



ASSESSMENT and  
QUALIFICATIONS  
ALLIANCE

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# Mark scheme January 2004

## GCE

### Biology B

### Unit BYB8/A

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### Guidance on the award of the mark for Quality of Written Communication

Quality of Written Communication assessment requires candidates to:

- select and use a form and style of writing appropriate to purpose and complex subject matter;
- organise relevant information clearly and coherently, using specialist vocabulary when appropriate; and
- ensure text is legible, and spelling, grammar and punctuation are accurate, so that meaning is clear.

For a candidate to be awarded 1 mark for quality of written communication on the question identified as assessing QWC in a unit test, the minimum acceptable standard of performance should be:

- the longer parts (worth 4 marks or more) should be structured in a reasonably logical way, appropriate and relevant to the question asked;
- ideas and concepts should be explained sufficiently clearly to be readily understood. Continuous prose should be used and sentences should be generally be complete and constructed grammatically. However, minor errors of punctuation or style should not disqualify;
- appropriate AS/A level terminology should be used. Candidates should not use such phrases as ‘fighting disease’, ‘messages passing along nerves’, ‘enzymes being killed’ etc, but a single lapse would not necessarily disqualify. Technical terms should be spelled correctly, especially where confusion might occur, e.g. mitosis/meiosis, glycogen/glucagon.

The Quality of Written Communication mark is intended as a recognition of competence in written English. Award of the mark should be based on overall impression of performance on the question identified on the paper as assessing QWC. Perfection is not required, and typical slips resulting from exam pressure such as ‘of’ for ‘off’ should not be penalised. Good performance in one area may outweigh poorer performance in another. Care should be taken not to disqualify candidates whose lack of knowledge relating to certain parts of a question hampers their ability to write a clear and coherent answer; in such cases positive achievement on other questions might still be creditworthy. No allowance should be made in the award of this mark for candidates who appear to suffer from dyslexia or for whom English is a second language. Other procedures will be used by the Board for such candidates.

Examiners should record 1 or 0 at the end of the paper in the Quality of Written Communication lozenge. This mark should then be transferred to the designated box on the cover of the script.

**Question 1**

- (a) innate – inborn/genetically determined/present at birth, learned – acquired during lifetime;  
innate – cannot be modified, learned – can be modified by experience;  
innate – same for all members of species, learned – different in individuals; 2 max
- (b) (i) classical conditioning; 1
- (ii) bell rung same time as/short time before food given;  
repeated many times; 2
- Total 5
- 

**Question 2**

- (a) villi/microvilli provide large area for transfer;  
trophoblast/chorion/placental membrane forms barrier to pathogens / blood of different pressures/groups;  
chorion/placental membrane produces progesterone/oestrogen;  
thin barrier between maternal and fetal blood / breakdown of maternal capillary walls / formation of blood lacuna produces short diffusion pathway;  
countercurrent blood flow maintains diffusion gradient;  
(two descriptions only without explanation allow one mark) 2 max
- (b) (i) blood for placenta; 1
- (ii) extra iron/protein needed to make haemoglobin/red blood cells  
(accept prevent anaemia); 1
- (c) amniotic fluid; 1
- Total 5
- 

**Question 3**

- (a) (i) growth hormone; 1
- (ii) oestrogen; 1
- (b) (i) 16.0 years; 1
- (ii) 13.5 years; 1

- (c) role of environment/example of environmental effect e.g. diet;  
polygenes;  
random assortment/independent assortment;  
random fertilisation;  
crossing over;  
mutation; 3 max
- Total 7
- 

**Question 4**

- (a) (i) A – high proportion of young, decreasing proportion  
in successively older groups / low proportion of older people;  
B – approximately same proportion of all age groups;  
(*must have pattern i.e. refer to whole age range*) 2
- (ii) a large base to pyramid/high proportion of young /high birth rate; 1
- (b) birth rate and death rate;  
emigration and immigration; 2
- Total 5
- 

**Question 5**

- (a) (i) smoking increases risk and the effect increases as plasma  
cholesterol increases/is higher at high plasma cholesterol;  
smoking increases risk and the effect is greater at high blood  
pressure; 2
- (ii) cholesterol/fatty tissue deposited in lining/wall of arteries;  
formation of plaques/blood clots;  
which obstruct blood flow; 2 max
- (b) noradrenaline produced by SNS;  
stimulates SAN;  
increase in heart rate/cardiac output;  
blood pressure increases;  
increased risk of cerebrovascular accident/stroke;  
increased risk of blood clot/thrombosis; 4 max
- Total 8
-

**Question 6**

- (a) ovulation;  
development/maintenance of corpus luteum;  
stimulates release of progesterone; 1 max
- (b) (i) amino and carboxyl groups;  
sulphur/sulphide bonds;  
across/spans whole membrane; 2 max
- (ii) specific shape;  
which is complementary to hormone shape;  
(*max one mark if reference to active site*) 2
- (c) (i) testosterone released / produced;  
important for maintenance of secondary sexual characteristics /  
sex drive/named characteristic; 2
- (ii) digested;  
by proteases/named protease (in stomach/intestine); 2
- Total 9
- 

**Question 7**

- (a) fewer territories in December;  
more single sex territories in December; 1 max
- related to food availability in winter/spring;  
migration of most females;  
breeding in spring; 1 max
- (b) species recognition;  
pair bond formation;  
indicates fitness;  
synchronisation of breeding behaviour;  
reduces normal aggression; 3 max
- (c) other robins have same niche;  
competition from other robins;  
for food;  
nesting sites;  
mates; 3 max

- (d) birds with low aggression less likely to pair bond/mate;  
less likely to obtain territory;  
and pass on alleles/genes to offspring;  
birds with high aggression expend too much energy in aggressive  
behaviour;  
only those with average aggression obtain territories/breed;  
so no change in frequency of aggression genes in population; 3 max

Total 11

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