



ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Mark scheme

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GCE

Biology B

Unit BYB8

Section A

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Question 1

- | | | |
|---------|---|-------|
| (a) | Changes in physiological function;
degeneration of tissue;
malfunction of the immune system;
two examples of the above;; | 2 max |
| (b) (i) | 0.9% per year | 2 |
| (ii) | Idea of effects only when numbers fall below critical number. | 1 |
| | Total | 5 |
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Question 2

- | | | |
|-----|---|-------|
| (a) | E.g. species recognition;
pair bonding;
for female mate selection/display against other males;
ref to fitness (in reproductive sense);
to bring female into breeding state/allow approach | 2 max |
| (b) | Visual stimulus;
affecting innate releaser mechanism(s) in female/ releases
innate response/ leads to modification of behaviour of opposite
sex. | 2 |
| (c) | (if) Number of 'eye spots' is genetically determined;
mutations produce new alleles/genes for more spots;
males with (alleles for) more spots more likely to breed
and pass these on/ greater fitness;
leading to an increase in these alleles/genes in the population. | 3 max |
| | Total | 7 |
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Question 3

- | | | |
|---------|--|-------|
| (a) (i) | X Rest of the body, because two main growth spurts.
Y Reproductive organs, grow from puberty; | 2 |
| (b) | Stimulates protein synthesis/growth of (skeletal) muscle;
stimulates cell division;
stimulates growth of (limb) bones;
affects epiphyses. | 2 max |
| (c) (i) | Different target cells have different receptors, binding
to different gene(s)/ locus. | 1 |
| (ii) | Each gene has its own locus/position on DNA;
complex binding leads to transcription;
mRNA (enzyme produced);
translation at ribosome. | 3 max |
| | Total | 8 |
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Question 4

- | | | |
|---------|--|-------|
| (a) | Light receptors/rods/cones in the eye detect stimulus;
send nerve impulses along sensory neurones/optic nerve;
to the coordinator/CNS;
nerve impulses sent to effectors/muscles opening
nerve impulses sent to effectors/muscles opening | 3 max |
| (b) (i) | Operant conditioning;
because it depends on actions by the pigeon/ description
of the process. | 2 |
| (ii) | Pigeon makes beak/eye movements appropriate to food or
water;
but food/water not visible. | 2 |
| | Total | 7 |
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Question 5

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|---------|--|-------|
| (a) (i) | Atheroma -build up of fat/cholesterol <u>in</u> the wall of an artery. | 1 |
| (ii) | Infarction – death/damage of part of the heart muscle. | 1 |
| (b) | E.g. diet with high cholesterol/saturated fat content. | 1 |
| (c) | Rate of respiration of heart muscle increases during exercise;
atheroma reduces oxygen supply to <u>heart</u> muscle;
muscle carries out a lot of anaerobic respiration which
produces lactate;
lactate produced not easily removed. | 3 max |
| (d) | Dye stops X-rays/shows where narrowing is. | 1 |
| | Total | 7 |
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Question 6

- (a) Inhibits secretion of FSH/LH;
preventing ripening of other follicles/ovulation;
prevents menstruation;
maintains/develops uterine lining/endometrium;
inhibits uterine contraction;
stimulates development of milk glands;
inhibits prolactin/milk production;
reduction at end of pregnancy (a factor) in birth;
thickens mucus plug in cervix. 3 max
- (b) (i) Fetal haemoglobin has greater affinity for/binds more readily to oxygen;
at same ppO_2 /concentration of oxygen, fetal has higher saturation;
correct use of figures from graph (% and pp);
maintains diffusion gradient across placenta. 2 max
- (ii) leads to different/changed binding site for oxygen/different strength of binding; 2
- (c) Mitochondrion;
(site of) respiration providing energy/ATP for active transport. 2
- Total 9
-

Question 7

- (a) (i) E.g. better food supply, so fewer deaths by starvation;
clean water supply, so less disease transmission. 2 max
- (ii) Curve rising rapidly and then falling. 1
- (b) E.g. narrowing at base of age pyramid;
increasing percentage of older people; 1 max
- (c) E.g. predation on other species/eat more of other species;
inter-specific competition/disruption of food chain;
destruction of habitat/damage by pollution;
niche not present;
competition for named abiotic resource; 3
- Total 7
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