Pearson
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Mark Scheme (Results)

Summer 2025

Pearson Edexcel GCSE
In Combined Science Biology
(1SC0) Paper 1BF

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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.

Mark schemes have been developed so that the rubrics of each mark scheme reflects the characteristics of the skills within the AO being targeted and the requirements of the command word. So for example the command word 'Explain' requires an identification of a point and then reasoning/justification of the point. Explain questions can be asked across all AOs. The distinction comes whether the identification is via a judgment made to reach a conclusion, or, making a point through application of knowledge to reason/justify the point made through application of understanding. It is the combination and linkage of the marking points that is needed to gain full marks.
When marking questions with a 'describe' or 'explain' command word, the detailed marking guidance below should be consulted to ensure consistency of marking.

Assessment Objective		**Command Word**	
Strand	**Element**	**Describe**	**Explain**
AO1		An answer that combines the marking points to provide a logical description	An explanation that links identification of a point with reasoning/justification(s) as required
AO2		An answer that combines the marking points to provide a logical description, showing application of knowledge and understanding	An explanation that links identification of a point (by applying knowledge) with reasoning/justification (application of understanding)
AO3	1a and 1b	An answer that combines points of interpretation/evaluation to provide a logical description	
AO3	2a and 2b		An explanation that combines identification via a judgment to reach a conclusion via justification/reasoning
AO3	3a	An answer that combines the marking points to provide a logical description of the plan/method/experiment	
AO3	3b		An explanation that combines identifying an improvement of the experimental procedure with a linked justification/reasoning

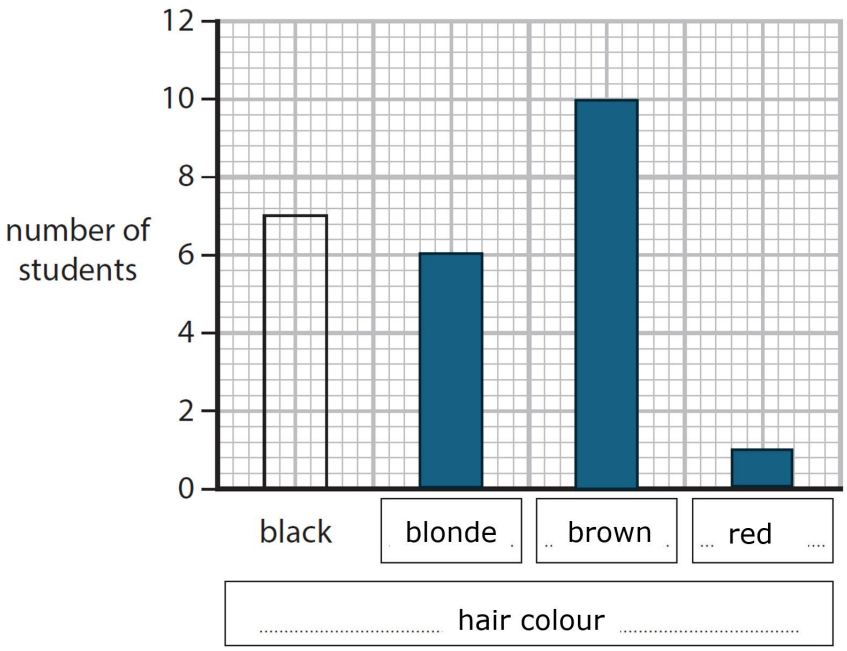
Combined Science – Biology 1SC0_1BF

Question number	Answer	Mark
1(a)(i)	A variation **The only correct answer is A** B, C and D are incorrect because they do not describe differences in hair colour	**(1)** **AO2 1**

Question number	Answer	Additional guidance	Mark
1(a)(ii)	nucleus	accept mitochondria	**(1)** **AO1 1**

