Mark Scheme (Results)

October 2018

Pearson Edexcel International GCE
In Psychology (WPS02 01)

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.

Paper WPS02 mark scheme
October 2018

Section A.

Question Number	Answer	Mark
1a	AO1 (1 mark) Credit one mark for accurate identification. For example: • Serotonin (1). Look for other reasonable marking points.	(1)

Question Number	Answer	Mark
1b	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: • The function of neurotransmitters as an explanation of human behaviour is reductionist as it ignores the effect of the environment on our behaviour (1) so it is not a complete explanation of human behaviour (1). Look for other reasonable marking points.	(2)

Question Number	Answer	Mark
2(a)	AO1 (2 marks) Credit up to two marks for accurate description. For example: • Psychologists use CAT scans to detect whether there are any abnormalities in the brain that may be causing a specific behaviour such as aggression (1). CAT scans pass multiple X-rays through the brain which are then constructed into a 3D image of the brain by a computer (1). Look for other reasonable marking points.	(2)

Question Number	Answer	Mark
2(b)	AO1 (2 marks) A03 (2 marks) Credit one mark for accurate identification of one strength and one weakness. (AO1) Credit one mark for justification of one strength and one weakness. (AO3) For example: Strength • CAT scans give objective data as the computer forms an image from the scan (1), so increasing the reliability of the results from the CAT scan as the results are not subjective (1). Weakness • CAT scans emit radiation which means they can be harmful to some people (1), therefore they may cause harm to some people such as the foetus if a woman does not know she is pregnant (1). Look for other reasonable marking points.	(4)

Question Number	Answer	Mark
3(a)	AO2 (3 marks) Credit up to three marks for accurate description in relation to scenario. For example: • Gabriella should use the day and night time of the country she is going to, and make sure that she does not sleep whilst it is light, and go to bed when it is dark (1). When Gabriella arrives at her holiday destination she should stay up until it is time to go to bed in that country, even if she feels tired as the country is eight hours behind her home country (1). Gabriella should not eat an evening meal when she arrives at her holiday destination, but should eat breakfast as it will be early morning (1). Look for other reasonable marking points. Generic answers score 0 marks.	(3)

Question Number	Answer	Mark
3(b)	AO2 (2 marks), AO3 (2 marks) Credit one mark for accurate identification of one strength and one weakness in relation to scenario. (AO2) Credit one mark for justification of one strength and one weakness (AO3) For example: Strength. • One strength is external zeitgebers can be easily accessible, such as Gabriella using clocks set to local time to (1) as found by Folkard et al. (1985) as the participants adjusted their sleep-wake cycle to a 22 hour cycle when the clock they used was on a 22 hour cycle (1). Weakness. • The use of external zeitgebers ignores the fact that Gabriella's internal pacemakers will be out of sync with the new time zone, e.g. body temperature (1), therefore the use of external zeitgebers may not help with Gabriella's sleep-wake cycle on the first few days of her holiday as her body will be saying it is time to sleep based on her old sleep-wake cycle (1). Look for other reasonable marking points. Generic answers score 0 marks.	(4)

Question Number	Answer	Mark
4(a)	AO2 (2 marks) Credit one mark for each variable in relation to scenario. For example: • The average number of hours slept in a week (1). • Percentage of correct marks out of 100% (1). Look for other reasonable marking points. Generic answers score 0 marks.	(2)

Question Number	Answer	Mark
4(b)	AO2 (1 mark) Credit one mark for accurate identification from the scenario. For example: • Tau used a volunteer sample as he put a notice up in the local school (1). Look for other reasonable marking points. Generic answers score 0 marks.	(1)

Question Number	Answer	Mark
4 (c)	AO2 (1 mark), AO3 (1 mark) Credit one mark for accurate identification of one weakness in relation to scenario. (AO2) Credit one mark for justification of one weakness. (AO3) For example: • Tau's sample may be biased as he asked for volunteers from one school (1), therefore the results may not be the same for people from other areas so Tau's results do not represent a wider population (1). Look for other reasonable marking points. Generic answers score 0 marks.	(2)

Question Number	Answer	Mark
4(d)	AO2 (2 marks) Credit one mark for each accurate reason given in relation to the scenario. For example: • Tau was looking for a relationship between the average amount of sleep students had in a week and their exam performance (1). • The data on the exam performance was in the form of numbers so it was ordinal data as the students' data can be placed in order. (1). Look for other reasonable marking points. Generic answers score 0 marks.	(2)

Question Number	Answer	Mark
4 (e)	AO2 (1 mark) Credit one mark for accurate identification in relation to scenario. (AO2) • 0.520 (1) Reject all other answers.	(1)

