Mark Scheme (Results)

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Pearson Edexcel International Advance 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
1a	**AO1 (1 mark)** Credit **one** mark for accurate definition. For example: • An external zeitgeber is an environmental cue that helps regulate biological rhythms (1). **Look for other reasonable marking points.**	**(1)**

Question Number	Answer	Mark
1b	**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: • Siffre (1975) had no external cues when he was in a cave for 6 months and his biological rhythm extended to 25 hours (1), showing that external zeitgebers, such as daylight, play a role in regulating our 24-hour sleep wake cycle giving the explanation credibility (1). • Skene and Arendt (2007) found that most blind people who have some light perception have normal circadian rhythms unlike those without any light perception (1), showing how external zietgebers regulate our circadian rhythms which includes the sleep wake cycle suggesting it is a plausible explanation (1). **Look for other reasonable marking points.**	**(4)**

Question Number	Answer	Mark
2(a)	**AO2 (2 marks)** Credit **one** mark for a partially operationalised null hypothesis. Credit **two** marks for a fully operationalised null hypothesis. For example: • There will be no difference in the mood score for the participants who have the anti-depressants and the participants who do not have the anti-depressants (1). • There will be no difference in the mood score from 1 (happy mood) to 7 (low mood) between the participants who received the anti-depressants for a month and those who had no anti-depressants, and any difference will be due to chance (2). **Look for other reasonable marking points.** **Answer must relate to the scenario.** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
2(b)	**AO2 (1 mark)** Credit **one** mark for accurate mean. • 4.33 **Reject all other answers.**	**(1)**

Question Number	Answer	Mark
2(c)	**AO2 (1 mark)** Credit **one** mark for accurate median. • 2 **Reject all other answers.**	**(1)**

Question Number	Answer	Mark
2(d)	**AO2 (1 mark), AO3 (1 mark)** Credit **one** mark for the accurate identification of what the two standard deviations show (AO2) Credit **one** mark for justification/exemplification of what the two standard deviations show (AO3) For example: Those who had the anti-depressants had a standard deviation of 1.03 which is only 0.18 lower than the standard deviation for those who did not receive anti-depressants (1) therefore, the two standard deviations show there is not much difference in the spread of the scores for mood between those who had anti-depressants for their seasonal affective disorder and those who did not (1). **Look for other reasonable marking points.** **Answer must relate to the scenario.** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
2(e)	**AO2 (1 mark), AO3 (1 mark)** Credit **one** mark for the accurate identification of a weakness in relation to the scenario (AO2) Credit **one** mark for justification/exemplification the weakness (AO3) For example: Harrison asked the participants to score their own mood out of seven, so those on anti-depressants may have shown demand characteristics (1), as they may have guessed the aim was to see if anti-depressants helped their mood so they may have said they were happier than they were so affecting the validity of the experiment (1). **Look for other reasonable marking points.** **Answer must relate to the scenario.** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
3(a)	**AO1 (3 marks)** Credit up to **three** marks for accurate description For example: • Raine et al. (1997) found that the 41 NGRIs had lower glucose metabolism in the prefrontal cortex compared to the control group (1). The murderers had lower activity in the left angular gyrus and in the parietal area of the brain (1). There was no significant difference in the metabolism of glucose in the lateral temporal lobe between the murderers and the control group (1). **Look for other reasonable marking points.**	**(3)**

Question Number	Answer	Mark
3(b)	**AO1 (2 marks), AO3 (2 marks)** Credit **one** mark for accurate identification of each strength/weakness (AO1) Credit **one** mark for justification/exemplification of the strength/weakness (AO3) For example: Strength • Raine et al. (1997) matched the NGRIs with the control group for age, sex and factors such as whether they have schizophrenia (1) which increases the validity of the results as they can be sure the results were not due to other factors which may affect brain activity, such as mental illness (1). Weakness • Raine et al. (1997) only used murderers who pleaded guilty by reasons on insanity as his experimental group (1), this limits the generalisability of the results as there may not be the same brain activity in criminals who committed murder but did not plead insanity (1). **Look for other reasonable marking points.**	**(4)**