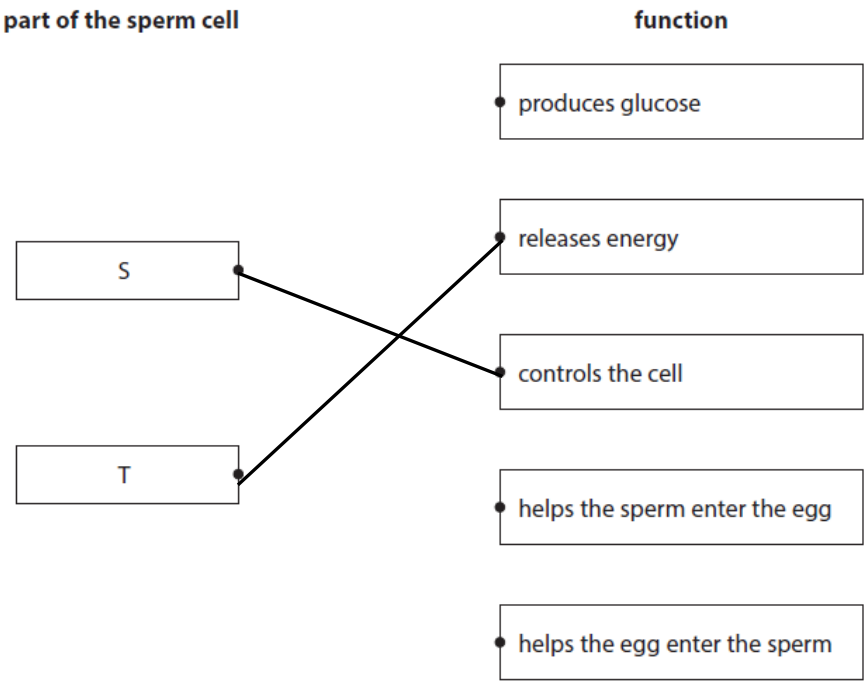
Question number	Answer	Mark
1(b)(i)	tally for brown completed (1) total for brown completed (1)	**(2)** **AO3 1a**

hair colour			
black	blonde	brown	red
𝍸 ||	𝍸 |	𝍸 𝍸	|
total = 7	total = 6	total = 10	total = 1

Question number	Answer	Additional guidance	Mark
1(b)(ii)	• bars for blonde, brown and red plotted (from Figure 2) (1) • labels for blonde, brown and red (1) • x-axis labelled (hair) colour (1) 	accept plotting +/- ½ small square	(3) AO2 1 A03 1a

Total for Question 1 = 7 marks

Question number	Answer	Mark
2(a)(i)	acrosome accept phonetic spellings	(1) AO1 1

Question number	Answer	Mark
2(a)(ii)	 Do not award mark if more than one line drawn from box S Do not award mark if more than one line drawn from box T	(2) AO1 1

Question number	Answer	Additional guidance	Mark
2(b)	chloroplast / cell wall / vacuole		**(1)** **AO2 1**

Question number	Answer	Mark
2(c)(i)	C polymer **The only correct answer is C** A is incorrect because DNA is not a monomer B is incorrect because DNA is not a protein D is incorrect because DNA is not starch	**(1)** **AO1 1**

Question number	Answer	Additional guidance	Mark
2(c)(ii)	A description including two from: • complementary bases (pairing) (1) • A with T / C with G (1) • joined by weak (bonds) (1) • hydrogen bonds (1)	award 2 marks for weak hydrogen bonds	**(2)** **AO1 1**

Total for Question 2 = 7 marks

Question number	Answer	Mark
3(a)(i)	B evolution **The only correct answer is B** A, C and D are not correct as they do not describe the changes in species over time.	**(1)** **AO1 1**

Question number	Answer	Additional guidance	Mark
3(a)(ii)	0.7 (million years)	accept answers in the range 0.6 to 0.8 million years	**(1)** **AO3 1a**

Question number	Answer	Additional guidance	Mark
3(a)(iii)	An answer including two from: • compare the fossils / fossil features to other fossils (of a known age) (1) • radiometric dating (of surrounding rocks) (1)	accept depth in the rock layer / stratigraphy (1) accept (dating) the type of tools found with the fossils (1)	**(2)** **AO2 1**

Question number	Answer	Additional guidance	Mark
3(b)(i)	characteristics (1) generations (1)	answers must be in the correct order	**(2)** **AO1 1**

Question number	Answer	Additional guidance	Mark
3(b)(ii)	Any one from: size / taste / colour / {ripening time / storage time} / disease resistance	 accept any other feature that could be improved	**(1)** **AO2 1**

Question number	Answer	Additional guidance	Mark
3(c)(i)	Step one: One from: • break cells open / cell {walls / membranes} burst (1) • to release DNA (1) Step two: • to separate the liquid / DNA from the solids (1)		**(2)** **AO2 2**

