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Mark Scheme (Results)

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Pearson Edexcel International GCE PSYCHOLOGY (WPS02)

PAPER 2: Biological Psychology, Learning Theories and Development

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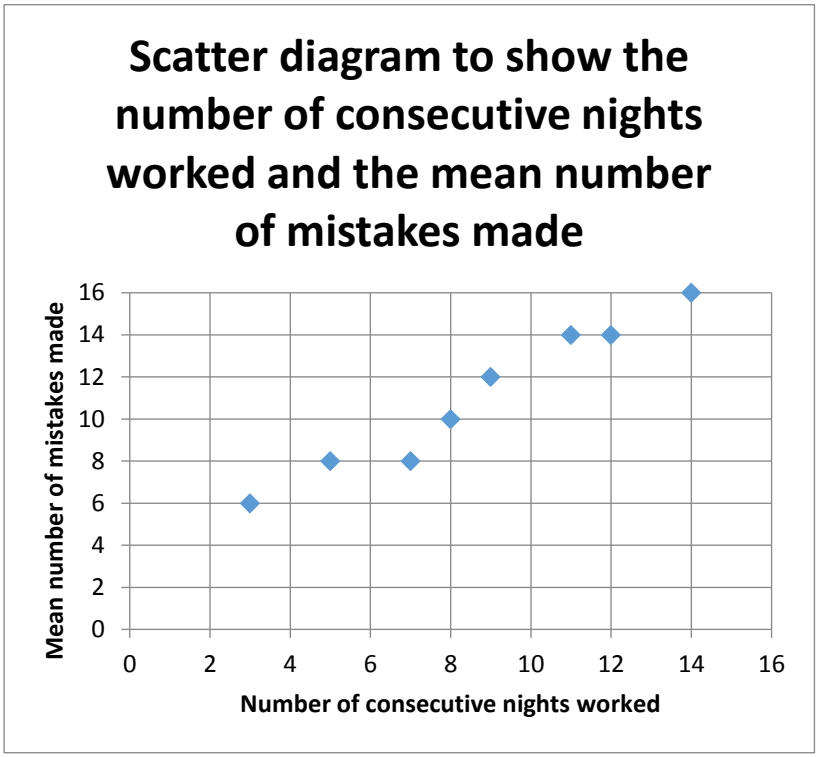
General Marking Guidance

- 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 (1 mark)** Credit **one** mark for accurate definition. For example: • Looks at a relationship between two variables. **Look for other reasonable marking points**	**(1)**
1 (b)	**AO1 (1 mark), AO3 (1 mark)** Credit **one** mark for accurate identification of one strength (AO1) Credit **one** mark for justification of one strength (AO3) For example: • Correlations allow the researcher to investigate naturally occurring variables (1) that maybe unethical or impractical to test experimentally in a laboratory. (1) **Look for other reasonable marking points**	**(2)**

1 (c)	**AO2 (3 marks)** Credit **one** mark for correct/appropriate title. Credit **one** mark for correct/appropriate labelling of axes. Credit **one** mark for accurate plotting of scores.  	**(3)**

Question Number	Answer	Mark
1 (d)	**AO2 (2 marks)** Credit **one** mark for a correct identification in relation to scenario. Credit **one** mark for accurate description in relation to scenario. For example: • A positive correlational relationship (1). As the number of consecutive nights participants worked increases, the mean number of mistakes made also increases. (1) **Look for other reasonable marking points**	**(2)**

1 (e)	**AO2 (1 mark)** Credit **one** mark for a correct identification. For example: • Spearman's Rank test/Spearman's Rho Correlation Coefficient/ Spearman's **Look for other reasonable marking points**	**(1)**

Question Number	Answer	Mark
2 (a)	**AO1 (2 marks)** Credit up to **two** marks for accurate statements. For example: • To what extent can the difference between physical aggression and social aggression be explained by genetic shared environment or non-shared environmental factors. (1) • To examine the contribution of genes and environment to social versus physical aggression. (1) **Look for other reasonable marking points**	**(2)**
2 (b)	**AO1 (1 mark)** Credit **one** mark for appropriate conclusion. For example: • Physical aggression is influenced by a mixture of genetic factors and environmental factors that were not shared between the twins. **Look for other reasonable marking points.**	**(1)**

