



Mark Scheme (Results)

Summer 2025

Pearson Edexcel International Advanced
Subsidiary Level in Psychology (WPS02)
Paper 01 Biological Psychology, Learning
Theories and Development

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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.

Section A

Question Number	Answer	Mark
1(a)	AO1 (2 marks) Credit one mark for each accurate statement of each hormone. For example: • Testosterone (1). • Cortisol (1). Look for other reasonable marking points.	(2)

Question Number	Answer	Mark
1(b)	AO1 (2 marks), AO3 (2 marks) Credit one mark for accurate identification of each strength (AO1). Credit one mark for justification/exemplification of each strength (AO3). For example: • Rieger et al. (2022) found in a review of current literature that a variety of hormones were responsible for aggression in rodents, so the explanation is credible (1), as they found that hormones involved in stress and sex steroid hormones, amongst others were involved in aggression (1). • Hormones as an explanation of aggression can be deemed scientific as it is falsifiable which means it can be proved wrong (1), as the theory could be shown to be incorrect if someone with increased testosterone was not more aggressive than someone with lower testosterone (1). Look for other reasonable marking points.	(4)

Question Number	Answer	Mark
2(a)	AO2 (1 mark) Credit one mark for an accurate naming of the experimental design. For example: Amadeus used males and females, so it is an independent groups design (1). Look for other reasonable marking points. Generic answers score 0 marks.	(1)

Question Number	Answer	Mark
2(b)	AO2 (1 mark), AO3 (1 mark) Credit one mark for accurate identification of a weakness in relation to the scenario (AO2). Credit one mark for justification/exemplification of the weakness (AO3). For example: Those who volunteer to answer the questionnaire about the games they play online may have different characteristics to those who do not answer the questionnaire, so the sample would be biased (1), as those who answer the questionnaire may spend more time playing online games so the sample is not representative of all online players (1). Look for other reasonable marking points. Generic answers score 0 marks.	(2)

Question Number	Answer	Mark
2(c)	AO2 (1 mark) Credit one mark for accurate identification of the level of measurement. For example: Amadeus collected nominal data as he tallied the most popular online games (1). Look for other reasonable marking points. Generic answers score 0 marks.	(1)

Question Number	Answer	Mark
2(d)	AO2 (1 mark), AO3 (1 mark) Credit one mark for accurate identification of a reason in relation to the scenario (AO2). Credit one mark for justification/exemplification of the reason (AO3). For example: Amadeus collected qualitative data to give him more understanding of why males and females played the online games they played (1), as qualitative data gains detail and depth about the participants reasons for playing certain online games adding validity to his investigation (1). Look for other reasonable marking points. Generic answers score 0 marks.	(2)

Question Number	Answer	Mark
3(a)	AO1 (4 marks) Credit up to four marks for an accurate description. For example: If the pre-frontal cortex is damaged, then people may not be able to delay gratifying their impulses and so become aggressive (1). When the amygdala is stimulated, we go into fight or flight mode and become aggressive if we decide to fight (1). If damaged the amygdala may misinterpret a situation as threatening when it is not, so leading to aggressive behaviour (1). The hypothalamus controls homeostasis so if it malfunctions it can lead to an excess of testosterone, so increasing aggression (1). Look for other reasonable marking points.	(4)

Question Number	Answer	Mark
3(b)	AO1 (2 marks), AO3 (2 marks) Credit one mark for an accurate identification of one strength and one weakness (AO1). Credit one mark for justification/exemplification of the strength and the weakness (AO3). For example: Strength - Matthies et al. (2012) found a 16-18% reduction in amygdala volume in those who were more aggressive so giving the theory credibility (1), with the lower the amygdala volume the more aggressive the participant was showing that brain structure does affect aggression (1). Weakness - Brain functioning as an explanation of aggression can be said to be reductionist as it ignores other factors such as the effect of nurture on aggression (1), as social learning theory would argue that aggression is due to nurture and imitating the aggressive behaviour of our role models (1). Look for other reasonable marking points.	(4)

