Mark Scheme (Results)

June 2022

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

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.

Question Number	Answer	Mark
1(a)	**AO1 (3 marks)** Up to three marks for completing Table 1 with the name of the correct lobe. 	**(3)**

Lobe	Function of the lobe
Frontal lobe	This lobe is involved in higher executive functioning, motor skills, planning, reasoning and problem solving.
Occipital lobe	This lobe is associated with interpreting visual stimuli, depth and distance.
Parietal lobe	This lobe involves interpreting sensory information, including touch, temperature, pain and pressure.

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 the strength/weakness (AO3). For example: Strength • Raine et al. (1997) found that the murderers who pleaded not guilty by reasons of insanity had lower activity in prefrontal regions of the brain (1) suggesting that the damage to their PFC may have caused loss of self-control which resulted in an increase in their aggressive human behaviour (1). Weakness • Higher levels of hormones such as testosterone have been known to increase aggressive tendencies in murderers (1) so factors other than lower activity in the PFC may equally explain an increase in aggressive human behaviour (1). **Look for other reasonable marking points.**	**(4)**

Question Number	Answer	Mark
2(a)	**AO2 (4 marks)**	**(4)**

Total number of cups of coffee drunk	Rank 1	Self-reported alertness score	Rank 2	d	d²
6	6	5	5.5	**0.5**	**0.25**
3	2.5	4	3	**-0.5**	**0.25**
5	5	5	5.5	**-0.5**	**0.25**
2	1	1	1	**0**	**0**
4	4	4	3	**1**	**1**
3	2.5	4	3	**-0.5**	**0.25**
				Total:	**2**

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

One mark for accurate completion of d².

One mark for substituting into equation

$$1 - \frac{6 \times 2}{6(36 - 1)}$$

One mark for 0.943 (to 3 d.p.) / 0.94 (to 2 d.p.)

Look for other reasonable marking points.

Question Number	Answer	Mark
2(b)	**AO2 (1 mark), AO3 (1 mark)** One mark for identification of a strength of using random sampling in relation to the scenario (AO2) One mark for justification of the strength (AO3). For example: • Phil's use of random sampling ensured that all the doctors had an equal chance of taking part in his investigation on alertness (1) therefore reducing sampling bias of only some doctors being able to take part compared to volunteer sampling where only those motivated to take part would do so (1). **Look for other reasonable marking points.** **Answers must relate to the scenario.** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
2(c)	**AO2 (2 marks), AO3 (2 marks)** Up to two marks for identification of why Phil gathered both quantitative and qualitative data in relation to the scenario (AO2) Up to two marks for justification of using both qualitative and quantitative data (AO3) For example: • The quantitative data gathered by Phil on whether the doctors felt the coffee helped them maintain their alertness was objective (1) therefore reducing bias as to whether the number of cups of coffee correlated with alertness making the data more reliable (1). The qualitative data gathered through the post-interviews will provide reasons why the doctors felt the coffee helped them to maintain alertness (1) providing Phil with more valid findings to understand why the doctors felt the coffee helped them to maintain alertness during their shift (1). **Look for other reasonable marking points.** **Answers must relate to the scenario.** **Generic answers score 0 marks.**	**(4)**

Question Number	Answer	Mark
2(d)	**AO2 (2 marks), AO3 (2 marks)** One mark for identification of each improvement in relation to the scenario (AO2). One mark for justification of each improvement (AO3). For example: • Phil could have improved his investigation by using a baseline measure on current coffee levels at the start of the doctor's shift (1) as this would ensure that all doctors coffee consumption prior to their shift could be factored into final self-reported alertness level, making the results more valid (1). • Phil could have improved his investigation by increasing his sample to include other professions such as lawyers (1) therefore increasing the representativeness of the findings of Phil's investigation on the effects of coffee on alertness to other professions (1) **Look for other reasonable marking points.** **Answers must relate to the scenario.** **Generic answers score 0 marks.**	**(4)**

