Mark schemes

Q1.

[AO1 = 6 AO3 = 10]

Level	Marks	Description
4	13-16	Knowledge of the role of chromosomes and hormones in sex and gender 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 the role of chromosomes and hormones in sex and gender 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 the role of chromosomes and hormones in sex and gender 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. **OR** one aspect at L3/4.
1	1-4	Knowledge of the role of chromosomes and hormones in sex and gender 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. **OR** one aspect at L1/2.
	0	No relevant content.

Possible content:

- typical chromosome pattern for 23rd pair is XY in males and XX in females
- the Y chromosome houses the SRY gene – this determines the development of the testes, which produce testosterone
- testosterone determines male sexual characteristics and has been linked to aggression in animal studies (Van de Poll, 1988)
- oestrogen affects female sexual characteristics and menstruation and has been linked to emotional behaviour as in pre-menstrual syndrome
- oxytocin – higher levels in females – thought to influence several sex differences in behaviour, eg responses to stress (Taylor, 2000), nurturing behaviour, trust (Zak, 2011)
- testosterone may be responsible for increased size of an area of the hypothalamus in males – sexually dimorphic nucleus (SDN)
- possible role of hormones in gender dysphoria – Paterski (2014)

- atypical chromosome patterns for 23rd pair include XO (Turner's syndrome) and XXY (Klinefelter's syndrome)
- Turner's syndrome occurs in females missing an X chromosome and generally includes the following effects: good language/reading skills, shorter than usual stature, no breast development, infertility
- Klinefelter's syndrome occurs in males with an extra X chromosome and generally includes the following effects: difficulty reading and writing, tendency to emotional upset, passivity, lack of facial hair, extra height, small testes.

Possible discussion:

- use of evidence to support/contradict the effects of chromosomes and hormones on sex and gender, eg Young (1966) – male hormones given to female rats led to change in behaviour; Berenbaum and Bailey (2003) – individuals with congenital adrenal hyperplasia (CAH) have higher than usual testosterone and females with CAH show increased aggression and 'tomboy' behaviour; Hines 2014 – CAH individuals show increased cross-gender behaviours; Paterski (2014) – possible role of hormones in gender dysphoria; Insel (2001) oxytocin promotes pair-bonding in prairie voles; van Goozen (1995) – effects of opposite sex hormones on aggression and visuo-spatial skills; case study evidence, eg David Reimer and the Batista family
- problems with some evidence – small samples, use of non-human animals
- hard determinism – strong emphasis on role of chromosomes sees gender as fixed and binary from birth whereas gender might be viewed as a continuum
- social sensitivity – misuse of gender research
- reductionism – oversimplifies gender to say that gender-related behaviour is simply due to biological structures and chemicals
- comparison with alternative explanations for gender-related behaviours, eg social learning theory view of gender as a social construct
- cross-cultural evidence challenging the existence of two genders.

Credit other relevant material.

[16]

Q2.

[AO1 = 4]

Level	Mark	Description
2	3-4	Description of the role of chromosomes in sex and gender is clear, accurate and detailed, showing sound understanding. The answer is coherent with appropriate use of specialist terminology.
1	1-2	Description of the role of chromosomes in sex and gender is limited/muddled. Detail is lacking, there is some misunderstanding or lack of clarity. Use of specialist terminology is either absent or inappropriate.
	0	No relevant content.

Possible content:

- usual sex chromosome patterns for 23rd pair are XY for males and XX for females
- chromosome pattern determines levels of various hormones
- SRY gene on Y chromosome confers male sexual characteristics (eg development of testes) through production of androgens, especially testosterone
- in XX pattern, female sexual development is governed primarily by oestrogen
- brain sex is also governed by chromosomes and hormones – difference in size of sexually dimorphic nucleus in the hypothalamus between males and females
- atypical patterns include XXY – male with Klinefelter's syndrome and XO – female with Turner's syndrome
- indirect effects on gender eg gender roles, stereotyping etc

Credit other relevant material.

[4]