Question Number	Answer	Mark
4 (a)	AO2 (2 marks) Credit one mark for each accurate identification in relation to the scenario. For example: • The number of psychology lectures missed in the previous term (1). • The percentage scored in the end of year psychology exam (1). Look for other reasonable marking points. Generic answers score 0 marks.	(2)

Question Number	Answer	Mark
4 (b)	AO2 (1 mark), AO3 (1 mark) Credit one mark for accurate use of the graph/data (AO2). Credit one mark for a conclusion (AO3). For example: • As the score for the number of psychology lectures missed increases, the percentage score in the end of year psychology exam decreases (1), therefore it can be concluded that there is a negative correlation between the number of lectures missed and the score in the end of year exam (1). Look for other reasonable marking points. Generic answers score 0 marks.	(2)

Question Number	Answer	Mark
4 (c)	AO2 (1 mark), AO3 (1 mark) Credit one mark for identification of one improvement in relation to the scenario (AO2). Credit one mark for justification/exemplification of the improvement (AO3). For example: • Sunshine could ask students who study other subjects such as medical students to increase the representativeness of her sample (1), as the results would be reflective of a variety of different students not just psychology students, so her results would be more generalisable (1). Look for other reasonable marking points. Generic answers score 0 marks.	(2)

Question Number	Indicative content	Mark
5	AO1 (4 marks), AO3 (4 marks) AO1 • Brendgen et al. (2005) studied 234 pairs of twins who were aged 6-years-old and had been assessed for zygosity at 18 months old. • Both teachers and peers were asked to answer questions that were in French, about the aggression of the twin pairs during the spring term. • The peers were given a booklet of photographs of each twin and had to circle the photographs of three children who best fit descriptors such as 'gets into fights with others'. • Brendgen et al. (2005) found that between 50-60% of physical aggression was due to genetic factors, but only 20% of social aggression was due to inherited factors. AO3 • As zygosity was assessed using physical appearance some twins may have been incorrectly identified as monozygotic (MZ) or dizygotic (DZ) affecting the validity of the study so it may not be an effective way to measure aggression. • As the teachers and peers were asked in the spring term this is an effective way to measure the aggression in the twins, as those answering the questions would know the twins better and give more accurate answers. • Asking peers to circle the photographs of three children who best fit a descriptor may not be an effective way to measure aggression as the peers' answers may have been influenced by whether they had fallen out with a twin recently. • As Brendgen et al. (2005) studied both physical and social aggression this can be said to be a more effective way of measuring aggression as it is more holistic than studies which just focus on physical aggression. Look for other reasonable marking points.	(8)

Level	Mark	Descriptor
AO1 (4 marks), AO3 (4 marks) Candidates must demonstrate an equal emphasis between Knowledge and understanding vs assessment/conclusion in their answer.		
	0	No rewardable material.
Level 1	1–2 Marks	Demonstrates isolated elements of knowledge and understanding. (AO1) Generic assertions may be presented. Limited attempt to address the question. (AO3)
Level 2	3–4 Marks	Demonstrates mostly accurate knowledge and understanding. (AO1) Candidates will produce statements with some development in the form of mostly accurate and relevant factual material, leading to a generic or superficial assessment being presented. (AO3)
Level 3	5–6 Marks	Demonstrates accurate knowledge and understanding. (AO1) Arguments developed using mostly coherent chains of reasoning, leading to an assessment being presented which considers a range of factors. Candidates will demonstrate understanding of competing arguments/factors but unlikely to grasp their significance. The assessment leads to a judgement but this may be imbalanced. (AO3)
Level 4	7–8 Marks	Demonstrates accurate and thorough knowledge and understanding. (AO1) Displays a well-developed and logical assessment, containing logical chains of reasoning throughout. Demonstrates an awareness of the significance of competing arguments/factors leading to a balanced judgement being presented. (AO3)

Section B

Question Number	Answer	Mark
6 (a)	AO2 (1 mark) Credit one mark for an accurate identification. For example: The secondary reinforcement is the stamp on the reward card that Jorge gets every time he sits still and concentrates on his work for five minutes. (1). Look for other reasonable marking points. Generic answers score 0 marks.	(1)

