

APOLLO

Transfers of energy and matter

SL

Biology

First assessment 2025

18 questions | mark schemes

Mark-scheme answers

Biology SL | Paper 1A | May 2025 TZ1 | Q28 | 1 marks

28. C

Biology SL | Paper 1A | May 2025 TZ1 | Q30 | 1 marks

30. C

Biology SL | Paper 1A | May 2025 TZ2 | Q24 | 1 marks

24. B

Biology SL | Paper 1A | May 2025 TZ2 | Q26 | 1 marks

26. D

Biology SL | Paper 1A | May 2025 TZ2 | Q28 | 1 marks

28. B

Biology SL | Paper 1A | May 2025 TZ3 | Q28 | 1 marks

28. B

Biology SL | Paper 1A | May 2025 TZ3 | Q30 | 1 marks

30. C

5.	a		a. may kill useful species/pollinators; b. greater loss of biodiversity/species diversity OR greater disruption to food webs/chains;		1 max
5.	b	i	secondary consumer;		1
5.	b	ii	a. biomagnification/bioaccumulation; b. (insecticide) is not broken down / <i>OWTTE</i> ; c. (so) stored/accumulated/increased in organism/tissues/fat; d. (so) not excreted; e. birds eat large numbers of (large) fish OR animals at higher trophic levels eat animal below / (animals) receive/accumulates insecticide from the previous trophic level OR large numbers of organisms lower down with high insecticide level / <i>OWTTE</i> ;		3 max

Question	Answers	Notes	Total
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8.	a	a. LH stimulates progesterone production / ovaries/corpus luteum produce progesterone; b. (progesterone) inhibits FSH and LH; c. inhibition of FSH prevents follicles developing/maturing; d. inhibition of LH prevents ovulation/egg release (from ovary); e. maintains/increases thickness of endometrium/uterus lining; f. inhibition of FSH/LH is (an example of) <u>negative feedback</u>; g. if egg is not fertilized, progesterone level falls/corpus luteum degenerates OR if egg is fertilized, progesterone level remains high/does not fall/corpus luteum is maintained;		4 max
8.	b	a. PCR amplifies DNA/makes many copies of DNA; b. (DNA) heated to high temperatures to separate strands/break hydrogen bonds / denature; c. cooled/temperature lowered; d. use of primers (to identify DNA to be replicated) / primers bind (to DNA strands); e. Taq polymerase is heat-stable/does not denature at high temperatures; f. (Taq) polymerase joins nucleotides (on new DNA strands)/forms phosphodiester bonds; g. the process is repeated numerous times to produce sufficient DNA;	<i>b. Both references to increased temperature and separation of strands are needed for this marking point.</i>	4 max

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2225 – 6024

Question		Answers	Notes	Total
8.	c	a. plants/autotrophs use CO₂ in <u>photosynthesis</u>; b. plants/autotrophs release CO₂ during <u>respiration</u>; c. (CO₂) converted to organic compounds/glucose/starch/cellulose/fat/protein; d. (transferred) to consumers/animals by feeding; e. consumers/animals/detritus feeders/heterotrophs release CO₂ during <u>respiration</u>; f. plants/animals die forming (dead) organic matter; g. saprotrophs/decomposers digest dead plants/animals; h. saprotrophs/decomposers release CO₂ by <u>respiration</u>; i. fossilization/incomplete decomposition produces fossil fuels/coal/oil/peat/gas OR anaerobic respiration releases methane/ruminant (cows) release methane; j. combustion of fossil fuels/plants/biomass releases CO₂;	<i>Accept annotated diagrams that clearly show the relevant marking points.</i>	7 max

Mark-scheme answers

Biology SL | Paper 1A | Nov 2025 TZ1 | Q27 | 1 marks

27. B

Biology SL | Paper 1A | Nov 2025 TZ1 | Q28 | 1 marks

28. B

Biology SL | Paper 1A | Nov 2025 TZ3 | Q25 | 1 marks

25. C

Biology SL | Paper 1A | Nov 2025 TZ3 | Q26 | 1 marks

26. D

Biology SL | Paper 1A | Nov 2025 TZ3 | Q28 | 1 marks

28. B

5.	a	uses light/external sources (chemicals) as an energy source to make complex carbon/organic compounds (from simple/inorganic molecules);	<i>Do not award a mark if it is clear candidates are referring to organic "food" being used as an energy source.</i> <i>Do not award a mark if the definition refers to making food alone, a reference to complex carbon/organic compounds is needed.</i> <i>Accept OWTTE</i>	1
5.	b	a. decomposers are bacteria/fungi /invertebrates; b. break down dead organic matter / faeces; c. release/recycle minerals/nutrients (into the environment);	<i>For b. there MUST be a reference to the matter being dead / deceased etc. but we can accept other clear references.</i> <i>Do not accept reference to recycling carbon alone as this is not a unique property of decomposers.</i>	2 max
5.	c	a. energy is lost between trophic levels as heat/metabolism/10% (or less) is transferred (accept converse); b. length of food chains varies / number of trophic levels in the food chains vary; c. some animals / herbivores may be able to digest (more) plant material/ cellulose/ parts of their food such as skin or bones than other animals; d. some animals are different in size / are more active; e. use more energy (to keep warm or cool) than others/are warm or cold blooded;		3 max

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8825 – 6024M

Question		Answers	Notes	Total
5.	d	a. <u>methane</u> production (by cows) is a greenhouse gas; b. deforestation (to provide land for grazing) reduces carbon dioxide removal from the atmosphere by photosynthesis OR burning of trees (to provide land for grazing) produces carbon dioxide; c. greenhouse gases (carbon dioxide/CO ₂ /methane) lead to the enhanced greenhouse effect/global warming ; d. cattle farming releases more greenhouse gases than plant-based crops;	<i>b. is referring to CO₂, do not accept deforestation/burning alone.</i>	2 max

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8825 – 6024M

Mark-scheme answers

Biology SL | Paper 1A | Specimen 2025 | Q26 | 1 marks

26. C

Biology SL | Paper 1A | Specimen 2025 | Q27 | 1 marks

27. D

1.	a		a. the plants are unable to absorb copper; b. cows eat the copper-deficient plants;		2
1.	b		a. liming; b. as Cu becomes less bioavailable at neutral/basic pH;		2
1.	c		creation of antibodies / white blood cell function;		1
1.	d	i	any pH value above pH 7 or below 5.5;		1
1.	d	ii	a. nucleic acids /DNA/ RNA/nucleotides; b. ATP/phospholipids;		1

Question	Answers	Notes	Total
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