Question Number	Indicative Content	Mark
3	**AO1 (4 marks), AO3 (4 marks)** **AO1** • Darwin's evolutionary theory suggests that humans have evolved many traits that aid their survival. • Natural selection is the process by which a species changes and develops over time in response to its environment. • Evolutionary theory suggests that men have evolved to be more aggressive towards other men in order to protect and/or attract a female mate. • In puberty hormones like testosterone influence gender development in determining male and female characteristics. **AO3** • Evolutionary theory has been accused of being reductionist and not considering some situational factors that may influence human development such as social learning theory. • Explanations for human development were explained by Darwin through his observations on non-human species such as his finches in which they developed over time to fit in with their habitat to aid their survival which lacks generalisability to humans. • Buss (2005) found that when men give in to women (debasement) and threaten any males around them it aids their survival of the gene pool and ensures their human development. • Pubertal blocking medication such as gonadotropin-releasing hormone (GnRH) analogues can be used as a therapy with transgender patients to suppress the body's release of sex hormones therefore disrupting the natural evolutionary process during puberty. **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)

Question Number	Answer	Mark
4(a)	**AO2 (2 marks)** One mark for a basic hypothesis. Two marks for an operationalised hypothesis. For example: • There will be a significant difference in polite behaviour depending on gender (1). • There will be a significant difference in the number of males or females saying "thank-you" to a bus driver when getting off a bus (2). **Look for other reasonable marking points.** **Answers must relate to their practical investigation.** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
4 (b)	**AO2 (2 marks)** Up to two marks for a description of how quantitative data was gathered in their practical investigation. For example: • I gathered quantitative data by counting the number of times male and female participants did or did not say thank you to a bus driver (1). I then recorded the scores onto my structured observation table and tallied the final totals of male and female responses (1). **Look for other reasonable marking points.** **Answers must relate to their practical investigation.** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
4 (c)	**AO2 (1 mark), AO3 (1mark)** One mark for identification of a conclusion in their practical investigation (AO2). One mark for justification of the conclusion (AO3). For example: • We concluded that men were less polite than females when observed saying "thank you" or not to a bus driver (1) which was supported by a total of 3 tallied scores for men observed showing polite behaviour compared to a higher number of 13 tallied scores for females (1). **Look for other reasonable marking points.** **Answers must relate to their practical investigation.** **Generic answers score 0 marks.**	**(2)**

Question Number	Answer	Mark
4(d)	**AO2 (2 marks), AO3 (2 marks)** One mark for identification of each weakness of their practical investigation (AO2). One mark for justification of each weakness of their practical investigation (AO3). For example: • One weakness is that I only used the words "thank you" to record the bus passengers' politeness to the bus driver (1) which may have resulted in other ways of being polite to the bus driver being missed leading to subjective results (1). • One weakness is that other passengers on the bus talking and getting on and off the bus were not controlled for (1) which may have resulted in missing them saying "thank you" therefore getting invalid results on polite behaviour (1) **Look for other reasonable marking points.** **Answers must relate to their practical investigation.** **Generic answers score 0 marks.**	**(4)**

Question Number	Answer	Mark
5(a)	**AO1 (1 mark)** One mark for stating the aim of Bandura's (1961) Bobo doll experiment. For example: • Aimed to see if aggressive behaviour could be acquired through the observation of aggressive role models (1). **Look for other reasonable marking points.**	**(1)**

Question Number	Answer	Mark
5(b)	**AO1 (1 mark), AO3 (1 mark)** One mark for identification of a strength (AO1) One mark for justification of the strength (AO3) For example: • Bandura controlled for individual differences in the children by matching them on their levels of aggression prior to the observation (1) meaning he could be sure that it was the role models' behaviour that affected whether the children acted aggressively or not therefore increasing internal validity (1). **Look for other reasonable marking points.**	**(2)**

Question Number	Answer	Mark
5(c)	**AO1 (1 mark), AO3 (1 mark)** One mark for identification of an improvement (AO1). One mark for justification of the improvement (AO3). For example: • One improvement to Bandura (1961) study would be to observe the children acting aggressively in their own real-life environments (1) which would result in being able to observe the children's real life behaviour in relation to whether they are aggressive which would increase ecological validity (1). **Look for other reasonable marking points.**	**(2)**