Question Number	Answer	Mark
6 (b)	AO2 (1 mark) Credit one mark for an accurate identification. For example: The negative reinforcement is avoiding being put on a table on his own if Jorge does not distract the other children (1). Look for other reasonable marking points. Generic answers score 0 marks.	(1)

Question Number	Answer	Mark
6 (c)	AO2 (1 mark), AO3 (1 mark) Credit one mark for accurate identification of a reason in relation to the scenario (AO2). Credit one mark for justification/exemplification of the reason (AO3). For example: If Jorge gets a stamp on his reward card every time he sits still and concentrates for five minutes, he will come to expect the reward all the time (1), which means when the reward stops, he will soon revert back to distracting the other children and misbehaving at school (1). Look for other reasonable marking points. Generic answers score 0 marks.	(2)

Question Number	Answer	Mark																																
7 (a)	AO2 (4 marks) Credit one mark for correct completion of column$(x-x)^2$ Credit one mark for correct calculation of sum of differences² = 25.2 Credit one mark for correct calculation of dividing the sum of the differences² by (n-1) = 6.3 Credit one mark for correct answer for standard deviation to two decimal places = 2.51 For example: <table><tr><td></td><td>Condition A: Amount of saliva, in millilitres in the cats who heard the dog barking when presented with food after four weeks of classical conditioning</td><td>$x-x^-$</td><td>$(x-\bar{x})^2$</td></tr><tr><td>A</td><td>4</td><td>-1.4</td><td>1.96</td></tr><tr><td>B</td><td>7</td><td>1.6</td><td>2.56</td></tr><tr><td>C</td><td>4</td><td>-1.4</td><td>1.96</td></tr><tr><td>D</td><td>9</td><td>3.6</td><td>12.96</td></tr><tr><td>E</td><td>3</td><td>-2.4</td><td>5.76</td></tr><tr><td colspan="2">Mean = 5.4</td><td colspan="2">Sum of differences² = 25.2</td></tr><tr><td colspan="4">Standard deviation = 2.51</td></tr></table>		Condition A: Amount of saliva, in millilitres in the cats who heard the dog barking when presented with food after four weeks of classical conditioning	$x-x^-$	$(x-\bar{x})^2$	A	4	-1.4	1.96	B	7	1.6	2.56	C	4	-1.4	1.96	D	9	3.6	12.96	E	3	-2.4	5.76	Mean = 5.4		Sum of differences ² = 25.2		Standard deviation = 2.51				(4)
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Look for other reasonable marking points.																																		

Question Number	Answer	Mark
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7 (b)	AO2 (1 mark), AO3 (1 mark) Credit one mark for accurate identification of an ethical issue in relation to the scenario (AO2). Credit one mark for an accurate justification/exemplification of the ethical issue (AO3). For example: Einor should have considered whether classically conditioning cats to salivate when they hear a dog barking is justified in terms of any new knowledge to ensure his study is ethical (1) as if there is not a certainty of benefit then Einor should not have measured the saliva of the cats which would have involved a medical procedure (1). Look for other reasonable answers. Generic answers score 0 marks.	(2)
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Question Number	Answer	Mark
7 (c)	AO2 (1 mark), AO3 (1 mark) Credit one mark for accurate identification of an improvement in relation to the scenario (AO2). Credit one mark for justification/exemplification of the improvement (AO3). For example: Einor could have used a different sound when the cats were presented with food, such as a bell (1), as a bell would have no innate reflexive reaction which could interfere with the results, unlike the sound of a dog barking (1). Look for other reasonable answers. Generic answers score 0 marks.	(2)

Question Number	Answer	Mark
7 (d)	AO2 (1 mark), AO3 (1 mark) Credit one mark for accurate identification of a reason in relation to the scenario (AO2). Credit one mark for justification/exemplification of the reason (AO3). For example: The response of the cats salivating when they heard the dog barking has spontaneously recovered, as the association between the barking and food has returned briefly (1), as shown by Rescorla (1997) who found that rats spontaneously salivated to conditioned stimuli after the response had been extinct for eight days (1). Look for other reasonable answers. Generic answers score 0 marks.	(2)

