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**FOOD AND NUTRITION**

**0648/12**

Paper 1 Theory

**October/November 2018**

MARK SCHEME

Maximum Mark: 100

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**Published**

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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

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This document consists of **14** printed pages.

**PUBLISHED****Generic Marking Principles**

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

**GENERIC MARKING PRINCIPLE 1:**

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

**GENERIC MARKING PRINCIPLE 2:**

Marks awarded are always **whole marks** (not half marks, or other fractions).

**GENERIC MARKING PRINCIPLE 3:**

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

**GENERIC MARKING PRINCIPLE 4:**

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

**GENERIC MARKING PRINCIPLE 5:**

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

**GENERIC MARKING PRINCIPLE 6:**

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Question	Answer	Marks
1	<b>people who have a greater need for protein in their diet</b> babies / children; adolescents / teenagers; the elderly; pregnant women; post-operative / convalescent; men / athletes / manual labourer;	2

Question	Answer	Marks
2	<b>characteristics of an unsaturated fat</b> soft fat or oil; mainly found in plants and fish; liquid (at room temp); could pick up hydrogen / can accept more hydrogen / more reactive; has one or more double bonds / hydrocarbon chain is not saturated;	3

Question	Answer	Marks
3	<b>functions of carbohydrates in the body</b> energy; provide dietary fibre / aids digestion / satiety / fullness or any function of NSP; acts as a protein sparer; stored as glycogen as reserve energy source;	2

Question	Answer	Marks
4	<p><b>factors which affect BMR</b></p> <p><u>body size</u> metabolism increases due to growth;</p> <p><u>body composition</u> fat tissue has a lower metabolic activity than muscle tissue;</p> <p><u>gender</u> lower in women as they generally have more body fat compared to men;</p> <p><u>age</u> decrease in lean muscle mass during adulthood / teenagers more need because of growth spurt;</p> <p><u>climate and body temperature</u> it takes energy to keep the body cool in hot climate / warm if you work or exercise in very cold weather;</p> <p><u>hormonal levels</u> thyroxine released by the thyroid glands has an effect on metabolic rate;</p> <p><u>health</u> fever, illness, or injury may increase resting metabolic rate;</p>	4

Question	Answer	Marks
5(a)	<p><b>good sources of calcium</b></p> <p>hard water;</p> <p><u>wholegrain</u> cereals;</p> <p>nuts (or named example);</p> <p>pulses (or named example) / tofu;</p> <p>milk;</p> <p>cheese;</p> <p>yoghurt / fromage frais;</p> <p>flour;</p> <p>bread;</p> <p>green vegetables (or named example);</p> <p>fish where bones are eaten / canned fish e.g. sardines / anchovies;</p> <p>seaweed;</p> <p>sesame seeds;</p>	3
5(b)	<p><b>other nutrients which work with calcium</b></p> <p>vitamin D / cholecalciferol;</p> <p>phosphorus;</p>	2
5(c)	<p><b>deficiency disease associated with a lack of calcium</b></p> <p>rickets / osteomalacia / osteoporosis / tetany;</p>	1

Question	Answer	Marks
6(a)	<b>animal foods which provide a good supply of vitamin B group</b> meat (pork / bacon / ham) / poultry; liver; kidney; heart; eggs; (oily) fish (or named example) / roe / fish liver / fish liver oil; milk; dairy foods;	<b>3</b>
6(b)	<b>functions of Vitamin B group</b> <u>release</u> energy from carbohydrate / fats / proteins; growth; function / maintenance of nerves;	<b>2</b>
6(c)	<b>health problems due to a deficiency of nicotinic acid</b> dermatitis; diarrhoea; dementia;	<b>2</b>

Question	Answer	Marks
7(a)	<b>role of enzymes in the digestive system</b> catalysts / speed up (the breakdown of nutrients);	<b>1</b>
7(b)(i)	<b>enzymes found in gastric juice</b> <u>pepsin</u> ; <u>rennin</u> ;	<b>2</b>
7(b)(ii)	<b>nutrient which these enzymes act upon</b> <u>protein</u> ;	<b>1</b>

