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FOOD AND NUTRITION **6065/12**

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MARK SCHEME

Maximum Mark: 100

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Question	Answer	Marks
1(a)	*substance which combines with fatty acids to form a fat molecule (triglyceride)* glycerol / glycerine;	**1**
1(b)	*physical difference between fats and oils* fats are usually solid (at room temperature), oils are usually liquid (at room temperature);	**1**
1(c)	*chemical difference between saturated and unsaturated fats* in saturated fat all carbon atoms are saturated with hydrogen / cannot accept any more whereas unsaturated fats can accept more hydrogen; **OR** saturated fat has single (carbon to carbon) bonds whereas unsaturated fat has one or more (carbon to carbon) double bond;	**1**
1(d)(i)	*examples of saturated fat* butter; cheese; cocoa butter; coconut oil / milk; cream; dripping; eggs; ghee; lard; meat / meat product; milk; palm oil; suet;	**2**

Question	Answer	Marks
1(d)(ii)	*examples of unsaturated fat* avocado (oil); fish-liver oil (or named example); flaxseed (oil); maize / corn (oil); nut (oil) (or named); oily fish (or named example); olive (oil); peanut (oil); rapeseed / canola oil; safflower (oil); sesame seed (oil); soya (oil); sunflower seeds/oil;	**2**
1(e)	*ways the body uses energy* mechanical energy OR muscle movement / work / examples; chemical energy OR metabolism / growth / repair / concentration / study / digestion / absorption; heat energy OR maintain body temperature; electrical energy OR transmission of nervous impulses / brain function; basal metabolism OR heartbeat / blood circulation / breathing;	**5**
1(f)	*unit used to measure the energy value of fat* kcal / calories OR kJ / kilojoule;	**1**
1(g)	*effect of heat on fat* melts / becomes liquid; blue haze / smoke given off OR smoking / flash point; (ignites and) burns;	**2**

Question	Answer	Marks
1(h)	*why strain oil after use* remove impurities / food particles OR to keep it clean; prevent next food to be fried from having appearance spoiled by leftover food particles; prevent rancidity due to food particles;	**2**
1(i)(i)	*substance that emulsifies fats* bile;	**1**
1(i)(ii)	*enzyme which breaks down fats* lipase;	**1**
1(i)(iii)	*part of the digestive system where most digested food is absorbed* ileum / small intestine;	**1**
1(i)(iv)	*location and function of the lacteal* *location:* villi; *function:* absorbs (nutrients) OR transports (nutrients);	**2**

Question	Answer	Marks
2(a)	*functions of vitamin A (retinol)* antioxidant; formation of mucous membranes; for healthy skin; helps vision in dim light / at night; prevents night blindness / xerophthalmia; production of visual purple / rhodopsin in retina of eye; required for growth; required to keep mucous membranes e.g. throat / digestive / bronchial / excretory tracts moist / free from infection;	**2**
2(b)	*food sources of vitamin D (cholecalciferol)* butter; cheese; cream; eggs; fish liver oils (or named e.g.); liver; margarine; milk; oily fish (or named e.g.); red meat; yoghurt;	**2**
2(c)	*function of vitamin E* antioxidant; destroys free radicals; formation of new blood vessels around damaged areas; functioning of sex organs / reproduction / fertility; healthy skin; helps to prevent cancer; helps to prevent heart disease; maintenance of cell membranes / cellular respiration;	**1**

Question	Answer	Marks
2(d)	*source of vitamin K* bacon; black strap molasses; blueberries; cereals / <u>wholemeal</u> flour / bread; cheese; eggs; fish liver oils; grapes; leafy green vegetables / named example; leeks / spring onions; liver; milk; natto / fermented soy; polyunsaturated oils; red meat; yoghurt;	**1**

Question	Answer	Marks
3(a)	*Discuss the need for iron and vitamin B9 (folic acid) during pregnancy. Give <u>two</u> examples of how each of these nutrients could be included in the diet.* *iron* blood volume increases / formation new blood cells; making haemoglobin; blood cells transport oxygen (to provide energy); blood supply for baby; baby has to have store of iron to last until weaning; growth of the placenta / fetus; prevention of anaemia; iron deficiency anaemia during pregnancy can increase the risk of the baby having a low birth weight; *examples* black treacle / molasses; bread; cocoa / (plain) chocolate; corned beef; curry powder; dark green leafy vegetables / named example; dried fruit / named example; eggs; <u>fortified</u> breakfast cereals; kidney; pulses / soya bean; (red) meat / named example; whole grain cereal;	**6**

