

APOLLO

Carbohydrates and lipids

HL

Biology

First assessment 2025

7 questions | mark schemes

Mark-scheme answers

Biology HL | Paper 1A | May 2025 TZ1 | Q3 | 1 marks

3. A

Biology HL | Paper 1A | May 2025 TZ2 | Q3 | 1 marks

3. A

Biology HL | Paper 1A | May 2025 TZ3 | Q3 | 1 marks

3. A

Biology HL | Paper 1A | Nov 2025 TZ1 | Q3 | 1 marks

3. B

8.	a	a. monosaccharides/disaccharides/sugars are soluble (in water/blood/plasma/sap) OR monosaccharides/disaccharides/sugars can be transported (in blood/plasma/sap); b. glucose is used for (aerobic) respiration OR glucose releases/yields energy during respiration/when oxidized; c. can be polymerized / form polymers/macromolecules/long chains by <u>condensation</u>; d. starch/glycogen is a polymer containing/is made of many (alpha) glucose (molecules); e. starch consists of amylose and amylopectin OR amylose is unbranched / amylopectin is branched / glycogen is (more) branched; f. glycogen/starch (is branched so) can be hydrolyzed to release (alpha) glucose quickly/easily/when needed; g. starch/glycogen are used as energy stores; Marking point for 8a continued on next page...	<i>For a. accept named sugars</i> <i>For b. accept other sugars.</i> <i>For d. accept α.</i> <i>For g. energy is required.</i>	7 max
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8a continued..

8.	a	h. (coiling of starch) makes it compact so that lots of (alpha) glucose can be stored in a small volume; i. starch/glycogen are insoluble (due to large molecular size) so do not affect the water/solute/pressure potential inside a cell OR glucose would cause osmotic problems if stored in cells; j. cellulose is a (beta) glucose polymer / is made of many (beta) glucose (molecules); k. cellulose consists of alternating orientation of (beta) glucose monomers / the glucose subunits in the chain face alternately upwards and downwards; l. (different) cellulose chains are crosslinked (by hydrogen bonds) to form bundles; m. cellulose has a structural role / supports / forms the cell wall (in plants); n. cellulose is insoluble / has high tensile strength / prevents plant cells from bursting (when water enters by osmosis);	<i>For h. accept references to 'area,' 'space' or 'density'.</i> <i>For j. accept β.</i> <i>For k. accept drawings.</i> <i>For l. accept 'microfibrils'.</i>	
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Question	Answers	Notes	Total
8. b	a. movement of cells/chromosomes and example of movement; b. movement of flagellum/cilium; c. endocytosis/exocytosis; d. detachment of myosin heads from actin filaments / myosin heads change their angle/become cocked; e. active transport and example of use of active transport; f. anabolic reactions / polymerization example / example of synthesizing macromolecules; g. generation of heat and to provide optimum temperature for enzyme activity / in homeostasis / to maintain body temperature; h. phosphorylation of substrates in glycolysis; i. phosphorylation of substrates in photosynthesis light-independent reaction/Calvin cycle;	<i>For a. accept descriptions of cells (e.g. amoeboid phagocyte moving to site of infection) or chromosomes (e.g. anaphase, chromosomes moving to opposite poles).</i> <i>For d. ignore 'muscle contraction'.</i> <i>For e. E.g. sodium-potassium pump (in neurons) / maintaining resting potential in neurons / generation of root pressure / villus epithelial cells / selective reabsorption in kidney.</i> <i>For e. do not accept transport of large molecules as example.</i> <i>For f. accept examples such as DNA replication / transcription / translation / and other examples of formation of macromolecules.</i> <i>For h. accept phosphorylation of glucose (to glucose-6-phosphate) or phosphorylation of fructose-6-phosphate (to fructose 1,6-biphosphate).</i> <i>For i. accept formation of triose phosphate and formation of ribulose biphosphate (regeneration of RuBP).</i>	5 max

Question		Answers	Notes	Total															
8.	c	<table><thead><tr><th></th><th>Reduced hydrogen carriers in AEROBIC RESPIRATION</th><th>Reduced hydrogen carriers in PHOTOSYNTHESIS</th></tr></thead><tbody><tr><td>a.</td><td>found in cytoplasm/mitochondria</td><td>found in chloroplasts;</td></tr><tr><td>b.</td><td>reduced NAD/NADH involved</td><td>reduced NADP/NADPH involved;</td></tr><tr><td>c.</td><td>made in glycolysis/ link reaction/Krebs cycle</td><td>made in light dependent reactions/ (non-cyclic) photophosphorylation;</td></tr><tr><td>d.</td><td>required for oxidative phosphorylation</td><td>required for light-independent reactions/Calvin cycle;</td></tr></tbody></table>		Reduced hydrogen carriers in AEROBIC RESPIRATION	Reduced hydrogen carriers in PHOTOSYNTHESIS	a.	found in cytoplasm/mitochondria	found in chloroplasts;	b.	reduced NAD/NADH involved	reduced NADP/NADPH involved;	c.	made in glycolysis/ link reaction/Krebs cycle	made in light dependent reactions/ (non-cyclic) photophosphorylation;	d.	required for oxidative phosphorylation	required for light-independent reactions/Calvin cycle;	Accept NAD⁺ and NADP⁺ For c. accept PSI / PSII / ETC / chemiosmosis for photophosphorylation in photosynthesis. For d. accept ETC / chemiosmosis or oxidative phosphorylation in aerobic respiration For d. accept named stages of the Calvin cycle A table is not required. Accept separate paragraphs about respiration and photosynthesis as long as both parts of the marking point are stated.	3 max
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Question	Answers	Notes	Total
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Mark-scheme answers

Biology HL | Paper 1A | Specimen 2025 | Q4 | 1 marks

4. B

Biology HL | Paper 1A | Specimen 2025 | Q5 | 1 marks

5. B