Question	Answer	Marks
8(a)	<p><b>health issues which can result from obesity</b>            CHD / cardiovascular disease / heart disease / heart attack / stroke / angina;            HBP / hypertension;            (type 2) diabetes;            osteoporosis;            problems with knees / hip / spine;            arthritis;            respiratory problems / breathless;            excessive perspiration leading to rashes / inflammation of the skin;            risk of complications during surgery / pregnancy / childbirth;            menstrual irregularities and infertility in women;            (intestinal / liver / breast) cancer;            gallstones;            mental health problems / low self-esteem / depression;</p>	<b>4</b>
8(b)	<p><b>ways to adapt meals to reduce the amount of fat they contain</b>            avoid frying food;            use methods, e.g. grilling / stir frying / dry frying / baking / steaming / air fryer;            drain fat on absorbent paper;            cut visible / excess fat from meat / remove skin from poultry;            eat less red meat / eat more poultry and white fish;            swap meat for pulses / TVP / vegetables;            buy canned fish in water instead of oil;            replace full fat milk with semi-skimmed / skimmed;            use low-fat versions of cheese / yoghurt / spreads / cream / salad dressing;            spread butter / margarine thinly / don't use;            avoid processed meats, e.g. sausages / pies;            reduce fat in recipes;            eat fewer cakes / biscuits / chocolate;            avoid fatty snacks, e.g. peanuts / crisps;            make informed choices by reading food labels;            skim fat from soups / sauces / gravies;</p>	<b>8</b>

Question	Answer	Marks
9(a)	<p><b>reasons why some meat can be tough when eaten</b>            long / thick muscle fibres;            meat from an old animal / age of animal;            muscles have had most movement / cut of meat has more/longer muscle;            animal stressed before slaughter;            contains a large amount of collagen / connective tissue / gristle / elastin;            incorrect cooking method / time used / over-cooked / under-cooked;            if frozen, not defrosted thoroughly;            cooked meat has dried out by leaving un-covered / under hot lamp / stored for too long;</p>	<b>4</b>
9(b)	<p><b>methods of tenderising tough meat</b>            hang meat;            mince / cut into small pieces / chopping;            pulverise / use a meat hammer / rolling pin;            marinade <b>OR</b> soak in wine / lemon juice / vinegar;            use an enzyme such as papain from papaya / bromalin from pineapple / ficin from figs;</p>	<b>4</b>
9(c)	<p><b>methods of cooking tough meat</b>            stew;            casserole;            steam;            pot roast;            boil;            braise;            pressure cook;            slow cook;</p>	<b>2</b>



Question	Answer	Marks
9(d)	<p><b>changes that happen to beef during cooking</b>            proteins sets / coagulate / denatured;            fat melts;            (connective tissue shortens so) meat shrinks;            collagen converted to gelatine / meat becomes tender / softens;            texture changes;            colour changes (from red to brown);            some vitamin B is lost;            taste / flavour changes / develops;            smell / aroma changes;            meat becomes more digestible;</p>	4
9(e)	<p><b>guidelines to follow when storing fresh meat</b>            wrap / cover meat / clean container;            store in a fridge / cold area / freezer;            store raw and cooked meat on different shelves in the fridge;            store raw meat on bottom shelf of fridge;            check regularly for fresh smell;            check regularly for good colour;            check for moist / soft texture;            use date marks for shelf life;</p>	3
9(f)	<p><b>reasons why some people choose not to eat meat</b>            religious beliefs;            moral / ethical reasons / object to slaughter / rearing conditions of animals;            uneconomical use of land;            dislike taste / texture / smell of animal flesh;            health reasons / animal fat is saturated / contains cholesterol / risk of CHD / use of hormones / allergy;            meat is expensive;            peer pressure / follow trends;            family upbringing / tradition / custom / culture;            bird 'flu / BSE / salmonella;            green issues / methane from cows;</p>	5

