Mark schemes

Q1.

[AO1 = 6 AO3 = 10]

Level	Marks	Description
4	13-16	Knowledge of genetic factors in aggression is accurate and generally well detailed. Discussion is thorough and effective. Minor detail and/or expansion of argument is sometimes lacking. The answer is clear, coherent and focused. Specialist terminology is used effectively.
3	9-12	Knowledge of genetic factors in aggression is evident but there are occasional inaccuracies/omissions. Discussion is mostly effective. The answer is mostly clear and organised but occasionally lacks focus. Specialist terminology is used appropriately.
2	5-8	Limited knowledge of genetic factors in aggression is present. Focus is mainly on description. Any discussion is of limited effectiveness. The answer lacks clarity, accuracy and organisation in places. Specialist terminology is used inappropriately on occasions.
1	1-4	Knowledge of genetic factors in aggression is very limited. Discussion is limited, poorly focused or absent. The answer as a whole lacks clarity, has many inaccuracies and is poorly organised. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible content:

- role of the monoamine oxidase A (MAOA) gene – mice with the gene were more aggressive
- low-activity form (MAOA-L) is a shortened version which produces low levels of the enzyme leading to excess neurotransmitter levels – linked to higher levels of aggression (Brunner, 1993)
- MAOA gene controls enzyme that breaks down neurotransmitters dopamine, noradrenaline and serotonin – increased levels of serotonin lead to impulsivity
- genetic studies, eg selective breeding – selecting for aggressive traits leads to an increase in aggression in animals
- evolutionary explanation – aggression as an adaptive behaviour
- twin studies show higher concordance for certain types of aggression in MZ pairs than DZ pairs (Coccaro, 1997); adoption studies indicate a significant genetic element (Rhee and Waldman, 2002).

Possible discussion:

- use of evidence to support/counter the influence of genetic factors
- evaluation of evidence where linked to the discussion, eg extrapolation from animal studies; problems of twin studies

- discussion of the possible evolutionary advantages of an 'aggressive gene'
- interactionism/diathesis-stress – genetic predisposition can be triggered by childhood trauma or in specific situations only
- reductionism – oversimplifies a complex anti-social behaviour
- determinism – if aggression is biologically determined then there is no free will to choose how we behave
- moral and practical implications: for the justice system and who is to blame; for rehabilitation and the possibility of change.

Credit other relevant material.

[16]

Q2.

[AO1 = 6 AO3 = 10]

Level	Mark	Description
4	13-16	Knowledge of **one or more** biological explanations for human aggression is accurate and generally well detailed. Evaluation is thorough and effective. Minor detail and/or expansion of argument is sometimes lacking. The answer is clear, coherent and focused. Specialist terminology is used effectively.
3	9-12	Knowledge of **one or more** biological explanations for human aggression is evident but there are occasional inaccuracies/omissions. Evaluation is mostly effective. The answer is mostly clear and organised but occasionally lacks focus. Specialist terminology is used appropriately.
2	5-8	Limited knowledge of **one or more** biological explanations for human aggression is present. Focus is mainly on description. Any evaluation is of limited effectiveness. The answer lacks clarity, accuracy and organisation in places. Specialist terminology is used inappropriately on occasions.
1	1-4	Knowledge of **one or more** biological explanations for human aggression is very limited. Evaluation is limited, poorly focused or absent. The answer as a whole lacks clarity, has many inaccuracies and is poorly organised. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible content:

- faulty MAOA gene leading to higher than usual levels of serotonin; evidence from disabling the MAOA gene on the X chromosome in mice
- role of serotonin in inhibiting amygdala activity – low levels of serotonin linked to aggression
- selective breeding studies and twin studies indicate that aggression can be inherited, passed on through DNA
- Y chromosome and role of testosterone (an androgen) secreted by the testes
- neural mechanisms, eg limbic system – role of the hypothalamus (ventromedial nuclei) and amygdala; orbitofrontal cortex and impulse

control.

Possible evaluation:

- use of evidence to support/contradict biological explanation(s)
- problems with some evidence, eg based on animal studies so might not tell us much about human aggression
- problems demonstrating cause and effect – altered biological functioning may be a consequence of aggressive behaviour rather than a cause
- links to approaches, eg aggression may have evolved as it is evolutionarily advantageous
- implications of biological explanation(s), eg moral responsibility and behaviour change
- evaluation in relation to broader issues, eg determinism, reductionism, gene-environment interaction etc
- comparison with alternative explanations, eg social psychological explanations.

Credit other relevant material.

[16]

Q3.

[AO1 = 6]

Level	Mark	Description
3	5-6	Description is clear, accurate and detailed. Specialist terminology is used effectively.
2	3-4	Description is mostly clear but lacks detail in places. There is some appropriate use of specialist terminology.
1	1-2	Description is limited/muddled. The answer lacks clarity and accuracy. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible content:

- limbic system, particularly the hypothalamus and amygdala, is responsible for aggressive behaviour
- fMRI scans show heightened amygdala activity during aggressive response
- stimulation of the amygdala can increase/decrease aggression response
- frontal cortex moderates the expression of aggression – reduced serotonin activity in the prefrontal cortex is related to reduced self-control/disinhibition
- lower levels of 5-HIAA (by-product of serotonin breakdown) are found in impulsive/poorly controlled offenders
- testosterone may mediate the activity of the amygdala and/or the orbitofrontal cortex.

Credit other relevant material

[6]