Question number	Answer	Additional guidance	Mark
3(c)(ii)	to precipitate the **DNA** / make the **DNA** visible		**(1)** **AO2 2**

Total for Question 3 = 10 marks

Question number	Answer	Mark
4(a)(i)	B the distance the ruler falls **The only correct answer is B** A, C and D are not correct because they would not allow the reaction times to be compared	**(1)** **AO2 2**

Question number	Answer	Mark
4(a)(ii)	C 13.4 cm **The only correct answer is C** A, B and D are not correct because they are not the calculated mean	**(1)** **AO2 1**

Question number	Answer	Mark
4(a)(iii)	An explanation linking: • (student) J (1) • because the ruler fell the longest distance before it was caught / 15 cm is the longest distance (1)	**(2)** **AO3 2a 2b**

Question number	Answer	Additional guidance	Mark
4(a)(iv)	Any two from: • the same ruler (1) • distance between {the finger and thumb / hands} / height ruler is dropped from (1) • catch ruler with same / dominant hand (1) • no stimulant / depressant / drugs taken (1) • same environmental conditions (1)	accept size / length / mass of ruler accept keeping named environmental conditions the same, e.g. noise, room temperature	**(2)** **AO3 3b**

Question number	Answer	Additional guidance	Mark
4(b)(i)	transmit (electrical) {impulses / messages / signals} from the CNS (1) OR transmit (electrical) {impulses / messages / signals} to effectors (1)	accept brain / spinal cord / relay neurone for CNS accept muscles / glands for effector	**(1)** **AO1 1**

Question number	Answer	Additional guidance	Mark
4(b)(ii)	An explanation including two from: • insulates the **axon** (1) • so nerve impulses travel faster (1)	accept messages / signals for impulses accept ensures impulses move in one direction (1)	**(2)** **AO1 1**

Question number	Answer	Additional guidance	Mark
4(b)(iii)	A description including three from: • a chemical is released (1) • neurotransmitter (1) • (neurotransmitter / chemical) **diffuses** (1) • (across the) synapse (1) • (neurotransmitter / chemical) binds to receptors (1)	accept named neurotransmitter accept moves from a high concentration to a low concentration reject impulse diffuses across accept (across the) synaptic cleft (neurotransmitter / chemical) triggers an impulse / message / signal in the next neurone (1) by neurotransmission (1)	**(3)** **AO1 1**

Total for Question 4 = 12 marks

Question number	Answer	Mark
5(a)(i)	A bacteria **The only correct answer is A** B, C and D are incorrect as they do not cause chlamydia	**(1)** **AO1 1**

Question number	Answer	Additional guidance	Mark
5(a)(ii)	40 000 (cases)		**(1)** **AO2 1**

Question number	Answer	Additional guidance	Mark
5 (a)(iii)	Any two from: • take antibiotics (1) • vaccination / immunisation (1) • covering mouth when sneezing or coughing / wear a (face) mask (1) • isolation of (infected individuals) / avoid contact with infected people (1) • washing hands /disinfecting surfaces (1)	 ignore take medicine / drugs ignore PPE accept avoid mixing in groups / more ventilation / air filters	**(2)** **AO1 1**

Question number	Answer	Additional guidance	Mark
5(b)(i)	(because) it cannot be passed from person to person / it is not caused by a pathogen	accept it is caused by consuming alcohol ignore it cannot be spread unqualified	**(1)** **AO1 1**

Question number	Answer	Additional guidance	Mark
5(b)(ii)	calculation (80 ÷ 90) = 0.8888 (1) 0.89	award full marks for the correct answer with no working accept 0.88 / 0.8 / 0.9 / 0.90 / 1.13 for one mark	**(2)** **AO2 1**

Question number	Answer	Additional guidance	Mark
5(b)(iii)	An explanation linking: • the risk to health is low (1) • (because excess mass) is not around the {waist / vital organs}	 ignore no risk accept because the {WHR / 0.75} is **less** than 0.8 (1)	**(2)** **AO3 2a2b**

Question number	Answer	Additional guidance	Mark
5(c)	An answer including two from: • two (cells produced) (1) • diploid / two sets of **chromosomes** (1) • **genetically** identical (1) • body cells (1)	 ignore they double / duplicate accept a full set of **chromosomes** reject haploid accept somatic cells	**(2)** **AO1 1**