Question Number	Answer	Mark
3(a)	**AO2 (2 marks)** Credit **one** mark for an appropriate hypothesis Credit **two** marks for an appropriate operationalised hypothesis For example: • There will be a significant positive relationship between height and aggression (1) • There will be a significant positive correlation/relationship between height (cm) and self-rating of aggressive tendencies (2) **Look for other reasonable marking points**	**(2)**
3(b)	**AO2 (1 mark), A03 (1 mark)** Credit **one** mark for accurate identification of an ethical consideration (AO2) Credit **one** mark for justification of ethical consideration (AO3) For example: • Participants were asked for informed consent before completing self-report data on aggression (1). Informed consent ensures participants were aware of the nature of the topic content beforehand so they could choose whether or not to take part (1). **Look for other reasonable marking points.**	**(2)**
Question Number	Answer	Mark

3(c)	**AO2 (4 marks)** Credit up to **four** marks for accurate description in relation to practical. For example: • Quantitative data was gathered by measuring the height of each participant in centimetres (1). A questionnaire using closed questions was designed to measure aggression (1). The questionnaire data was recorded on a tally chart (1) the sum of this data gave an aggressive tendency score (1). **Look for other reasonable marking points.** **Generic answers score 0 marks.**	**(4)**

Question Number	Answer	Mark
4	**AO1 (4 marks), A03 (4 marks)** **A01** • Neurotransmitters are chemical messengers that act between neurones in the brain. • Neurotransmitters allow the brain to process thoughts and memories. • Chemicals, called **neurotransmitters,** are released from one neuron at the presynaptic nerve terminal. • Serotonin is an inhibitory neurotransmitter that has been found to be intimately involved in emotion and mood. **A03** • Acetylcholine has been found to have links to REM (dream) sleep, in that if your acetycholine levels are not low enough during REM sleep you may act out your dreams or sleep walk. • The mental illness schizophrenia has been shown to involve excessive amounts of dopamine in the frontal lobes so neurotransmitters do explain human behaviour. • Neurotransmitter explanations are reductionist; social learning theory explains human behaviour through imitation and modelling. • Supporting evidence for the role of acetycholine and memory formation comes from Martinez & Kesner (1991) who found that human memory can be explained by neurotransmitters. **Look for other reasonable marking points.**	**(8)**

Level	Mark	Description
(4 AO1, 4 AO3) Candidates must demonstrate an equal emphasis between knowledge and understanding vs evaluation/conclusion in their answer.		
	0	No rewardable material.
Level 1	1-2 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	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 superficial conclusion being made. (AO3)
Level 3	5-6 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	7-8 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)

Section B

Question Number	Answer	Mark
5 (a)	**AO1 (1 mark)** Credit **one** mark for accurate identification. • Phallic stage **Look for other reasonable marking points**	**(1)**
5 (b)	**AO2 (2 marks)** Credit up to **two** marks for accurate explanation in relation to scenario. For example: • Stuart has developed intense sexual love for his and sees his father as a rival for her affection (1) which causes Stuart to be afraid as his father is more powerful than he is (1) **Look for other reasonable marking points** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
6 (a)	**AO2 (1 mark), AO3 (1 mark)** Credit **one** mark for accurate identification in relation to scenario (AO2) Credit **one** mark for justification (AO3) For example: • The id is responsible for Shruthri eating all the sweets (1) as it needs immediate gratification so wants the sweets now (1). **Look for other reasonable marking points** **Generic answers score 0 marks.**	**(2)**

6 (b)	**AO2 (1 mark), A03 (1 mark)** Credit **one** mark for accurate identification in relation to scenario (AO2) Credit **one** mark for justification (AO3) For example: • The superego should have stopped her eating all the sweets (1) because it is moral conscience, which should have controlled the demands of the id stopping her eating the sweets (1). **Look for other reasonable marking points** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
6 (c)	**AO1 (1 mark), A03 (1 mark)** Credit **one** mark for accurate identification of one weakness (AO1) Credit **one** mark for justification of one weakness (AO3) For example: • Freud's theory stops at adolescence and does not explain development in adulthood (1) therefore, it is not a complete explanation of human development (1). **Look for other reasonable marking points**	**(2)**