Question	Answer	Marks
3(a)	*folic acid* help prevent megaloblastic anaemia in mother; essential for normal growth of baby / no malformations; essential for the formation of red blood cells; required for the release of energy from food / protein; important for the production of DNA / RNA; helps development of brain and nervous system; prevents neural tube defects, e.g. spina bifida / cleft lip / palate; prevents premature birth / congenital heart disease; *sources* asparagus; bananas; beans; cheese; fortified cereals; grapefruit; green leafy vegetables / named vegetable; milk; nuts; okra; oranges; potatoes; pulses; seeds; whole wheat / wholegrain cereals; yeast extract; yoghurt;	

Question	Answer	Marks
3(b)	*Suggest <u>three</u> types of food which should be avoided during pregnancy. Give reasons for your suggestions.* pate (liver / veg) may contain listeria which could harm the baby / cause miscarriage / stillbirth; <u>soft</u> cheese with white rind / blue cheeses may contain listeria which could harm baby / cause miscarriage / stillbirth; raw / undercooked / cured meat / fish may cause toxoplasmosis; <u>unpasteurised</u> milk / cheese / yoghurt / goats cheese may contain listeria which could harm baby / cause miscarriage / stillbirth; raw or partially cooked eggs to avoid the risk of salmonella; raw egg dishes / home-made mayonnaise / mousse / ice cream to avoid the risk of salmonella; liver / liver products / products containing vitamin A / fish liver oils as high levels of vitamin A could reach toxic levels and harm baby; shark / swordfish / marlin / tuna may contain high levels of mercury which can harm a baby's developing nervous system; raw shellfish can contain harmful bacteria and viruses that could cause food poisoning; pre-packaged salads unless re-washed due to listeria;	**6**

Question	Answer	Marks
4(a)	*advantages of using a slow cooker* cooking the meal in a single pot reduces washing up; food can be left to cook all day / good for working households; gentle cooking allows flavours to develop; glass lid allows you to see the progress of your food without losing heat by lifting the lid; kitchen does not get heated as when using an oven; little / no attention needed during cooking / can do other things; little loss of (soluble) nutrients / vitamins; low-fat method of cooking / less oil required; low temperature makes it almost impossible to burn food even if cooked too long; portable; require the minimum amount of effort; slow cookers are economical of fuel energy / energy efficient / saves fuel; tougher, cheaper cuts of meat with connective tissue and lean muscle fibre are suitable for use in slow cooker;	**6**
4(b)	*storing and reusing leftovers* cool as quickly as possible; place in clean container; cover food / airtight container / sealed container; store in the fridge / freezer (or at given temperature); don't put hot food in the fridge, let it cool first; leftovers should be kept above raw meat and poultry; only reheat the meat once; reheat the food to a temperature of 70 °C / (piping) hot all the way through; consume food within 2–3 days; use freezer for longer storage; thaw thoroughly before use if storing in freezer;	**6**

Question	Answer	Marks
5(a)	*why recipe not suitable for a coeliac* contains wheat OR sensitivity to the protein/gluten in wheat;	**1**
5(b)	*reason why strong plain flour is used* enables CO_2 to be held in small pockets; gives better structure to bread; high gluten/protein content; makes a strong elastic dough;	**1**
5(c)	*function of the salt in recipe* controls the action of yeast; flavours bread; improves the dough; strengthens gluten;	**1**
5(d)	*importance of water temperature* correct temperature needed to activate yeast; too cold and the yeast works more slowly; too hot and the yeast dies;	**1**
5(e)	*process by which yeast produces carbon dioxide and alcohol* fermentation;	**1**
5(f)	*reasons for kneading in bread making* breaks down large bubbles of gas for even texture of finished dough; develops protein/gluten in flour / forms elastic dough; distributes yeast which aerates dough and stimulates action of yeast / helps yeast react; stretches during rising to trap carbon dioxide;	**2**