Total for Question 5 = 11 marks

Question number	Answer	Additional guidance	Mark
6(a)	An explanation including three from: • (the mass) will increase (1) • because **water** will move **into** the potato cells (1) • water moves across a {partially / semi} permeable membrane (1) • by <u>osmosis</u> (1) • from a high water concentration to low water concentration (1)	 accept weight for mass accept potato absorbs **water** accept correct references to down a water concentration gradient / water potential / low to high {**solute** / **named solute**} concentrations maximum two marks if mass change or direction of water movement incorrect	**(3)** **AO2 1**

Question number	Answer	Additional guidance	Mark
6(b)(i)	 3 x 3 x 3 / 3^3 (1) 27 (cm^3)	award full marks for the correct answer with no working accept 54 ÷ 2	**(2)** **AO2 1**

Question number	Answer	Additional guidance	Mark
6(b)(ii)	An explanation linking two from: • cube A takes less time (1) • because cube A {is smaller / has a smaller volume} / surface area to volume ratio of cube A is greater (1) • as A has a shorter **diffusion** distance (1)	accept reverse argument for B against all three marking points ignore the surface area of cube A is smaller	**(2)** **AO3 1a1b**

Question number	Indicative content	Mark
6(c)*	Plan: • any step in preparing the agar plate with a well • use two or more concentrations of kiwi fruit juice / enzyme • method of producing different concentrations of kiwi fruit juice • use a separate Petri dish for each concentration / several wells on one Petri dish • repeat each concentration • use a control / use a Petri dish with a well containing (distilled) water or boiled kiwi fruit juice Measurements: • measure the diameter of the liquid agar / calculate the area of liquid agar (using πr^2) / measure the volume of liquid agar • measure how long the set agar takes to be broken down with each different concentration Controlled variables include: • same size Petri dishes • same type / concentration of agar • same depth / volume of agar • plates left for the same length of time • plates left at same temperature / in an incubator / in the same place in a room • same volume of kiwi fruit juice • same source / age of kiwi fruit juice • same size well	**(6)** **AO2 2** **A03 3a**

Level	Mark	Descriptor
	0	No awardable content
Level 1	1–2	• The plan attempts to link and apply knowledge and understanding of scientific enquiry, techniques and procedures, flawed or simplistic connections made between elements in the context of the question. (AO2) • Analyses the scientific information but understanding and connections are flawed. An incomplete plan that provides limited synthesis of understanding. (AO3)
Level 2	3–4	• The plan is mostly supported through linkage and application of knowledge and understanding of scientific enquiry, techniques and procedures, some logical connections made between elements in the context of the question. (AO2) • Analyses the scientific information and provides some logical connections between scientific enquiry, techniques and procedures. A partially completed plan that synthesises mostly relevant understanding, but not entirely coherently. (AO3)
Level 3	5–6	• The plan is supported throughout by linkage and application of knowledge and understanding of scientific enquiry, techniques and procedures, logical connections made between elements in the context of the question. (AO2) • Analyses the scientific information and provide logical connections between scientific concepts throughout. A well-developed plan that synthesises relevant understanding coherently. (AO3)

Level	Mark	Additional guidance	General additional guidance The level is driven by the workability of the plan. The mark within the level is determined by the control of variables.
	0	No rewardable material	
Level 1	1–2	States a relevant part of a plan or a measurement to be taken Includes a variable to control.	<u>Possible candidate responses</u> • Get more than one Petri dish (of agar) • Get more than one Petri dish with the same volume of agar in each one
Level 2	3–4	States parts of a plan including a reference to using different kiwi fruit juice concentrations. Controls more than one variable or one variable and a control.	<u>Possible candidate responses</u> • Get two different kiwi fruit juice concentrations and pour into wells in set agar plates. • Get two different kiwi fruit juice concentrations and pour into wells in set agar plates. Make the wells the same size.
Level 3	5–6	Produces a plan including using different kiwi fruit juice concentrations and measures the area / volume of liquid agar or time taken for agar to break down Controls more than one variable or one variable and a control.	<u>Possible candidate responses</u> • Get two different kiwi fruit juice concentrations and pour into wells in set agar plates. Measure the diameter of the liquid agar. • Get two different kiwi fruit juice concentrations and pour into wells in set agar plates. Measure the diameter of the liquid agar. Make the wells the same size and keep the agar plates at the same temperature

Total for Question 6 = 13 marks

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