

Mark Scheme Summer 2009

GCE

GCE D&T (6FT02/01)

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6FT02 Mark Scheme

Question Number	Answer	Mark
1(a)	<p>Any one from the following examples of carbohydrates - up to a maximum of four marks:</p> <ul style="list-style-type: none"> • monosaccharide: glucose / dextrose / fructose / galactose / ribose (1) • disaccharide: maltose / sucrose / lactose (1) • simple polysaccharide: starch / glycogen / cellulose (1) • complex polysaccharide: pectin / alginates / carrageenan / xanthan / gum Arabic / guar gum (1) <p style="text-align: right;">(4 x 1)</p>	(4)
1(b)	<p>Any one from the following examples for each function of protein - up to a maximum of three marks:</p> <ul style="list-style-type: none"> • structural: cellular membranes / muscle / skin / hair (1) • physiological: enzymes / hormones / blood proteins / nucleoproteins (1) • nutritional: High Biological Value (H.B.V.) protein supplies all essential amino acids / Low Biological Value (L.B.V.) protein supply some essential amino acids (1) <p style="text-align: right;">(3 x 1)</p>	(3)
1(c)	<p>Reference to the Maillard reaction, up to a maximum of three marks:</p> <ul style="list-style-type: none"> • reducing sugar / CHO group (1) • reacts with protein / amino acid / NH₂ (1) • to produce brown pigment / colour (1) • influences flavour (1) • must be heated (1) <p style="text-align: right;">(3 x 1)</p>	(3)
	Total for question	10

Question Number	Answer	Mark
2(a)	<p>Any three from the following reasons for blanching vegetables, up to a maximum of three marks:</p> <ul style="list-style-type: none"> • inactivate enzymes (1) • shrinkage / expulsion of trapped air / H₂O (1) • helps clean product (1) • reduce bacterial population (1) <p style="text-align: right;">(3 x 1)</p>	(3)
2(b)	<p>Two of the following problems that are caused by blanching, up to a maximum of two marks:</p> <ul style="list-style-type: none"> • if product is left wet and warm possible increase in bacterial population (1) • softening of cellular membranes (1) • loss of water soluble / heat sensitive nutrients (1) <p style="text-align: right;">(2 x 1)</p>	(2)
2(c)	<p>Reference to the steam blanching process, up to a maximum of three marks:</p> <ul style="list-style-type: none"> • food conveyed to vessel by rotating screw / conveyor belt (1) • uses steam (1) • condensed steam drained away (1) • short time process (1) • rapid cool after blanching (1) <p style="text-align: right;">(3 x 1)</p>	(3)
Total for question		8

Question Number	Answer	Mark
3(a)	<p>Any two named from the following bacteria, up to a maximum of two marks:</p> <ul style="list-style-type: none"> • <i>Salmonella</i> (1) • <i>Clostridium</i> (1) • <i>Staphylococcus</i> (1) • <i>Bacillus</i> (1) • <i>Campylobacter</i> (1) • <i>Listeria</i> (1) • <i>Escherichia coli</i> (E.coli)(1) • <i>Vibrio</i> (1) <p style="text-align: right;">(2 x 1)</p>	(2)
3(b)	<p>Any two from the following factors described which influence the growth of micro organisms, up to a maximum of four marks:</p> <ul style="list-style-type: none"> • nutrients (1) provided by growth medium (1) • pH (1) near neutral pH7 (1) • warmth (1) growth range (1) • oxygen (1) some need oxygen others don't (1) • time (1) numbers to grow to serious level / toxin production (1) • water activity (1) different water activity/ moisture levels (1) <p style="text-align: right;">(2 x 2)</p>	(4)

3(c)	<p>Any four from the following outline correct industrial chilled storage of food may reduce the risk of food poisoning, up to a maximum of four marks:</p> <ul style="list-style-type: none"> • temperature must not exceed 4°C or bacteria can grow (1) • do not over load / allow air to circulate for efficient functioning (1) • prevent cross-contamination of raw and cooked foods by storing separately (1) • store raw foods below cooked foods to avoid drip (1) • raw foods should be in air-tight containers to avoid drip food /stored in clean suitable containers (1) • operating temperature should be checked once a day and records kept (1) • a good (FIFO) stock rotation system essential (1) • regular cleaning (1) • temperature of food must be reduced as quickly as possible (1) • dont open the chiller/ constant temperature (1) (4 x 1) 	(4)
	Total for question	10