Question Number	Answer	Mark
4 (a)	**AO2 (4 marks)** Credit up to **four** marks for accurate description in relation to the scenario. For example: • Meryl could use volunteer sampling where she advertises for people interested in a study on hormones and aggression to take part in a study naming the time and place (1). Meryl could take saliva swabs of her participants to measure the amount of cortisol each participant has in their saliva (1). The participants could be asked to say how many times they were physically and/or verbally aggressive during the past week (1). Meryl would have to ensure that none of the participants had any life events during the past few weeks that may make them more aggressive than normal (1). **Look for other reasonable marking points.** **Answer must relate to the scenario.** **Generic answers score 0 marks.**	**(4)**

Question Number	Answer	Mark
4(b)	**AO2(1 mark), AO3 (1 mark)** Credit **one** mark for accurate identification of the significance (AO2) Credit **one** mark for justification/exemplification of the significance (AO3) For example: • Meryl did find a significant correlation between hormones and aggression (1) as the calculated value of 0.569 exceeds the critical value of 0.560 for a two tailed test at p≤0.05 (1). **Look for other reasonable marking points.** **Answer must relate to the scenario.** **Generic answers score 0 marks.**	**(2)**

Question Number	Indicative content	Mark
5	**AO1 (4 marks), AO2 (4 marks)** **AO1** - If the amygdala misinterprets a situation as threatening it can lead to an increase in aggression. - When the amygdala is activated it can bypass the rational part of the brain so we are less likely to think about the consequences of our aggression. - The hypothalamus keeps testosterone in homeostasis, if it is damaged there may be too much testosterone released which can increase aggression. - The pre-frontal cortex helps control our impulses, if it is damaged, we are less able to control our impulses and so may be more aggressive. **AO2** - Sylvester may have processed the customer as a threat to himself which is why he kicked them after he had thrown them out of the shop. - If Sylvester's amygdala reduced his ability to think rationally, he did not think about the fact he would lose his job if he was aggressive to any more customers. - If Sylvester's hypothalamus cannot regulate his testosterone effectively, he could have excess testosterone which caused him to shout at his partner. - Sylvester may have been unable to control his impulse to fight supporters of an opposing football team due to damage to his prefrontal cortex so he got involved in the fight. **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 B.

Question Number	Answer	Mark
6 (a)	**AO1 (2 marks)** Credit **two** marks for accurate description. For example: • The unconscious contains thoughts, desires and memories that we cannot cope with emotionally (1). We are not aware of what is in the unconscious but it can motivate our behaviour (1). **Look for other reasonable marking points.**	**(2)**

Question Number	Answer	Mark
6 (b)	**AO1 (2 marks), AO3 (2 marks)** Credit **one** mark for 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 • Freud's study of Little Hans (1909) found that Little Hans's fear of horses was really an unconscious fear of his father (1), showing that Little Hans was going through the Oedipus complex during the phallic stage, so supporting Freud's theory (1). Weakness • The study of the unconscious is not scientific as it has features such as the unconscious are not directly observable (1), so assumptions about what is in the unconscious motivates behaviour has a lack of empirical evidence (1). **Look for other reasonable marking points.**	**(4)**

Question Number	Answer	Mark
7 (a)	**AO2 (2 marks)** Credit up to **two** marks for accurate description in relation to the scenario. For example: • Sigourney could have collected all the names of the children from the local village and put them into a computer programme (1). She would then use a random computer programme to select the names of the children until she had enough to conduct her observation on positive reinforcement (1). **Look for other reasonable marking points.** **Answer must relate to the scenario.** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
7 (b)	**AO2 (1 mark), AO3 (1 mark)** Credit **one** mark for accurate identification of a strength in relation to the scenario (AO2). Credit **one** mark for justification/exemplification of the strength (AO3). For example: • All the children in the local village had an equal chance of being participants so the results on the effects of positive reinforcement on reading are not affected by researcher bias (1) as Sigourney should have a variety of children such as those who enjoyed reading and those who did not like reading so the results would be more representative (1). **Look for other reasonable answers.** **Answer must relate to the scenario.** **Generic answers score 0 marks.**	**(2)**