Question	Answer	Marks
5(g)	*why the crust turns brown during baking* Maillard reaction / non-enzymic browning; reaction between carbohydrate and protein; dextrinisation; starch (on the bread surface) broken down into sugar/glucose; caramelisation; by sugar/glucose;	**2**
5(h)	*rules for personal hygiene when making bread* wash/clean hands (in hot, soapy water before touching food / after visiting toilet / touching waste bin); tie back long hair / wear hair net / wear hat; keep nails short and clean; wear (clean) protective clothing; avoid coughing / sneezing / spitting / smoking over food; cover cuts with waterproof / blue dressing; do not wear jewellery; do not wear nail varnish; if you are ill with diarrhoea or sickness, do not work with food; do not lick fingers / touch face/nose;	**5**
5(i)	*other types of packaging material with an example of its use* glass; fruit / beverages / sauces / oil etc. metal / foil; fruit / meat / fish / crisps etc. paper (board) / card (board); cakes / flour / sugar / tea etc.	**4**

Question	Answer	Marks
6(a)	*points to look for when buying fresh fish* bright eyes not sunken / prominent; firm / plump flesh; plenty of scales firmly attached / bright scales; stiff tail; skin moist but not wet; bright red gills; pleasant smell / fishy smell / sea smell / suigenis; closed shells;	**3**
6(b)(i)	*examples of oily fish* herring; mackerel; salmon;	**2**
6(b)(ii)	*examples of shell fish* crabs; lobster; mussels; prawns;	**2**
6(c)	*suitable coatings for deep frying* batter; (egg and) (seasoned) flour; (egg and) breadcrumbs; (egg and) oatmeal; pastry;	**2**

Question	Answer	Marks
6(d)	*safety points when deep frying* use back burner if possible so less chance of being knocked over; pan handle turned in to avoid knocking over; pan should have flat base so it does not wobble; pan not more than half full to prevent overflowing when food is added; dry food thoroughly before putting into fat preventing food spitting / splutter; put food into pan carefully / do not throw food into pan to avoid splashing; do not overfill pan with food or oil may overflow / leave enough space for food to be turned; do not overheat oil as this could catch on fire; have lid / fire blanket / damp cloth nearby to cover pan / prevent oxygen reaching flames if it catches fire; do not move pan if on fire due to safety hazard for kitchen and chef; do not leave unattended may ignite / overflow; turn heat off if oil begins to smoke fat is near flash point; the pan / equipment / utensils should be dry before using to prevent oil spitting;	**4**
6(e)	*ways to make steamed white fish more appetising* sauces to add colour e.g. parsley sauce; use of garnish e.g. dill / tomato; accompaniments e.g. colourful named vegetables;	**2**

Question	Answer	Marks
7(a)	*Describe the functions and advantages of each of the following additives* *(i) preservatives; (ii) flavourings and sweeteners; (iii) emulsifiers and stabilisers.* *preservatives [max. 5 marks for this section]* to extend the shelf life of food; stop the growth of bacteria; slow down / reduce natural spoilage of food; increases time food is safe to eat; to help food keep longer; improve keeping quality; use food out of season; maintain freshness; food can be transported greater distances; good for emergencies / unforeseen circumstances; increases variety / range of processed/pre-prepared foods available; prevents oxidation / stops browning; examples: salt, sugar, acid, smoke, sulfur dioxide, antioxidants, nitrates; *flavourings and sweeteners [max. 5 marks for this section]* used to improve taste; add flavour; restore original flavour (after processing); to reduce sugar content; to develop a product range e.g. crisps; to create new food products with unusual flavours; sweeten a product without adding excessive calories, beneficial as allows consumers sweet taste without extra calories; can be used in confectionery / bakery goods / many other foods to provide a range of healthy option products; can help reduce tooth decay; can reduce the sugar content which can help consumers with weight reduction / obesity; suitable for diabetics (e.g. jam / jellies) increasing the food choice for diabetic consumers; economical to use by food manufacturers keeping costs low for consumers;	**15**