Question Number	Answer	Mark
8 (a)	AO1 (4 marks) Credit up to four marks for an accurate description. For example: Psychoanalysis aims to bring unconscious thoughts into the conscious so the client can gain insight into their issues (1). Dream analysis involves the client describing the manifest content of dreams and the analyst interpreting what unconscious thoughts the dreams represent (1). Free association allows the client to talk freely in the hope that defence mechanisms will weaken so unconscious thoughts can be revealed (1). The client may transfer their unconscious feelings about a person onto the analyst and those feelings can then be worked through (1). Look for other reasonable marking points.	(4)

Question Number	Answer	Mark
8 (b)	AO1 (1 mark), AO3 (1 mark) Credit one mark for an accurate identification of a weakness (AO1). Credit one mark for justification/exemplification of the weakness (AO3). For example: The analyst has to determine what the manifest content of the dreams mean which can be subjective (1), so if the analyst does not correctly interpret the dreams, then psychoanalysis will not be an effective treatment as it will not identify the client's unconscious thoughts (1). Look for other reasonable marking points.	(2)

Question Number	Answer	Mark
9 (a)	AO1 (2 marks), AO3 (2 marks) Credit one mark for an accurate identification of each weakness (AO1). Credit one mark for justification/exemplification of each weakness (AO3). For example: - Watson and Rayner (1920) only used one 11-month-old boy when conditioning a fear of rats so the results may not be generalisable (1), as Little Albert is not representative of adults who may not be as easy to condition when pairing a loud noise with a white rat (1). - It can be said that the study was unethical as they deliberately made Little Albert cry when he saw a white rat (1), which breaks the ethical principle of protection from harm as Little Albert did not leave the study in the same psychological state as he entered it (1). Look for other reasonable marking points.	(4)

Question Number	Answer	Mark
9 (b)	AO1 (1 mark), AO3 (1 mark) Credit one mark for an accurate identification of an improvement (AO1). Credit one mark for justification/exemplification of the improvement (AO3). For example: Watson and Rayner (1920) could have conditioned a different reflexive reaction in Little Albert, such as eye blinking to a whistle (1), as this would be more ethical as it would not have scared Little Albert and caused him to be distressed (1). Look for other reasonable marking points.	(2)

Question Number	Indicative content	Mark
10	AO1 (4 marks), AO2 (4 marks) AO1 - A naturalistic observation involves watching participants in their natural environment which has not been manipulated. - Observations can be covert where the participants do not know they are being observed or overt where the participants do know they are being observed. - When the observer is part of the group being observed it is a participant observation, if they are not part of the group, it is a non-participant observation. - Event sampling is when the observer notes down every time a defined behaviour is seen. AO2 - Navya is watching the football supporters at a football match, so she is conducting a naturalistic observation. - Whilst Navya has the permission of the football club the football supporters do not know they are part of Navya's study therefore she is conducting a covert observation. - Navya is part of the crowd at the football match and is wearing the colours of the local team, so her observation is a participant observation. - Every time the males and females insult the referee, or a member of the opposing team, this is tallied by Navya as she is using event sampling. Look for other reasonable marking points.	(8)

Level	Mark	Descriptor
AO1 (4 marks), AO2 (4 marks) Candidates must demonstrate an equal emphasis between knowledge and understanding vs application in their answer.		
	0	No rewardable material
Level 1	1–2 Marks	Demonstrates isolated elements of knowledge and understanding. (AO1) Provides little or no reference to relevant evidence from the context (scientific ideas, processes, techniques and procedures). (AO2)
Level 2	3–4 Marks	Demonstrates mostly accurate knowledge and understanding. (AO1) Discussion is partially developed, but is imbalanced or superficial occasionally supported through the application of relevant evidence from the context (scientific ideas, processes, techniques and procedures). (AO2)
Level 3	5–6 Marks	Demonstrates accurate knowledge and understanding. (AO1) Arguments developed using mostly coherent chains of reasoning. Candidates will demonstrate a grasp of competing arguments but discussion may be imbalanced or contain superficial material supported by applying relevant evidence from the context (scientific ideas, processes, techniques and procedures (AO2)
Level 4	7–8 Marks	Demonstrates accurate and thorough knowledge and understanding. (AO1) Displays a well-developed and logical balanced discussion, containing logical chains of reasoning. Demonstrates a thorough awareness of competing arguments supported throughout by sustained application of relevant evidence from the context (scientific ideas, processes, techniques or procedures). (AO2)