Question Number	Answer	Mark
4 (f)	AO2 (1 mark), AO3 (1 mark) Credit one mark for accurate identification of type II error in relation to scenario. (AO2) Credit one mark for justification of type II error. (AO3) For example: • Tau is using the probability level that his results are due to chance as equal to or less than 1% (1), therefore he may be more likely to reject his alternative hypothesis and say there is no correlation between sleep and exam performance, when in fact there could be a correlation between them (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 • Infradian rhythms have a cycle of more than 24 hours, with the menstrual cycle lasting for about 28 days. • The pituitary gland releases FSH to stimulate the ovaries to produce eggs. • The hormone oestrogen is at its lowest on the first day of the menstrual cycle, and gradually increases during the cycle as the eggs mature. • If the egg is not fertilised the levels of oestrogen and progesterone decline, so leading to the lining in the womb being shed. AO3 • Russell et al. (1980) found that women synchronised their menstrual cycle to the cycle of a donor woman's sweat so infradian rhythms are not the sole regulator of the menstrual cycle. • The changes in hormones throughout the menstrual cycle can be used in trials to explain why women may have attacked other people so the explanation can be applied to everyday life. • Moos et al. (1969) found that changes in menstrual symptoms, mood and sexual arousal changed in relation to a menstrual cycle and consistently across the menstrual cycle suggesting it is controlled internally by infradian rhythms. • It is hard to separate infradian rhythms from all external zeitgebers therefore research may not be valid when isolating the infradian rhythms. 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)

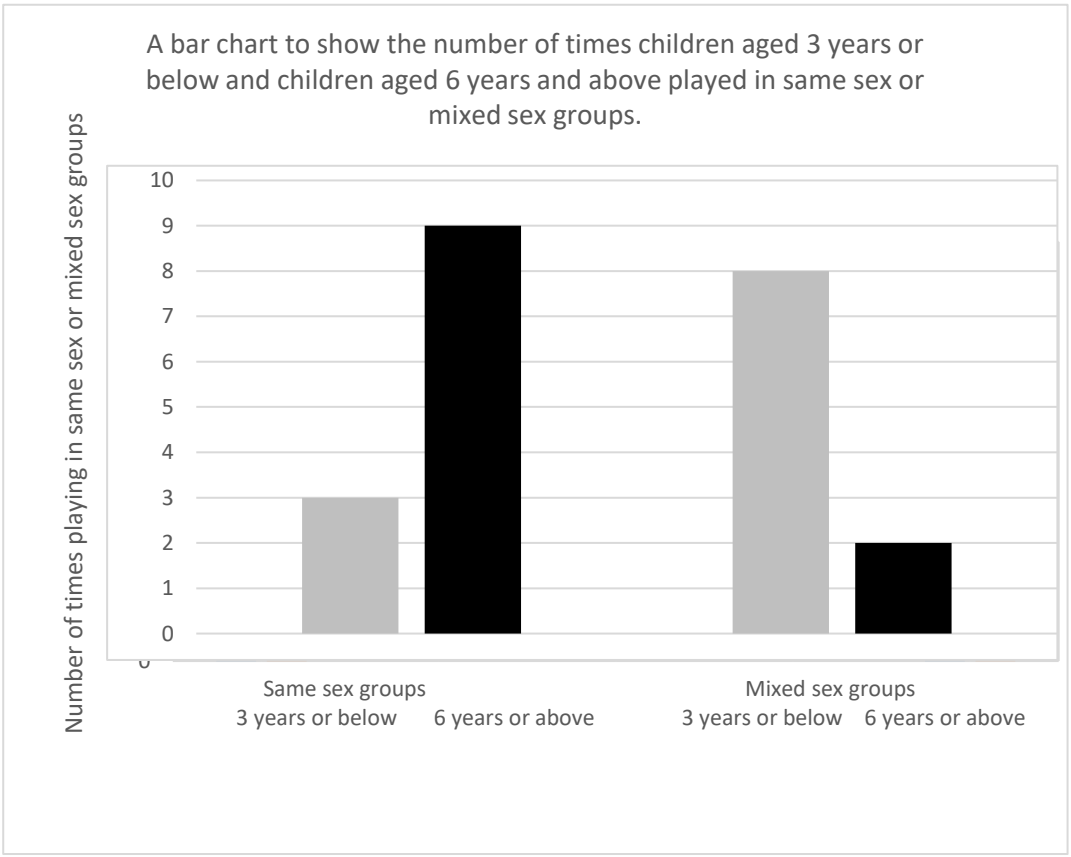
Section B.