Question	Answer	Marks
7(a)	*emulsifiers and stabilisers [max. 5 marks for this section]* help to improve the consistency / texture / mouth feel; mix together ingredients like oil and water that would normally separate; lengthen shelf life; control / prevent crystallisation; form an emulsion when fat and sugar are mixed together; improved shelf life means there will be less wastage / products can be stored for a longer period of time; stabilisers prevent them from separating again / keep them dispersed; allow fats and oils to mix with water; gives consumers on a weight reducing diet increased choice; improves the appearance of low-fat spreads / salad dressings / mayonnaise for consumers; added to bread dough to enhance volume / reduce staling; added to chocolate to stop fats separating forming fat crystals called blooming; added to frozen dessert products e.g. ice cream / mousse / sorbet for a smooth texture and ensure the product does not melt rapidly after serving; examples: ice cream / sorbet, mousse, low-fat spreads, salad dressings, mayonnaise, gelatin, pectin, chocolate, bread etc.;	

Question	Answer	Marks
7(b)	*Describe and explain ways to prevent food poisoning when storing and preparing food.* *storing [max. 8 marks]* follow manufacturer's storage instructions for suitable place to keep food e.g. remove food from opened can to prevent reaction with lining; dry food such as rice, flour, canned goods etc. should be stored in cool, dry, clean, ventilated area to prevent mould / to keep in good condition; keep dried foods / biscuits in airtight containers to prevent them getting damp to avoid mould / vermin / pests / dust; store food on shelves / off floor to minimise the risk of pests / contamination; dispose of dented / rusting / burst cans to prevent contamination from bacteria; high risk and perishable foods in fridges to slow growth of microorganisms; clean storage areas regularly / use antibacterial cleaners / clean and defrost fridges / freezers regularly to maintain hygiene standards; put chilled / frozen foods away immediately after shopping to minimise microbial growth; do not mix old food and new food to prevent contamination; do not use any food past its 'use-by' date / check dates on perishable foods regularly / rotate stock to ensure food is fresh / consumed within use-by date; keep foods wrapped / covered to protect from flies / vermin; keep raw meat (and poultry) away from other foods / put raw meat at the bottom of the refrigerator, cooked meat above it to prevent cross contamination; do not overload refrigerator / allow air to circulate to ensure fridge at optimum temperature; allow cooked food to cool before placing in the fridge to ensure fridge doesn't heat up; check fridge temperature regularly / should be 1–4 °C / have an alarm to ensure at optimum temperature / minimises growth of microorganisms; minimise number of times fridge / freezer are opened to maintain temperature / prevent entry insects; keep freezer at –18 °C to keep microorganisms dormant / enzymes inactive;	**15**

Question	Answer	Marks
7(b)	*preparing [max. 8 marks]* keep raw and cooked foods apart to prevent cross-contamination; ensure vegetables / fruits are washed before use to remove of soil / fertiliser / to prevent contamination; wash chopping boards, knives and other equipment and hands, after use with raw food to prevent cross-contamination; keep pets / pests / insects away from food preparation to prevent infestation; ensure thorough cleaning of food preparation area before / after use to prevent cross-contamination; dispose of rubbish in covered bins / empty frequently to prevent mosquitoes / to discourage pests / flies / vermin; extra care with high risk foods to prevent contamination; wipe up spills immediately to discourage pests / flies / vermin; sterilise / clean dishcloth and tea towel to prevent spread of bacteria; use separate colour coded chopping boards / knives / equipment for each category of food to prevent cross-contamination; do not use chipped or damaged equipment which can harbour bacteria; *personal hygiene – max 3 marks from preparing section:* handle food as little as possible to prevent cross-contamination; clean hands in hot, soapy water before touching food / after visiting toilet / after touching raw meat / blowing nose / touching waste bin to prevent spread of bacteria; tie back long hair / use net as bacteria on hair / may fall into food; keep nails short and clean as harbour dirt / bacteria etc.; wear clean protective clothing to prevent contamination from outdoor clothing; avoid coughing / sneezing / spitting / smoking over food to avoid transferring bacteria; cover cuts with waterproof/blue dressing to avoid transferring bacteria; avoid wearing jewellery which could trap dirt / bacteria; do not prepare food if you are ill with diarrhoea / sickness to avoid passing on infection; do not lick fingers / touch face / nose or bacteria will pass to food; do not lick spoons and put back into food as bacteria in nose and throat will be transferred to food;	