Section C

Question Number	Indicative content	Mark
11	AO1 (4 marks), AO2 (4 marks), AO3 (4 marks) AO1 • An infradian rhythm lasts more than 24 hours, seasonal affective disorder is an infradian rhythm as it lasts for about 12 months. • A lack of daylight affects our sleep-wake cycle so we may want to sleep for longer during the winter. • In the winter a lack of sunshine can decrease serotonin which can make a person feel depressed. • As it is darker earlier in the winter the body produces more melatonin which can make people feel more tired. AO2 • Noah's seasonal affective disorder is an infradian rhythm as every winter he feels depressed, which is a 12-month cycle. • Noah wants to sleep more in the winter months, so the lack of daylight has affected his sleep-wake cycle. • The lack of sunshine may have reduced Noah's level of serotonin which may explain why he lacks the motivation to see his friends. • Due to the extra hours of darkness Noah's body is producing more melatonin which can explain why he does not eat as much food during the winter. AO3 • Wehr et al. (2001) found that people who had seasonal affective disorder created a biological signal to indicate the season was changing that was similar to other mammals that change their behaviours due to the season, indicating it is due to an infradian rhythm. • Sigurðardóttir and Grigaraviciuté (2018) found there was a relationship between being an evening type person and seasonal affective disorder, so it may be the circadian rhythm of evening chronotype that affects seasonal affective disorder, not an infradian rhythm. • Knowing that light affects seasonal affective disorder has led to light therapy as a treatment giving the explanation application so individuals can manage their symptoms of seasonal affective disorder. • Infradian rhythms as an explanation ignores social factors, such as not seeing as many friends in the winter months or not going out as much, therefore it could be this which leads to the depression not biological factors. Look for other reasonable marking points.	(12)

Level	Mark	Descriptor
AO1 (4 marks), AO2 (4 marks), AO3 (4 marks) Candidates must demonstrate an equal emphasis between knowledge and understanding vs application vs evaluation / conclusion in their answer.		
	0	No rewardable material.
Level 1	1-3 Marks	Demonstrates isolated elements of knowledge and understanding. (AO1) Provides little or no reference to relevant evidence from the context (scientific ideas, processes, techniques & procedures). (AO2) A conclusion may be presented, but will be generic and the supporting evidence will be limited. Limited attempt to address the question. (AO3)
Level 2	4-6 Marks	Demonstrates mostly accurate knowledge and understanding. (AO1) Line(s) of argument occasionally supported through the application of relevant evidence from the context (scientific ideas, processes, techniques & procedures). (AO2) Candidates will produce statements with some development in the form of mostly accurate and relevant factual material, leading to a superficial conclusion being made. (AO3)
Level 3	7-9 Marks	Demonstrates accurate knowledge and understanding. (AO1) Line(s) of argument supported by applying relevant evidence from the context (scientific ideas, processes, techniques & procedures). Might demonstrate the ability to integrate and synthesise relevant knowledge. (AO2) Arguments developed using mostly coherent chains of reasoning leading to a conclusion being presented. Candidates will demonstrate a grasp of competing arguments but evaluation may be imbalanced. (AO3)
Level 4	10-12 Marks	Demonstrates accurate and thorough knowledge and understanding. (AO1) Line(s) of argument supported throughout by sustained application of relevant evidence from the context (scientific ideas, processes, techniques or procedures). Demonstrates the ability to integrate and synthesise relevant knowledge. (AO2) Displays a well-developed and logical evaluation, containing logical chains of reasoning throughout. Demonstrates an awareness of competing arguments, presenting a balanced conclusion. (AO3)

