

Mark Scheme (Results)

Summer 2019

Pearson Edexcel GCE A-Level
In Design and Technology: Food Technology
6FT02/01

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Answer	Mark
1(a)	only answer: • lactose (1)	(1)
1(b)	i) one of the following: • Starch (1) • Cellulose (1) • Glycogen (1) ii) One of the following: • Alginates (1) • Pectin (1) • Carrageen (1) • Gums / any named gum (1)	(2)
1 (c)	i) Two of the following: • Sugar absorbs water (1) competes with starch for water (1) • Reduced water availability (1) reduces strength of gel (1) ii) Four of the following: • The higher (1) proportion of amylose, the weaker (1) the gel (or Vice Versa) • Amylose is spiral shaped/has short chains (1) which hold water easily (1) gels easily • On standing (1) amylose gels unwind (1) becomes a pulpy sponge (1) • Water is lost from gel /syneresis (1) as gel retrogrades (1) • Weak amylose gels (1) easily damaged in freeze thaw process (1)	(2) (4)
Total for Question 1		(9)

	Answer	Mark
2(a)	One of the following. Description must match named method. TWO MARKS FOR DESCRIPTION NAME : Sieves / screens (1) DESCRIPTION: Different size sieves / screens separate large/small particles (1) OR NAME : Aspiration (1) DESCRIPTION: Strong upward air current (1) separation due to different buoyancy of particles (1) blown out at different levels (1) OR NAME : metal detector (1) DESCRIPTION: Removes magnetic material / with powerful magnets (1) OR NAME : Rotating brushes (1) DESCRIPTION: Rotating brushes remove dried soil / surface contaminants (1) Suitable for root vegetables (1) Only partially effective (1)	(2)

2(b)	Any two of the following: • Separation by quality (1) • Using a number of factors: ○ Free from damage (1) ○ Colour (1) ○ Shape and size (1) ○ Uniformity (1) ○ Freedom from contamination (1) ○ Cannot be mechanised (1)	(2)
2 (c)	Two points discussed: • Easier mechanical processing (1) e.g filleting fish (1) • Easier to package (1) e.g. in trays(1) • Ensure even heat penetration (1) e.g. blanching / canning (1) • Consistency of heat loss (1) e.g. chilling/freezing (1)	(4)
	Total for question 2	(9)

Question Number	Answer	Mark
3(a)	Two from the following: • To enhance the nutritional content (1) • To replace nutrients lost during processing (1) • As a legal requirement (1) • To increase sales / consumer appeal (1)	(3)
3 (b)	Four of the following: ADVANTAGES: • Clean label (1) • Consumer preference (1) • Health concerns (1) • Marketing potential (1) DISADVANTAGES • Expensive (1) • Variable in strength (1) • Erratic supply / seasonal (1) • Unstable (1) NOTE: for full marks – at least one advantage and one disadvantage must be given.	(4)
3 (c)	Four from the following: • Able to absorb/bind up water (1) Prevents formation of large ice crystals (1) • Slows down thawing /melting (1) Prevents drip (1) • Gives body to the product (1) Improves smoothness of texture (1)	(4)
	Total for Question 3	10

Question Number	Answer	Mark
4(a)	One of the following explained: • Inactivate enzymes (1) prevent colour/flavour/texture changes (1) • Expel air (1) better fill (1) OR to ensure product reaches required temperature during sterilisation (1)	(2)
4(b)	Four from the following: • cooling by spraying with cold water (1) cooled in chlorinated water /clean, sterile water(1) • cans must be cooled slowly (1)pressure gradually reduced (1) to prevent buckling (1) • cooled to 38^c (1) then dried by warmth of can (1) avoids rusting (1)	(4)
4 (c)	Six of the following: ADVANTAGES • Kills pathogenic /harmful organisms (1) particularly mycobacterium tuberculosis / TB organism (1) • Kills some spoilage organisms (1) • Little damaging effect (1) • Minimal flavour change (1) DISADVANTAGES • Loss of Vit C / Thiamin / B₁₂ / Riboflavin • Short shelf life (1) must be refrigerated (1) • Protein denatures (1) • Fat globules agglomerate (1) rise to surface / separate (1) NOTE: at least one advantage and one disadvantage must be given for full marks	(6)
Total for Question 4		(12)

Question Number	Answer	Mark
5	Any three of the following linked responses: • handling and storage requirements (1) prevent physical / chemical / bacterial contamination (1) • nutritional data (1) check fat/sugar/fibre content /health issues(1) • minimum durability / shelf life (1) to ensure quality / reduce contamination (1) • health and safety requirements (1) any relevant considerations that apply to the handling / storage / use of product/ (1) • product code (1) identifies information about the product / traceability (1) • name and address of manufacturer / point of contact (1) concerns about quality/contents (1) • list of ingredients (1) allergic ingredients (1) • User requirements (1) target group(1) special diets (1)	(6)
	Total for Question 5	(6)

Question Number	Answer	Mark
6(a)	Any six of the following: • secondary/tertiary structure is altered (1) the molecule unfolds and changes shape (1) • caused by various physical (1) / chemical (1) means such as heat (1) acids (1) alkalis (1) heavy metals (1) salt (1) ethanol (1) agitation (1) enzymes (1) • involves breakage of cross- links (1) but the sequence of amino acids remains the same (1) • (usually irreversible) (1) properties of protein alter (1) eg less soluble (1) more viscous (1) can be more/less digestible (1) • unfolded molecules bond / clump together (1) causes protein to harden /set (1) known as coagulation (1)	(6)
6 (b)	Any six of the following: • Amino acids important for cell structure/growth/repair/ (1) • Physiological: enzymes/hormones(1) • 20 amino acids found in food proteins (1) • Essential amino acids cannot be made in the body (1) • 9/10 essential amino acids for children (1) • 8 essential amino acids for adults (1) • Animal/soya/Quorn sourced amino acids are of high biological value (1) contain all the essential amino acids (1) • Low biological value protein foods have one or more essential amino acids missing(1) • Importance of wide range of amino acids (1) • Amino acid deficiency (kwashiorkor) (1) widespread in developing countries (1) (6 x 1)	(6)
Total for Question 6		(12)

Question Number	Answer	Mark
7*	Any ten of the following: • used to ensure product uniformity (1) • ensures production efficiency (1) • scheduling of raw materials (1) • stock control (1) • controlling the flow of product through the process (1) • evaluation / control of the process (1) • evaluation of product (1) • making technical decisions / scaling up (1) • feedback (1) • sensors measure process (1) • variables can be controlled (1) • any named quality control check (1) • information stored (1) • compared with specification (1) • ensures due diligence (1) • ensures tracking (1) • ensures traceability (1) • workforce labour costs reduced (1) • health and safety (1) • 24/7 to meet consumer demand (1) • alter the production line (1) • alter speed of production process (1) • production time reduced due to automation (1) • prevents faults due to human error (1)	(12)
	Total for Question 7	(12)