Question Number	Answer	Mark
6 (a)	AO1 (4 marks) Credit up to four marks for accurate description. For example: • Classical conditioning is the process by which new reflexes are learnt (1). An unconditioned stimulus is the original stimulus that causes the reflex (unconditioned response) without any learning (1). A neutral stimulus that cause no reflexive behaviour is paired with the unconditioned stimulus several times (1). Eventually the neutral stimulus leads to a reflexive response because it has been associated with the unconditioned stimulus (1). Look for other reasonable marking points.	(4)

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 of one strength and one weakness (AO3) For example; Strength: • Studies that have supported classical conditioning are often laboratory experiments and are considered to be scientific (1) as they take place in controlled conditions and the data comes from objective, observable behaviour (1). Weakness. • Classical conditioning does not explain voluntary behaviour such as putting on make-up (1), therefore it is not a complete explanation of human behaviour, as the majority of our behaviour is not based on reflexes (1). Look for other reasonable marking points.	(4)

Question Number	Answer	Mark
7 (a)	AO2 (4 mark) Credit up to four marks for accurate description in relation to scenario. For example: • Jayant would read through his notes about the behaviour of the children as they played (1). As he read through his notes he would identify themes such as whether the children were arguing about the rules of a game (1). Once Jayant had decided on his themes, he would create a tally chart that may be categorised into body language and types of play (1). Jayant would then re-read his notes and record every time a theme occurred on his tally chart (1). Look for other reasonable marking points. Generic answers score 0 marks.	(4)

Question Number	Answer	Mark
7 (b)	AO2 (1 mark) Credit one mark for correct percentage. • 72.73 Reject all other answers.	(1)

Question Number	Answer	Mark
7(c)	AO2 (3 marks) One mark for appropriate title. One mark for appropriate labelling of axes. One mark for correct plots. For example:  Look for other reasonable marking points.	(3)

Question Number	Answer	Mark
7 (d)	AO2 (1 mark), AO3 (1 mark) Credit one mark for accurate identification of conclusion in relation to scenario (AO2). Credit one mark for accurate justification of conclusion (AO3) For example: • Jayant could conclude that as age increases, children are less likely to play with members of the opposite sex (1), because six more children played in mixed sex groups at the age of three or under compared to those children aged six years old or above (1). Look for other reasonable marking points. Generic answers score 0 marks.	(2)

Question Number	Answer	Mark
8 (a)	AO1 (2 marks), A03 (2marks) Credit one mark for accurate identification of each strength. (AO1) Credit one mark for justification of each strength (AO3) For example: Prot (2014) Strength 1: • Study 1 used the Interpersonal Reactivity Index to measure empathy which is a well-known scale (1) so the study can be replicated by others as the IRI is a known scale that other researchers can use in similar studies to check the results of Prot (2014) (1). Strength 2: • In study 2, objective data was gathered in the form of how many hours the participants spent playing their three favourite video games (1). This is objective data so increases reliability as the researchers did not have to subjectively interpret the meaning of the data (1). Bastian et al. (2011) Strength 1: • Bastian et al. (2011) had a controlled procedure as all the participants had a wireless X-box so they were using the same type of console (1). This means extraneous variables such as the type of gaming box did not affect the results so increasing reliability (1). Strength 2: • In both studies, video games that are commercially readily available were used, e.g. Mortal Kombat and are not designed by the researcher (1) therefore other researchers can replicate the study using those games to see if they get the same results to check for reliability (1). Look for other reasonable marking points.	(4)

Question Number	Answer	Mark
8 (b)	AO1 (1 mark) A03 (1 mark) Credit one mark for accurate identification of one improvement. (AO1) Credit one mark for justification of improvement. (AO3) For example: Prot (2014): • Prot could have used a wider age range rather than just adolescents and young adults such as older adults (1), this would have enabled the study to make conclusions based on a wider age range, which is more reflective of those who play video games so increasing generalisability (1). Bastian et al. (2011): • In study 2, they could have used participants who came from a variety of different occupations rather than just undergraduates (1), as then the results could be said to be true of a greater range of people, who may or may not be influenced by violent video games in the same way (1). Look for other reasonable marking points.	(2)

Question Number	Answer	Mark
8 (c)	AO1 (1 mark), AO3 (1 mark) Credit one mark for accurate identification of one improvement. (AO1) Credit one mark for justification of improvement (AO3). For example: Prot (2014): • The researchers could ask other people such as the parents which television and video games were the participants' three most favourite ones (1). This would help ensure the accuracy of the participants' answers to help avoid possible social desirability when they had to name them and so increase credibility (1). Bastian et al. (2011): • Instead of asking the participants how they felt about themselves they could have observed their behaviour after playing the video games (1). This would increase the credibility of the results as what people say may not reflect how they actually behave and so may be inaccurate (1). Look for other reasonable marking points.	(2)