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: • Sigourney could use parents and children from a variety of villages and towns rather than just from one village (1), this would ensure that the results from her observation would be more representative of all parents and children and the effects positive reinforcement has on their reading (1). **Look for other reasonable answers.** **Answer must relate to the scenario.** **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 weakness in relation to the scenario (AO2). Credit **one** mark for justification/exemplification of the weakness (AO3). For example: • When Sigourney is analysing the data on what the parents said in praise of their children reading, she will decide what data fits into what themes which may be subjective (1), as what Sigourney thinks goes into one theme and classes as positive reinforcement another person may not (1). **Look for other reasonable answers.** **Answer must relate to the scenario.** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
7 (e)	**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: • Sigourney could gather data from other sources such as whether positive reinforcement for reading was received at school (1), this would prevent positive reinforcement from other parts of the children's lives having a confounding effect on her results (1). **Look for other reasonable answers.** **Answer must relate to the scenario.** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
8 (a)	**AO2 (4 marks)** Credit up to **four** marks for accurate description in relation to the scenario. For example: • The therapist and Patricia discuss what triggers the anxiety, such as seeing a beard, how that anxiety presents itself such as Patricia getting sweaty (1). Patricia creates a hierarchy of fear where they list the least feared situation, seeing a picture of a beard, up to the most feared situation standing next to her boss (1). The therapist then teaches Patricia relaxation techniques, such as deep breathing before she is exposed to beards (1). Patricia is then presented with the situations on their hierarchy of fear for example seeing a real beard at a distance, using the relaxation techniques at each stage (1). **Look for other reasonable marking points.** **Answer must relate to the scenario.** **Generic answers score 0 marks.**	**(4)**

Question Number	Answer	Mark
8 (b)	**AO2 (1 mark), AO3 (1 mark)** Credit **one** mark for accurate identification of one weakness in relation to the scenario. (AO2). Credit **one** mark for justification/exemplification of the weakness (AO3). For example: • It may not be an effective cure for Patricia's fear of beards, it may just change Patricia's fear of beards to another fear, so it may still affect her job (1), as the psychodynamic approach would argue that the reason for Patricia's fear of beards has not been addressed so it will still affect her behaviour (1). **Look for other reasonable marking points.** **Answer must relate to the scenario.** **Generic answers score 0 marks.**	(2)

Question Number	Answer	Mark
9	**AO1 (4 marks)** Credit up to **four** marks for an accurate description. For example: • At 11 months and 10 days old Little Albert moved his hand towards the white rat, but moved it away before he touched the rat (1). By 11 months and 15 days, when the white rat was presented, Little Albert leaned away from the rat then crawled away from it (1). Little Albert also became scared of other objects such as a white rabbit from which he crawled away whilst crying (1). When they took Little Albert to a bright well-lit lecture room and first presented the white rat Little Albert moved his hand away from the rat but did not cry (1). **Look for other reasonable marking points.**	(4)

Question Number	Indicative content	Mark
10	**AO1 (4 marks), AO3 (4 marks)** **AO1** - Social learning theory involves observing and imitating the behaviour of our role models. - A person is our role model if they have relevance to us such as being the same gender and we can identify with them. - A behaviour must be performed where we can see it so we can pay attention to it and store the behaviour in our memory. - If the role model is reinforced, and receives a reward for their behaviour the observer is more likely to reproduce the behaviour. **AO3** - Charlton et al. (2000) found that after the introduction of television there was no significant change in the amount of antisocial behaviour in children, so observing behaviour does not always cause humans to imitate that behaviour. - Perez et al. (2018) found that a mother's body dissatisfaction positively predicted her daughter's body dissatisfaction, therefore human behaviour is explained through the observation of relevant role models. - Social learning theory does not explain all learnt behaviour, such as insight learning where we can suddenly understand the solutions to a problem without observing anyone else. - Bandura (1965) found that children who saw an aggressive model being reinforced showed significantly more aggressive behaviour, therefore the use of vicarious reinforcement can explain how humans learn new behaviour. **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 C

