Mark Scheme (Results)

Summer 2019

Pearson Edexcel
GCE Psychology 8PS0/02
Paper 2: Biological Psychology and Learning Theories

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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: BIOLOGICAL PSYCHOLOGY

Question Number	Answer	Mark
1(a)	**AO1 (1 mark)** **One** mark for stating the purpose of the PET scan. For example: • PET scans measure the activity of the brain (1). **Look for other reasonable marking points.**	**(1)**

Question Number	Answer	Mark
1(b)	**AO1 (2 marks), AO3 (2 marks)** **One** mark for identification of a strength/weakness (AO1). **One** mark for justification of a strength/weakness (AO3). For example: Strength • PET scans are a valid measurement of brain activity (1) as they provide a detailed image of brain activity during the completion of a task (1). Weakness • PET scans involve injecting a radioactive glucose tracer into participants which could be dangerous (1) therefore limiting the number of times that it can be used with the same participants (1). **Look for other reasonable marking points.**	**(4)**

Question Number	Answer	Mark
2(a)	**AO1 (3 marks)** Up to **three** marks for a description of the procedure. **Brengden et al. (2005)** • Brendgen et al. (2005) gathered 2 sources of data from teachers and classmates on 234 (those who completed) twin participants (1). Teacher ratings were based on agreement with a series of statements for example, "To what extent does the child try to make others dislike a child" (1). Peer ratings of the twins involved asking every child in the class to circle three pictures of the children they thought matched four different behaviour descriptions (1). **Van den Oever et al. (2008)** • Male Wistar rats (280-300g in weight) were given food, water and exposed to a 12hr light-dark cycle (1). Rats in the home cage condition self-administered heroin for 15 days with cues, had 21 day abstinence, and were re-exposed to heroin induced cues for 1 hour (1). Other rats were given an injection in various areas of the prefrontal cortex to block activity of the AMPA receptor (1). **Li et al. (2013)** • Fourteen male adult chronic heroin users and fifteen healthy subjects underwent an MRI scan (1). Participants completed a resting state task which involved focusing their attention on a target for 5 minutes and nothing else (1). They also completed a cue-induced condition in which participants were exposed to 24 drug related pictures and 24 pictures with neutral stimuli (1). **Look for other reasonable marking points.**	**(3)**

Question Number	Answer	Mark
2(b)	**AO1 (2 marks), AO3 (2 marks)** **One** mark for identification of strength/weakness (AO1). **One** mark for justification of strength/weakness (AO3). **Brengden et al. (2005)** Strength • Brendgen et al. (2005) used questionnaires like the Preschool Social Behaviour Scale (PSBS-T) to measure the aggression in the twins (1) which had already been established as a reliable measure of aggression (1). Weakness • In Brendgen et al.'s (2005) study not all the twins were DNA tested for identicalness (1) which means some of the twins may have been in the wrong group making the results unreliable (1). **Van den Oever et al. (2008)** Strength • Injections in the ventral area of the medial prefrontal cortex could be given to heroin addicts to help treat addiction (1) by preventing those seeking heroin when presented with drug paraphernalia which could save the NHS money in treatment costs (1). Weakness • The study used male Wistar rats so may not be generalisable to human heroin addicts (1) because there are differences in brain structure and function with humans and rats so synaptic changes in the brain may not apply to humans (1). **Li et al. (2013)** Strength • Participants in Li et al. (2013) study were matched in terms of age and gender providing a standardised control (1) which reduces participant variables that could have affected the results on heroin users (1). Weakness • Li et al. (2013) study used only 14 male participants which reduces generalisability of the results (1) and is not representative of the target population of heroin users as does not include female participants and the number used is small (1). **Look for other reasonable marking points.**	**(4)**

Question Number	Answer	Mark
3(a)	**AO2 (2 marks)** **One** mark for a partially operationalised hypothesis. **Two** marks for a fully operationalised hypothesis For example: • There will be a relationship between exercise and "well-being" score (1). • There will be a relationship between the number of hours exercised in a week and gym member's "well-being" score between 4 and 20 (2). **Look for other reasonable marking points.**	**(2)**