Question Number	Answer	Mark
4(a)	<p>Only two answers, up to a maximum of two marks:</p> <p>(i) • dessert jelly: gelatine</p> <p>(ii) • jam: pectin</p> <p style="text-align: right;">(2 x 1)</p>	(2)
4(b)	<p>Any three answers from the following explanation on food uses of alginates, up to a maximum of six marks:</p> <ul style="list-style-type: none"> • sauces / syrups (1) thickening agent / ability to retain moisture (1) • cakes mixes (1) reduces moisture absorption by pastry (1) • soups / canned products (1) temporary / delayed thickening(1) • ice-cream (1) growth of large ice crystals / dripping / separation / quick whipping (1) • drinks (1) prevents ringing (1) • milk desserts / table jellies / aerated desserts (1) gel /film • formation in cold preparation (1) • Stabilises (1) <p style="text-align: right;">(3 x 2)</p>	(6)
4(c)	<p>Any two answers from the following description of how alginates form a gel, up to a maximum of two marks:</p> <ul style="list-style-type: none"> • alginate needs to be in solution (1) • molecules form a three dimensional network (1) • calcium required to form cross links (1) • cold setting gels. (1) <p style="text-align: right;">(2 x 1)</p>	(2)
Total for question		10

Question Number	Answer	Mark
5(a) i & ii	<p>Only answer, up to a maximum of four marks:</p> <ul style="list-style-type: none"> • amylose: (1) • good gelling ability (1) • amylopectin: (1) • prevents retrogradation / syneresis (1) <p style="text-align: right;">(2 x 2)</p>	(4)
5(b)	<p>Any six marks from the following discussion on relative sweetness levels of sugars in comparison to sucrose, up to a maximum of six marks:</p> <ul style="list-style-type: none"> • sucrose taken as 100 (1) • fructose is sweeter than sucrose / 170 (1) • invert sugar (mixture of glucose and fructose) sweeter than sucrose / 130 (1) • glucose not as sweet as sucrose / 75 (1) • maltose not as sweet as sucrose (1) / 30 (1) • glucose not as sweet as sucrose / 30 (1) • lactose is much less sweet than sucrose / 15 (1) <p style="text-align: right;">(6 x 1)</p>	(6)
Total for question		10

Question Number	Answer	Mark
6 (a)	<p>Any six marks from the following explanation on three major differences between chilling and freezing as methods of preservation, up to a maximum of six marks:</p> <ul style="list-style-type: none"> • chilling reduces temperature between -1 and +8°C (1) freezing reduces temperature between -18 and -30°C (1) • chilling slows growth of food poisoning micro-organisms (1) freezing stops growth of ALL micro-organisms (1) • enzyme / chemical activity can continue during chilling (1) freezing retards the action of enzymes and chemicals (1) • chilling is a short term preservation technique / days (1) freezing is a longer term preservation technique /weeks / months (1) <p style="text-align: right;">(3 x 2)</p>	(6)

6 (b)	<p>Any six marks from the following discussion on three different chemical methods of food preservation, up to a maximum of six marks:</p> <ul style="list-style-type: none"> • sugar / salt solutions work on the principle of osmosis (1) by reducing the amount of water available /water activity to micro-organisms (1) • acids/ alcohol (pickling/ fermentation) effects PH (1) • undissociated acids kills bacteria (1) • inhibits enzymes (1) • traditional smoking produces an outer layer consisting of tars, phenols and aldehydes (1) this layer acts as a bactericidal skin which has an anti-microbial effect (1) • permitted preservatives: sorbic, benzoic, sulphur dioxide and sulphites, sodium and potassium nitrite/nitrates (1) preservatives produce unfavourable conditions for microbes and are used in a variety of foods (1) e.g. nitrites inhibit the growth of <i>Clostridium botulinum</i> / nitrite ions in curing are the main anti-microbial agents (1) <p style="text-align: right;">(3 x 2)</p>	(6)
	Total for question	12

Question Number	Answer	Mark
7	<p>Any ten marks from the following discussion on the importance of GMP in the food industry, up to a maximum of ten marks:</p> <ul style="list-style-type: none"> • GMP is an all-embracing management operation (1) that ensures that food products are manufactured to consistent quality standards (1) • GMP embraces both the total manufacturing process (1) and the quality assurance procedures aimed at maintaining quality (1) • Both of these components must be well designed (1) and effectively implemented (1) • GMP involves effective manufacturing operations (1) whereby every aspect of the manufacture/resources/facilities are fully specified in advance (1), effective manufacturing operations include: specifications / HACCP / trained staff / procedures / premises / equipment / materials / systems (1) • GMP involves effective food control (1) whereby management / staff (1) are involved in drawing up specifications / inspection / sampling / testing / monitoring / feedback of process (1) • GMP involves responsible management (1) policy firmly stated / continuously pursued by everyone (1) • The ability to demonstrate that the principles of GMP have been fully and effectively implemented (1) could assist a manufacture in defending a prosecution (1) 	(10)
	Total for question	10
	Total Marks for Paper	70

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