Question	Answer	Marks						
10(a)	<p><b>how to make the cake mixture using the creaming method</b>            cream margarine and sugar;            cream with wooden spoon / electric mixer;            cream until light and fluffy / pale colour / white;            beat eggs;            add beaten eggs gradually/slowly to creamed mixture;            beat well between each addition;            sieve flour;            fold flour into mixture with metal spoon to obtain soft dropping consistency;</p>	5						
10(b)	<p><b>functions of ingredients</b></p> <table border="1" data-bbox="331 587 1352 1066"> <thead> <tr> <th data-bbox="331 587 535 644">ingredient</th> <th data-bbox="535 587 1352 644">function</th> </tr> </thead> <tbody> <tr> <td data-bbox="331 644 535 839">margarine</td> <td data-bbox="535 644 1352 839">           keeps cake fresh longer / extends shelf life;            traps air when creamed / raising agent / lightens mixture;            adds colour;            increases moisture / prevents cake drying out;            adds nutritional value;         </td> </tr> <tr> <td data-bbox="331 839 535 1066">egg</td> <td data-bbox="535 839 1352 1066">           protein in egg coagulates on heating to form shape of cake;            adds colour;            emulsifies / holds fat and water / prevents curdling;            provides air / steam (to help cake rise) / raising agent;            adds moisture;            adds nutritional value;         </td> </tr> </tbody> </table>	ingredient	function	margarine	keeps cake fresh longer / extends shelf life; traps air when creamed / raising agent / lightens mixture; adds colour; increases moisture / prevents cake drying out; adds nutritional value;	egg	protein in egg coagulates on heating to form shape of cake; adds colour; emulsifies / holds fat and water / prevents curdling; provides air / steam (to help cake rise) / raising agent; adds moisture; adds nutritional value;	4
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10(c)	<p><b>different ways of decorating the finished small cakes</b>            sieved icing / powdered sugar;            icing / butter cream / glacé / fondant / frosting / ganache;            fruit / dried fruit;            coconut;            chocolate buttons / curls / chips;            sprinkles;            sweets;            chopped nuts;            cream;</p>	2						

Question	Answer	Marks
10(d)(i)	<b>ingredient in the cakes which causes caramelisation</b> (caster) <u>sugar</u> ;	<b>1</b>
10(d)(ii)	<b>effect of dextrinization</b> surface of the cake changes to a golden brown colour;	<b>1</b>
10(e)	<b>reasons why paper cases are useful when making small cakes</b> keeps shape of cake during cooking; protects cake from heat / may prevent burning / poor conductor of heat; contains the mixture; consistent appearance / uniform size; prevent sticking to tins / easy to remove from tin; less washing up; hygienic;	<b>3</b>

Question	Answer	Marks
11	<b>points to consider when choosing kitchen flooring</b> non-absorbent / waterproof to avoid absorbing water and lifting up so becoming a trip hazard; resistant to heat to prevent damage which could cause safety issues; resistant to grease to prevent absorption thus causing safety issues; stain resistant so it keeps its aesthetic appeal; scratch proof so not damaged during cleaning / dropping of equipment; easy to clean (not rough) to prevent health and safety issues / to reduce time cleaning; hardwearing / last a long time / durable to get value for money; not slippery to avoid trips and falls; not too cold so comfortable to stand on; not too hard / rough so comfortable to stand on; easy to maintain to prevent health and safety issues; does not dent easily in case of dropping equipment and causing further safety issues; colour matches with kitchen décor to maintain theme / absorb or reflect heat; cost to keep within budget available; quality / choose a well-known brand as it can be trusted;	<b>7</b>