Question Number	Answer	Mark
6 (a)	**AO1 (2 marks)** Up to two marks for a definition of extinction using an example. For example: • Extinction is when there is no longer a conditioned response (CR) to a conditioned stimulus (CS) (1). For example, in Pavlov's salivating dogs' experiments when the bell was repeatedly presented without the food being present, the salivation response stopped (1). **Look for other reasonable marking points.**	**(2)**

Question Number	Answer	Mark
6(b)	**AO1 (2 marks), AO3 (2 marks)** One mark for identification of strength/weakness (AO1). One mark for justification of strength/weakness (AO3). **For example:** Strength • Watson and Rayner (1920) claimed they conditioned a phobic response in a little boy named Albert which resulted in him fearing various objects including a rat (1) therefore supporting Classical conditioning as a way of explaining new learned responses such as the loud noise being paired with the rat to create a fear response (1). Weakness • Classical conditioning is an incomplete explanation of learning as it can only explain behaviour resulting from a conditioned stimulus-response (1) whereas social learning theory would suggest that learning behaviour can also involve observing and imitating others and not through a conditioned stimulus-response (1). **Look for other reasonable marking points.**	**(4)**

Question Number	Indicative content	Mark
7	**AO1 (4 marks), AO2 (4 marks)** For example: Key Question: Is anorexia nervosa caused by nurture factors? AO1 • Anorexia nervosa is classified as an intense fear of being over weight or becoming fat. • Anorexia nervosa treatment costs the NHS money so if we understand how it is caused then we can aim to put in place intervention to save money. • In 2006, it was reported that the female model Luizel Ramos died of a heart attack brought on by her anorexia whilst participating in Fashion Week in Montevideo, Uruguay. • Anorexia has long term implications for a sufferers such as disruption to mentrual cycle, tiredness and physical pain. AO2 • Operant conditioning suggests that anorexic role models and celebrities are reinforced through the positive coverage in magazines they get for the way they look therefore increasing their anorexic behaviour. • Secondary reinforcers could be offered as part of a token economy programme to encourage patients to follow healthy eating habits. • Bandura's research can explain the impact Ramos has in that we are influenced by role models who are the same gender as us, so young girls might be influenced by the anorexic behaviour of female models like Ramos. • The psychodynamic explanation for anorexia nervosa would suggest that it is a reaction to a fixation from an early developmental stage that prevents the child from growing up such as disruption to menstrual cycle through not eating. **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)

Question Number	Indicative content	Mark
8	**AO1 (4 marks), AO2 (4 marks), AO3 (4 marks)** **AO1** • Operant conditioning suggests that the consequence of a behaviour can be encouraged or discouraged. • Positive reinforcement takes place when something desired is introduced following a behaviour. • Testosterone is a male hormone which may increase competitive behaviour leading to aggressive behavour. • If cortisol levels are too low then inhibition is lowered leading to aggressive behaviour. **AO2** • Alik and Joshua are positively encouraged through praise and money by their parents for doing well in school and in their sports competitions. • Alik was rewarded with pleasant positive attention from the female spectators for winning the race. • Joshua is a teenage boy who has increased levels of testosterone due to puberty so may account for aggressive competitive behaviour towards his brother. • Joshua became more aggressive as his cortisol levels may have been too low to inhibit his behaviour towards his brother when he pushed him over. **AO3** • Skinner (1948) using positive reinforcement in his "Skinner Box" studies found that he could get animals to press a level for the consequence of a food pellet. • Some operant conditioning research on positive reinforcement was carried out on animals which may not be representative of humans as animal brains are qualitatively different. • Dabbs et al (1987) measured male prisoners involved in crime and found they had higher levels of testosterone, suggesting a link between aggression and testosterone changes. • Research into cortisol and aggressive behaviour is correlational so does not show causation. **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)