Question Number	Answer	Mark
3(b)	**AO2 (4 marks)**	**(4)**

Number of hours exercised	Rank 1	"Well-being" score	Rank 2	d	d^2
1	1	4	1	**0**	**0**
2	2	8	2.5	**-0.5**	**0.25**
7	5	8	2.5	**2.5**	**6.25**
5	4	9	4.5	**-0.5**	**0.25**
8	6	11	7.5	**-1.5**	**2.25**
11	8	11	7.5	**0.5**	**0.25**
12	9	18	9.5	**-0.5**	**0.25**
14	10	18	9.5	**0.5**	**0.25**
4	3	9	4.5	**-1.5**	**2.25**
9	7	10	6	**1**	**1**
				Total:	**13**

One mark for accurate completion of column d (minus signs can be present or not for the mark).

One mark for accurate completion of d^2.

One mark for substituting into equation

$$1 - \frac{6 \times 13}{10(100 - 1)}$$

One mark for 0.921 (to 3 d.p.) / 0.92 (to 2 d.p.)

Look for other reasonable marking points.

Question Number	Answer	Mark
3(c)	**AO2 (1 mark)** **One** mark for correct calculation of fraction. For example: • 4/5 **Reject all other answers**.	**(1)**

Question Number	Answer	Mark
3(d)	**AO2 (1 mark), AO3 (1 mark)** **One** mark for identification of improvement in relation to the scenario (AO2). **One** mark for justification of improvement (AO3). For example: • Daniel could gather qualitative data by using open-ended questions within his questionnaire on exercise and "well-being" (1) so that he could gain a true understanding about what the gym members felt influenced their "well-being" (1) **Look for other reasonable marking points.** **Answers must relate to the scenario.** **Generic answers score 0 marks.**	**(2)**

Question Number	Indicative Content	Mark
4	**AO1 (4 marks), AO3 (4 marks)** **AO1** • Damage in the ventromedial prefrontal cortex leads to impairments in behavioural control and decision making. • Matthies et al. (2012) found higher aggression levels with 16-18% reduction in amygdala volumes. • Low serotonin has been linked to aggression, assault, arson, murder, and child beating. • Recreational drugs such as heroin stimulate dopamine which is rewarding and so can lead to repeated use and could progress to addiction. **AO3** • Raine et al. (1997) found NGRIs had lower activity in prefrontal regions, supporting research linking damage to the PFC and aggressive behaviour. • Allen and Stevens (1994) suggested that hippocampal neuronal transmission might be unreliable in terms of a postsynaptic response suggesting human behaviour may have other factors influencing the communication centres in the brain. • Research linking neurotransmitters such as serotonin to aggressive behaviour in humans is correlational so other factors may contribute to aggression. • Olds and Milner (1954) found that when stimulating areas of the dopamine pathway (e.g. septal regions) rats would continue to press a lever due to the rewarding effects of the stimulation. **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 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: LEARNING THEORIES

Question Number	Answer	Mark
5(a)	**AO1 (1 mark)** **One** mark for definition of naturalistic observation For example: • A naturalistic observation involves watching participants in their own environment (1). **Look for other reasonable marking points.**	**(1)**

Question Number	Answer	Mark
5(b)	**AO1 (2 marks), AO3 (2 marks)** **One** mark for identification of a strength/weakness (AO1) **One** mark for justification of the strength/weakness (AO3) For example: Strength • Involves watching others in a familiar environment to them which is high in ecological validity (1) resulting in participants being more likely to behave in a realistic way (1). Weakness • Natural observations can be difficult to control as there are lots of extraneous variables in the environment (1) which may influence participants to behave differently on the day the observation is completed (1). **Look for other reasonable marking points.**	**(4)**

Question Number	Answer	Mark
6 (a)	**AO1 (2 marks)** Up to **two** marks for a description of spontaneous recovery. For example: • After extinction of an association between the CR and CS the conditioned response suddenly reappears (1). For example, if a dog previously salivated to a bell and stopped the dog may suddenly salivate to the bell again for no apparent reason (1). **Look for other reasonable marking points.**	**(2)**

