

## Biological Approach – Mark Scheme

### Q1.

(a) [AO1 = 1]

Genotype: refers to the genes an individual possesses / an individual's genetic make-up.

(b) [AO1 = 1]

Phenotype: refers to the observable traits or characteristics shown by the individual; these traits / characteristics are due to the combined effect of genes and environment.

### Q2.

[AO2 = 4]

Level	Marks	Description
2	3 – 4	Explanation is clear and coherent, showing sound understanding of genotype and phenotype/environmental factor. The material is applied appropriately. There is effective use of terminology.
1	1 – 2	The explanation shows some understanding of genotype and phenotype/environmental factor. Application is not always appropriate. The answer lacks clarity and coherence. Use of terminology is either absent or inappropriate.
	0	No relevant content.

#### Possible content:

- the genetic test reveals the genotype not the phenotype
- John's genotype will only reveal his set of genes (not their interaction with the environment)
- a genetic test will only reveal if he is predisposed to suffering Alzheimer's disease but will not reveal whether he will develop/suffer from the disorder
- environmental factors may contribute to the disorder (it depends on an interaction between inherited factors and the environment).

Credit other relevant material.

Note: merely defining genotype and/or phenotype is not creditworthy.

**Q3.**

[AO2 = 4]

Level	Marks	Description
2	3 – 4	Understanding of genotype and phenotype applied to the data is clear. The answer is generally coherent with effective use of terminology.
1	1 – 2	There is limited/partial understanding genotype and phenotype applied to the data. The answer may lack coherence. Use of terminology may be either absent or inappropriate. Or – only genotype or phenotype has been applied. Or 1 mark for basic understanding of genotype AND phenotype.
	0	No relevant content.

**Possible Content:**

- The genotype for tooth decay is the same for all the twin pairs as they are all MZ/identical so for each pair their teeth would be expected to decay in exactly the same way.
- The fact that some twin pairs have different decay to each other (52) indicates their phenotypes differ and something other than genes affected tooth decay e.g. diet/brushing teeth.

Expect to find this content embedded in the application.

**Q4.**

[AO2 = 4]

Level	Marks	Description
2	3 – 4	Knowledge of genotype and phenotype is clear. Explanation of how these affect personality is clear. The answer is generally coherent with effective use of terminology.
1	1 – 2	There is limited / partial knowledge and explanation. Knowledge is clear but the explanation is missing or inaccurate. The answer lacks accuracy and detail. Use of terminology is either absent or inappropriate.
	0	No relevant content.

**Possible Content:**

- Holly and Rita have identical genotype as they are MZ twins.
- They have the predisposition to develop the same personalities as each other unless another factor(s) intervenes.
- For them to have developed different personalities over time, this must have been influenced by being in different environments.

- Their phenotypes – personalities achieved – are different, presumably because Rita was encouraged to be sociable and lively and Holly was not.

**Q5.**

[AO1 = 6 AO3 = 10]

Level	Mark	Description
4	13-16	Knowledge of the behaviourist approach is accurate and generally well detailed. Comparison with the biological approach 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 behaviourist approach is evident but there are occasional inaccuracies / omissions. Comparison with the biological approach 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 behaviourist approach is present. Focus is mainly on description. Any comparison with the biological approach 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 the behaviourist approach is very limited. Comparison with the biological approach 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 - outline:**

- basic assumptions of the behaviourist approach
- the concept / theory of classical conditioning
- Pavlov's research
- the concept / theory of operant conditioning
- Skinner's research.

**Possible comparisons:**

- focus on environmental causes and experience vs focus on internal influences (nature vs nurture). Discussion of the interactionist approach
- approaches to treatment (e.g. flooding vs drug therapy)
- use of scientific methods
- the issue of determinism
- the issue of reductionism
- use of animal experiments and extrapolation

- contrasting implications (e.g. blame, responsibility and social stigma).

Note - Use of topic examples to illustrate and elaborate on comparison points should be credited.

Credit other relevant information.

**[16]**