Question Number	Indicative content	Mark
12	AO1 (6 marks), AO2 (4 marks), AO3 (6 marks) AO1 • The MAOA-L gene means that there is not enough of the enzyme that breaks down neurotransmitters such as serotonin and dopamine, so influencing aggression. • An excess of serotonin due to MAOA-L can lead to a person not being able to control their impulses, so they become more aggressive. • Males who have an extra Y chromosome are thought to be more aggressive due to characteristics of XYY such as lack of empathy. • Freud said that our unconscious affects our personality, and being aggressive may be an unconscious impulse as we cannot be aggressive to the person we want to be. • In the phallic stage we identify with the same sex parent after unconsciously desiring the opposite sex parent. • If we do not successfully resolve the Oedipus/Electra complex, then we may have issues as an adult which may include being overly aggressive. AO2 • Mila may have the MAOA-L gene which makes her overly aggressive which is why she has been arrested for fighting. • The excess serotonin means Mila cannot control her impulses, so when she got angry, she threw a book at another book club member. • Mila may have unconscious anger issues with her mother as she said the customer was rude to her, just like her mother. • Mila may not have successfully resolved her Electra complex as she is jealous of her stepmother having her father's attention which is why Mila said she was aggressive towards her. AO3 • Im et al. (2019) found that males with the MAOA-L gene had changes to their heart rate when presented with stimuli that produced aggression so the MAOA-L gene could explain Mila's aggressive behaviour. • The genetic explanation of aggression ignores factors due to nurture, such as learning aggressive behaviour from role models so genetics may not explain all aggressive behaviour. • The genetic explanation has scientific credibility as it can be empirically tested due to genes and aggression being measured so it could be said to be a more credible explanation of Mila's aggression than Freud's theory. • Freud's theory of development is hard to falsify, as concepts such as the unconscious are hard to measure, making it unscientific so it may not be a good explanation of aggression. • Little Hans (1909) was found to be going through the Oedipus complex during the phallic stages of development which explained his fear of horses, so Mila's aggression to her stepmother may be due to her psychosexual development.	(16)

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| | <ul style="list-style-type: none">• Freud's theory of psychosexual development focuses on childhood and ignores factors that occurred in adulthood, so it may not be a complete explanation of Mila's aggressive behaviour as an adult. | |
|--|---|--|

Look for other reasonable marking points.

Level	Mark	Descriptor
AO1 (6 marks), AO2 (4 marks), AO3 (6 marks) Candidates must demonstrate an equal emphasis between knowledge and understanding vs judgement/conclusion in their answer. Application to the scenario is capped at maximum 4 marks.		
	0	No rewardable material.
Level 1	1–4 Marks	Demonstrates isolated elements of knowledge and understanding. (AO1) Provides little or no reference to relevant evidence from the context (scientific ideas, processes, techniques and procedures). (AO2) A judgement/decision may be presented, but will be generic and the supporting evidence will be limited. Limited attempt to address the question. (AO3)
Level 2	5–8 Marks	Demonstrates mostly accurate knowledge and understanding. (AO1) Line(s) of argument occasionally supported through the application of relevant evidence from the context (scientific ideas, processes, techniques and procedures). (AO2) Candidates will produce statements with some development in the form of mostly accurate and relevant factual material leading to a judgement/decision being presented. Candidates will demonstrate a grasp of competing arguments but response may be imbalanced. (AO3)
Level 3	9–12 Marks	Demonstrates accurate knowledge and understanding. (AO1) Line(s) of argument supported by applying relevant evidence from the context (scientific ideas, processes, techniques and procedures). Might demonstrate the ability to integrate and synthesise relevant knowledge. (AO2) Displays a mostly developed and logical argument, containing mostly coherent chains of reasoning. Demonstrates an awareness of competing arguments, presenting a judgement/decision which may be imbalanced. (AO3)
Level 4	13–16 Marks	Demonstrates accurate and thorough knowledge and understanding. (AO1) Line(s) of argument supported throughout by sustained application of relevant evidence from the context (scientific ideas, processes, techniques or procedures). Demonstrates the ability to integrate and synthesise relevant knowledge. (AO2) Displays a well-developed and logical argument, containing logical chains of reasoning throughout. Demonstrates an awareness of competing arguments and presents a balanced response, leading to a balanced judgement/decision. (AO3)