Question Number	Answer	Mark
6 (b)	**AO2 (4 marks)** Up to **four** marks for description of classical conditioning in relation to Anastasia's behaviour. For example: • Anastasia falling off her bike produces an unconditioned fear response (1) to the naturally occurring unconditioned stimulus of falling off her bike (1). This has been paired with the neutral stimulus of her favourite pop band Camban (1) creating a conditioned stimulus of her pop band being associated with a conditioned response of fear (1). **Look for other reasonable marking points.** **Answers must relate to the scenario.** **Generic answers score 0 marks.**	**(4)**

Question Number	Answer	Mark
7(a)	**AO2 (1 mark)** **One** mark for correct calculation of the mode. • 54 **Reject all other answers.**	**(1)**

Question Number	Answer	Mark
7(b)	**AO2 (1 mark)** **One** mark for correct calculation of the range. • 119 (187-68=119)	**(1)**

Question Number	Answer	Mark
7(c)	**AO2 (2 marks), AO3 (2 marks)** **One** mark for identification of a strength/weakness (AO2). **One** mark for justification of the strength/weakness (AO3). For example: Strength • Brian used a primary source of real television programmes which would be a valid source (1) because the programmes have not been interpreted by others so are an original source of anti-social behaviour (1). Weakness • Brian generated the anti-social behaviour themes by himself which may be subjective (1) as he may not have considered the viewpoints of others which could lead to a biased analysis of the content of the programmes (1). **Look for other reasonable marking points.** **Answers must relate to the scenario.** **Generic answers score 0 marks.**	**(4)**

Question Number	Answer	Mark
8	**AO2 (2 marks), AO3 (2 marks)** **One** mark for identification of each way Denise could make her investigation scientific (AO2) **One** mark for justification of each way that Denise could make her investigation scientific (AO3) For example: • Denise could standardise her procedure and get all the pupils to complete the same set of mathematical calculations (1), thereby replicating the task for the pupils so she can test for reliability which is scientific (1). • Denise can measure the pupils' performance by gathering quantitative data on the pupils' mathematical calculations (1) which is an objective way to analyse the data about the success of positive reinforcement (1). **Look for other reasonable marking points.** **Answers must relate to the scenario.** **Generic answers score 0 marks.**	**(4)**

Question Number	Indicative content	Mark
9	**AO1 (4 marks), AO3 (4 marks)** AO1 • Operant conditioning refers to the process of learning through consequences. • If people are punished as a consequence for a particular behaviour then they are more likely to stop the behaviour. • Positive reinforcement results in people being more likely to repeat the behaviour as shown in token economy programmes. • Negative reinforcement involves the removal of an unpleasant stimulus to strengthen behaviour. AO3 • Skinner's (1948) animal studies showed that rats would press a lever to receive a reward, so behaviour can be learned through consequences. • Thorndike (1911) provides support for operant conditioning theory, however kittens were used so they have limited generalisability to humans. • Mestel and Concar (1994) found a token economy programme to be successful in treating cocaine addicts who were given shopping vouchers as rewards for staying "clean". • The influence of hormones on human behaviour suggests that operant conditioning does not fully explain human 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 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	Indicative content	Mark
10	**AO1 (4 marks), AO2 (4 marks), AO3 (4 marks)** **AO1** • Social learning theory proposes that people learn through observing role models whom they pay attention to, imitating what they do. • Bandura, Ross and Ross (1961) found that children were more likely to imitate the same sex role model. • Darwin's evolutionary theory suggests that humans have evolved many traits that aid their survival. • Evolutionary theory suggests that men have evolved to be more aggressive towards other men in order to protect and/or attract a female mate. **AO2** • Melissa observes the fashion clothes in the magazines she reads and buys them for herself. • Melissa imitates her favourite celebrity wearing make up as she is the same gender as her role model. • The boys stop playing football and begin to use their speed by racing each other to get to Melissa and her friends first. • Some of the boys become more aggressive towards the other boys after seeing the girls as a way of impressing Melissa and her friends. **AO3** • Mineka and Cook (1989) found Rhesus monkeys would imitate fear responses to crocodiles and snakes which supports observational learning. • Bandura, Ross and Ross's (1961) study only used children from one nursery in the USA so generalisability may be limited. • Evolutionary theory is accused of being reductionist as it does not consider the influence of situational factors supported by social learning theory. • Buss (2005) summarised that men give into women (debasement) and threaten any males around them aiding their survival of the gene pool. **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)

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