Question Number	Answer	Mark
7 (a)(i)	**AO2 (1 mark)** Credit **one** mark for correct answer. • 5.4 **Reject all other answers.**	**(1)**
7 (a)(ii)	**AO2 (1 mark)** Credit **one** mark for correct answer. • 5 **Reject all other answers.**	**(1)**
7 (b)	**AO2 (2 marks), AO3 (2 marks)** Credit **one** mark for accurate identification of one strength and one weakness in relation to scenario. (AO1) Credit **one** mark for justification of one strength and one weakness (AO3) **Strength** For example: • Angela observed the children in their natural setting of an early years setting (1), which is high in ecological validity for studying children (1). **Weakness** For example: • Angela may not have observed all the children's behaviour (1) therefore the results may be inaccurate and unreliable when coming to conclusions about children's play (1). **Look for other reasonable marking points** **Generic answers score 0 marks.**	**(4)**

Question Number	**Answer**	**Mark**
7 (c)	**AO2 (2 marks)** Credit up to **two** marks for accurate justification in relation to scenario. For example: • Angela collected nominal data (1) and used an independent measures design (1). **Look for other reasonable marking points**	**(2)**

Question Number	Answer	Mark
8 (a)	**AO1 (1 mark)** Credit **one** mark for an accurate definition. For example: • The return of a conditioned response to a condition stimulus after previously being extinguished (1). **Look for other reasonable marking points**	**(1)**
8 (b)	**AO1 (1 mark)** Credit **one** mark for an accurate definition. For example: • The disappearance of a previously conditioned response when the conditioned stimulus is no longer associated with the unconditioned stimulus (1). **Look for other reasonable marking points**	**(1)**
8 (c)	**AO1 (1 mark)** Credit **one** mark for an accurate definition. For example: • When a neutral stimulus similar to the conditioned stimulus elicits the same conditioned response (1). **Look for other reasonable marking points**	**(1)**
8 (d)	**AO1 (2 marks), A03 (2 marks)** Credit **one** mark for accurate identification of one strength (AO1) Credit **one** mark for justification of each strength (AO3) For example: • There is practical application for classical conditioning in training animals (1). Pavlov (1927) showed how classical conditioning can be used to train dogs to salivate to the ring of a bell (1). • There is scientific and empirical evidence that behaviour can be learned (1). Watson and Rayner (1920) conditioned Little Albert to fear rats and furry objects (1). **Look for other reasonable marking points**	**(4)**

Question Number	Answer	Mark
8 (e)	**AO2 (2 marks)** Credit up to **two** marks for accurate description in relation to scenario. For example: • You would pair the unconditioned response of sitting with the neutral stimulus of the command 'sit' several times (1). Sitting becomes a conditioned response the command becomes the conditioned stimulus (1). **Look for other reasonable marking points** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
9	**AO1 (4 marks), AO3 (4 marks)** **AO1** • 41 participants were randomly allocated into two groups. • The participants were matched on sex, age and self-reported fear level. • 90% of those who underwent the desensitisation programme reduced their fear level of flying. • Capafóns study gathered self-report data from the participants about their fear of flying. **AO3** • Random sampling eliminates experimenter bias which increases reliability. • Matching participants between the two groups eliminates participant variables which could have an influence on the treatment programme other than the programme itself. • The treatment programme for a phobia of flying was not effective for all 100% of participants and alternative programme such as CBT may have been more effective. • Self-report method reduces the validity as participants could have given answers they thought Capafóns wanted to hear rather than truthful ones. **Look for other reasonable marking points.**	**(8)**

Level	Mark	Description
AO1 (4 marks), AO3 (4 marks) Candidates must demonstrate an equal emphasis between knowledge and understanding vs evaluation/conclusion in their answer.		
	0	No rewardable material.
Level 1	1-2 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	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 superficial conclusion being made. (AO3)
Level 3	5-6 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	7-8 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)

