic enough – will not roll and stretch – will become dry and crack – poor volume – coarse and tough – too much water used – soft, sticky pastry – difficult to handle – over-handled when rolling and folding – softens fat – combines with dough – pastry will not form layers – if rectangular shape is not maintained – will not have same number of layers at corners – pastry will not rise evenly when baked – edges not sealed when rolling and folding – air escapes during rolling – not rested between rollings and before cooking – shrinks when baked – dough may become sticky and lose its elasticity – sharp knife to trim edges before baking – if they remain sealed they cannot separate into layers when baking – oven temperature too low – melted fat seeps out – leaving soggy and greasy underside – not hot enough to produce steam from water – or expand air quickly – oven temperature too high – top surface will burn – before inside layers are cooked etc.

14 points to cover both pastries 2 points = 1 mark

[7]