Question Number	Indicative content	Mark
11	**AO1 (4 marks), AO2 (4 marks), AO3 (4 marks)**	**(12)**
	AO1	
	• Classical conditioning involves the learning of new reflexes through association.	
	• The unconditioned stimulus is the environmental cue that causes the reflexive response before any learning has taken place.	
	• A neutral stimulus, which has no reflexive response is paired with the unconditioned stimulus.	
	• Stimulus generalisation is when the conditioned response is given to stimuli that are similar to the conditioned stimulus.	
	AO2	
	• Michelle has learnt to be afraid of her friend's house as she has associated it with the loud noise of the fireworks.	
	• Her unconditioned stimulus was the loud noise of the firework which caused the unconditioned response of fear.	
	• The friend's house was originally the neutral stimulus as Michelle had no reflexive response to the house.	
	• Michelle has generalised her fear of her friend's house to her grandparents' house as they live in a similar building.	
	AO3	
	• Watson and Rayner (1920) caused Little Albert to become afraid of white rats after pairing the white rat with a loud noise, showing fear can be learnt through classical conditioning.	
	• There could be other explanations for the development of fear such as operant conditioning, where attention is a positive reinforcement when someone shows they are scared of something.	
	• Classical conditioning is a scientific explanation of human behaviour as it researches directly observable, empirical behaviour such as the neutral stimulus not causing a response.	
	• Classical conditioning focuses on nurture and ignores nature, such as the effect of hormones on our behaviour so it is not a complete explanation of human behaviour.	
	Look for other reasonable marking points.	

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), AO3 (10 marks)** **AO1** • Brendgen et al. (2005) used a sample of 234 6-year-old twin pairs from Montreal, of which 94 pairs were monozygotic twins. • The teachers were asked to rate each twin on social and physical aggression using items based on a Preschool Social behaviour Scale • It was found that 60% of the variance in social aggression was due to unique environmental factors, and 20% was due to shared environmental factors. • Skinner used 8 pigeons that were at 75% of their normal weight. • A food hopper was swung into the experimental cage for five seconds each time. • The pigeons repeated behaviour, such as turning counter clockwise between the reinforcement of the food hopper. **AO3** • Brendgen et al. (2005) gained active written consent from the parents of the six-year-old twins before gathering the data so it is ethical as informed consent was gained. • The children could have been distressed if they found out that other children had said they told mean secrets about another child. • The results may not be the same when the children are older as social aggression does not fully develop until around 8 years old, therefore the results may not be reliable if the study was repeated on the twins again. • The children's answers may have been influenced by who their friends were on the day they had to do the peer ratings, so if the study was repeated on a different day, they may not circle the same twins. • The data are objective data as Brendgen et al. (2005) totalled the number of times each twin was circled for each statement, therefore increasing the reliability of the results as the researchers did not need to interpret the data. • The pigeons were starved to 75% of their weight which could be deemed unethical as they were deliberately kept hungry. • Skinner only used 8 pigeons which is a small number of animals to try and ensure the experiment was as ethical as possible. • Skinner used pigeons which are protected animal as they are a living vertebrate, his study would have been more ethical if he had not used a protected animal, such as an insect. • Skinner controlled the experiment, for example the food hopper was swung for 5 seconds at a time, so extraneous variables may not have affected his results. • In six out of eight cases two observers had perfect agreement when counting the number and types of behaviour demonstrated by the pigeons showing inter-rater reliability. **Look for other reasonable marking points.**	**(16)**

Level	Mark	Descriptor
AO1 (6 marks), AO3 (10 marks) **Candidates must demonstrate a greater emphasis on evaluation/conclusion vs knowledge and understanding in their answer.** **Knowledge & understanding is capped at maximum 6 marks.**	
	0	No rewardable material.
Level 1	1-4 Marks	Demonstrates isolated elements of knowledge and understanding. (AO1) 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	5-8 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 superficial conclusion being made. (AO3)
Level 3	9-12 Marks	Demonstrates accurate knowledge and understanding. (AO1) 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	13-16 Marks	Demonstrates accurate and thorough knowledge and understanding. (AO1) Displays a well-developed and logical evaluation, containing logical chains of reasoning throughout. Demonstrates an awareness of competing arguments, presenting a balanced conclusion. (AO3)