Question	Answer	Marks
12(a)	<p><b>Nutritional needs are one factor to consider when planning meals. Identify and discuss other factors to consider when planning meals for a pre-school child.</b></p> <p>present food attractively on the plate to encourage consumption;            serve colourful food to encourage consumption;            cut food into interesting shapes to encourage consumption;            children have small appetites so serve small portions of food to prevent over eating;            serve carefully flavoured food to encourage widening type of food eaten;            serve a variety of foods to encourage children to try new foods and avoid limited diet;            avoid highly flavoured / spicy foods children have sensitive palettes;            don't serve food which is too hot for safety reasons as well as causing dislikes;            serve a variety of textures to widen range of food eaten;            serve food which is easy to manage / eat / finger food as they may not be good with cutlery;            serve small pieces of food to encourage independence;            serve food on child's own special dish / glass with correct size cutlery to introduce fun;            eat as a family so children learn table manners;            have regular mealtimes to encourage good eating habits;            mash food / make food easier to eat as lumps may put children off by too much chewing / could also pose a choking hazard;            involve children in food preparation make meal times fun positive experiences;            prepare food in a hygienic manner to prevent health issues;            ensure eggs / chicken are well cooked to prevent risk of salmonella / food poisoning;            foods containing peanuts shouldn't be given to children if a parent or sibling has a diagnosed allergy;            whole nuts should not be given to any child under the age of five because of the risk of choking;            use additive free food as may be harmful / to avoid allergic reaction;            discourage snacking between meals or child will not be hungry for meal;            provide healthy snacks to avoid grazing / obesity / satisfy hunger;            remove bones from food to prevent choking;            avoid frying as a method of cooking as it is more difficult to digest / fills them up and prevents eating correct nutrients;            use fresh ingredients rather than processed foods to avoid high sugar / salt / additives / fat;</p>	15

Question	Answer	Marks
12(b)	<p><b>There are many ways to slow down the process of food spoilage and improve the keeping qualities of food. Discuss different processes where the use of a high temperature is the main factor preventing food spoilage.</b></p> <p><b><i>blanching</i></b></p> <p>blanching; vegetables / fruit in boiling water at 100 °C or steam for a short time then removed and plunged into iced water / under cold running water to halt the cooking process; process cleans surface of dirt and organisms which cause spoilage; process stops enzyme actions which cause ripening and decay; process prevents loss of flavour / colour / texture;</p> <p><b><i>pasteurisation</i></b></p> <p>pasteurisation; destroys harmful/pathogenic bacteria in milk / fruit juice; HTST (high temperature-short time) or flash process product heated to 72 °C and held for 15 seconds then cooled rapidly / LTLH (low temperature-long time) or holder method product heated to 63 °C and held for 30 minutes then cooled rapidly; product must be kept in fridge and used within a few days;</p> <p><b><i>Ultra Heat Treatment (UHT)</i></b></p> <p>ultra heat treatment; destroys <u>all</u> bacteria / prevents souring in milk/cream; product heated to 132–135 °C for 1 second then cooled rapidly; packed in sealed packs / aseptic stored in cupboard for several months once opened must be used in few days and kept in fridge; homogenised first to distribute fat throughout milk;</p>	15

Question	Answer	Marks
12(b)	<p><b>sterilisation</b></p> <p>sterilisation; destroys <u>all</u> bacteria / micro-organisms; time and temperature vary though usually 100 °C or above; product such as milk; can keep for several weeks unopened in glass bottle with metal cap; homogenised first to distribute fat throughout milk;</p> <p><b>bottling / canning</b></p> <p>bottling / canning / jam making used for fruit / milk / vegetables / fish; destroys <u>all</u> bacteria / micro-organisms / chlostridium botulinum; process stops enzyme actions which cause ripening and decay; product sealed in sterile airtight containers to prevent further entry of bacteria (then heated to over 100 °C); product stored in cupboard for several months;</p> <p><b>cooking methods</b></p> <p>any named cooking method; destroys harmful micro-organisms;</p>	