Section C

Question Number	Answer	Mark
10	**AO1 (6 marks), AO3 (6 marks)** **AO1** • The sleep-wake cycle is a circadian rhythm as it lasts 24 hours. • Circadian rhythms like the sleep-wake cycle can be endogenous and built-in to our biological make-up. • Endogenous pacemakers/biological clocks can be irregular and often require environmental influences to keep them regular. • Exogenous/External zeitgebers like light regulate the internal body clock (endogenous pacemaker). • The SCN is part of the hypothalamus that regulates sleep-waking patterns by sending messages to the pineal gland. • Humans have a free running 25 hour endogenous biological clock which is kept to 24 hours by the external zeitgeber light. **A03** • Supporting evidence for the influence of external zeitgebers comes from Siffre's (1999). • However, Siffre's study was only completed on one individual and therefore may not be representative of the sleep-wake cycle. • Aschoff and Weber (1963) support longer sleep-wake cycle than 24 hours. • Research on the influence of external zeitgebers has been completed on animals so generalising to humans is difficult. • People living in the Arctic circle have winter days with little daylight, if circadian rhythm was purely linked to an exogenous zeitgeber of light, they would sleep most of the day. • Evidence over simplifies the sleep-wake cycle's reliance on light, whereas the role of neurotransmitters can play a more significant role than credited. **Look for other reasonable marking points.**	**(12)**

Level	Mark	Descriptor
(6 AO1, 6 AO3) Candidates must demonstrate an equal emphasis between knowledge and understanding vs evaluation/conclusion in their answer.		
	0	No rewardable material
Level 1	1–3 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	4–6 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	7–9 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	10–12 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)

Question Number	Answer	Mark

11	**AO1 (6 marks) AO2 (4 marks) A03 (6 marks)** **AO1** • PET (Position Emission Tomography) scans produce a 3-dimensional still picture of the brain. • A radioactive tracer is injected into the body and shows us an area of brain activity which can be analysed and interpreted. • PET scans can also show the activity of different areas of the brain which can be measured and compared between different people. • There are different types of observations, structured observations involve a planned setting being observed and behaviour recorded. • Natural observations involve watching the behaviour of participants in their own setting without any manipulation by the researchers. • Participant observations involve other observers being part of the situation and behaviour that is being observed. **AO2** • A sample of boys could be asked to recall what it is like to play a particular violent video game whilst being PET scanned. • The results from the PET scan of the boys recalling their playing of a violent video game would be analysed for differences to see whether there is a link between the violent games and aggressive areas of the brain. • A groups of boys could be placed in a laboratory and asked to play 3 violent video games and then observed on how aggressive they behaved towards each other after playing the games. • Boys could be observed in an arcade playing violent video games and their behaviour recorded after completion of the game and analysed for violent behaviour. **AO3** • PET scans would allow us to visually see which parts of the brain are involved in the aggression caused by the video games which increases the validity of the results. • PET scans can be replicated with different video games and similar results are likely to occur, showing reliability. • PET scans do not allow us to specifically isolate which parts of the brain would be solely responsible for the aggressive behaviour caused by the video games, therefore validity is reduced. • Structured observations would allow us to observe the boys playing a video game in a controlled setting which could be replicated, therefore increasing reliability. • A natural observation would allow us to observe the aggression shown by the boys directly in their own video game environment therefore increasing the ecological validity of the results. • A participant observation would allow a researcher to join the boys in playing their violent video games which would reduce the validity of the results as the presence of the observer might influence the boys to behave differently, therefore producing unreliable results. **Look for other reasonable marking points.**	**(16)**

Level	Mark	Descriptor
AO1 (6 marks), AO2 (4 marks), AO3 (6 marks) **Candidates must demonstrate an equal emphasis between knowledge and understanding vs assessment/conclusion in their answer.** **Application to the context 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) Generic assertions may be presented. 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 generic or superficial assessment being presented. (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) 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	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 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)