Question Number	Indicative content	Mark
9	AO1 (4 marks), AO2 (4 marks) AO1 • Social learning theory says that we observe and then imitate a behaviour. • In order to imitate a behaviour the actions of that behaviour need to be remembered. • We imitate role models that we see as having relevance to us. • Vicarious reinforcement is when the role model is rewarded so we imitate the behaviour in the hope of getting a similar reward. AO2 • Tammy will have seen her sister steal cars and so copies her sister's actions in order to steal a car herself. • Tammy will have remembered the tools her sister used to steal cars, as well as how to break into a car. • Tammy's sister is her role model as she is the same sex, she so Tammy sees her behaviour as relevant. • Tammy is rewarded for her behaviour as she feels excitement when driving a stolen car, so this may be the reason she has stolen more than one car, rather than vicarious reinforcement. 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
10	AO1 (6 marks), AO3 (6 marks) AO1 • Capafóns et al. (1998) used a sample of 41 participants, 20 in the treatment group and 21 in the control group. • The participants were gained through asking for volunteers in advertisements on the radio, television and in the press. • Capafóns et al. (1998) used a number of measures to measure fear of flying, such as physiological measurements and the EPAV-A scale. • Physiological measurements were taken in the form of heart rate, muscle tension and skin temperature. • The participants in the experimental group created a hierarchy of fear and were taught relaxation techniques when being treated. • Participants in the experimental group had to imagine various aspects of the flight when working through their hierarchy of fear. AO3 • Having a sample of only 20 in the treatment group limits the generalisability of the results due to the small sample size. • Having a volunteer sample limits the generalisability as volunteers tend to be the minority, so the participants may have a strong reason for overcoming their fear of flying. • Using different methods to measure the fear of flying increases reliability as the different methods can be cross referenced with each other to see if the results correlate. • The physiological methods took objective data, e.g. in the form of heart beat per minute, increasing reliability. • The treatment has validity as relaxation techniques are used in systematic desensitisation, which are familiar to those undergoing the treatment. • Imagining being on a flight is not the same as actually being on a flight, so the treatment may not be effective when the participants had to go on an aeroplane. Look for other reasonable marking points.	(12)

Level	Mark	Descriptor
AO1 (6 marks), AO3 (6 marks) 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	Indicative content	Mark
11	AO1 (6 marks), A02 (4 marks), AO3 (6 marks) AO1 • The MAOA gene is thought to cause an increase in aggression as it causes low levels of the MAOA enzyme. • A lack of the MAOA enzyme means that the breakdown of neurotransmitters such as dopamine is affected, so leading to aggression. • Having an extra Y chromosome, so being XYY, is thought to increase aggression. • Operant conditioning says that if an aggressive behaviour is reinforced then that behaviour will be repeated. • Aggressive behaviour may be positively reinforced as it can enable the aggressor to get something they want. • Negative reinforcement may also reinforce aggressive behaviour if something undesirable is avoided. A02 • Having the MAOA gene means that Xia's neurotransmitters are not functioning normally so she is unable to control her impulse to hit the shopkeeper. • The XYY explanation does not explain Xia's aggression as she is female so her chromosomes will be XX. • Xia is positively reinforced for her aggression as she gains the food in her bag after hitting the shop keeper. • If Xia has previously avoided the police due to her aggression then her behaviour has been negatively reinforced. AO3 • McGuffin and Gottesman (1985) found that there was an 87% concordance rate in aggression in monozygotic twins compared to a 72% concordance rate in dizygotic twins suggesting genes do play a part in aggression. • Brendgen et al. (2005) found that a non-shared environment has more of an influence on social aggression so it seems that the influence of genes on aggression depends on the type of aggression being studied. • Beaver et al. (2014) found that people who had the MAOA gene were more likely to have stabbed or shot someone so it can be said that the MAOA gene is responsible for extremely aggressive behaviour. • Operant conditioning cannot explain how people who are not rewarded for being aggressive remain aggressive, so it is not a suitable explanation. • Whitaker and Bushman (2012) support the fact that being reinforced makes people more aggressive, as participants who were rewarded for playing a violent video game were more accurate when shooting a mannequin than those who had no reward for playing a shooting game.	(16)

	• Both the genetic explanation and operant conditioning ignore the influence of each other on aggression so it may be that aggression is a combination of both factors. 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 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)