

Edexcel International
London Examinations
GCE

O level Biology (7040)
Mark Scheme for Specimen Papers
Paper 1

Symbols used in the Mark Scheme

- ; indicates separate mark points
- / indicates alternatives
- eq allow for correct equivalent
- word underlined means no alternatives allowed

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1. (a) A stomach;
B pancreas;
C large intestine / colon / bowel; (3)
- (b) digestion;
absorption; (2)
- (c) maintains bulk / retains moisture / aids peristalsis / moves
food along gut / prevents constipation; (1)
- (d) peristalsis; (1)
- (Total 7 marks)**

2. (a) A pulmonary artery;
B vena cava;
C pulmonary vein;
D aorta; (4)
- (b) B less oxygen / de-oxygenated blood / C more oxygen /
oxygenated blood / B more carbon dioxide /
C less carbon dioxide (1)
- (c) heart rate / pulse rate increases / heart pumps faster / cardiac
output increases / pumps more blood / stroke volume increases;
more oxygen / glucose to muscles / faster delivery of oxygen;
more (aerobic) respiration;
more energy (released);
(‘more’ must appear once to get last points) (3)
- (d) blood mixes (between) (left and right ventricles)
some *de-oxygenated blood* pumped from heart /
sent to muscles;
less oxygen for (aerobic) respiration;
less energy / tires quickly / fatigues quickly / eg; (3)
- (Total 11 marks)**

3. (a) (i) *paramecium*;
daphnia;
may fly larvae;
midge larvae;
rotifers; (max 2)

(ii) rotifers;
daphnia;
midge larvae; (1)

(b) chlorella → paramecium → rotifers → carnivorous water beetles;
chlorella → paramecium → midge larvae → carnivorous water beetles;
chlorella → paramecium → midge larvae → newts
chlorella → paramecium → rotifers → daphnia

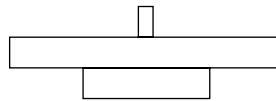
Notes: If not 4 stages but including Paramecium 1 maximum.
If no arrows 1 maximum.

Must start with producer or 1 maximum. (2)

(c) (i) increased; (1)

(ii) increased; (1)

(d) correct order;
correct size;



(2)

(Total 9 marks)

4. (a) W = vitreous humour;
 X = cornea;
 Y = retina;
 Z = optic / optical nerve; (4)
- (b) (i) biuret / sodium hydroxide / NaOH + copper sulphate /
 CuSO₄;
 (alkali + copper sulphate)
 purple / violet / mauve;
 or
 Millon's; red; (2)
- (ii) prevent / stop the bending / refraction / transmission of
 light / eq;
 stops focussing / unclear image / accommodation;
 retina / fovea;
 (any two – 1 mark each) (2)
- (c) (i) pancreas; (1)
 (ii) diffusion;
 high concentration to low concentration / eq; (2)
 (iii) osmosis; (1)
- (d) clear / transparent / eq;
 long lasting / eq;
 not rejected / no immune response / eq;
 flexible / elastic / can stretch;
 impermeable / waterproof;
 able to refract light; (not: curved to refract light) (2)
 (any 2 – 1 mark each)
- (Total 14 marks)**

5. (a) different alleles;
dominant + recessive / Aa; (2)
- (b) (i) codominance; (1)
(ii) $C^R C^R$; $C^W C^W$; (2)
(iii) C^R ; C^W ; (2)
(iv) $C^R C^W$; (1)
- (c) $C^R C^W \times C^R C^W$;
 C^R or C^W C^R or C^W ;
 $C^R C^R$ $C^R C^W$ $C^R C^W$ $C^W C^W$;
Red roan roan white; (4)
(ratio must be linked to phenotypes)
- (Total 12 marks)**

6. (a)

Substance	Reason needed
amino acids;	protein synthesis / protoplasm;
minerals / salts / named mineral;	suitable requirement;
growth hormone;	stimulates growth;
carbohydrates / named carbohydrates;	energy source;

(do not allow carbon dioxide, oxygen, vitamins and proteins)

(max 4)

- (b) (i) asexual / vegetative / artificial propagation; (1)
(ii) (the clones) would be genetically identical to each other while sexual reproduction would be genetically varied; (the clones) would be genetically identical to parent while sexual reproduction would be genetically varied (2)
- (c) many produced / quicker / maintain desired features / maintains rare plants; (1)
- (Total 8 marks)**

7. (a) meat / eq; cell growth / repair;
cheese / eq; energy store;
red meat / eq; red blood cells / haemoglobin; **(6)**
- (b) vitamin C / eq;
scurvy / eq; **(2)**
- (c) (i) heart disease;
diabetes;
certain cancers;
high blood pressure; **(max 2)**
- (ii) reducing calorie intake / taking more exercise; **(1)**
(Total 11 marks)
8. (a) A ureter; **(1)**
B bladder; **(1)**
C urethra; **(1)**
- (b) (i) urea;
uric acid;
creatinine;
salt / salts / mineral salts / named salt;
ammonia / ammonium chloride;
water; **(max 3)**
- (ii) glucose;
proteins / amino acids / haemoglobin / antibodies;
fat / fat derivatives (fatty acids / glycerol);
(Reject: blood cells, platelets, plasma, hormones,
vitamins) **(2)**
- (c) (i) osmoregulation / reabsorption / homeostasis; **(1)**
(ii) anti-diuretic hormone ADH; **(1)**
(iii) less water reabsorbed;
more dilute / more urine / more liquid / more water;
more dilute / higher water concentration / lower
concentration of urea / salts / ammonia; **(max 2)**
(Total 12 marks)

9. (a) bacterium; (1)
- (b) (i) water borne / food borne; (1)
(ii) supply of clean and safe drinking water;
hygienic disposal of faeces;
hygienic preparation of food; (max 2)
- (c) (i) patient may succumb to other disease;
opportunistic infection;
cancer / pneumonia / tuberculosis; (max 2)
(ii) attacks white blood cells involved in immune
response; (1)
(iii) disease is deadly once caught;
education can prevent infection;
virus can quickly change;
difficult to tell who is infected; (max 2)
- (Total 9 marks)**
10. (a) (i) sheep A / udder cell; (1)
(ii) it is diploid / not diploid / contains more /
twice the DNA / contains different DNA / genes; (1)
(iii) sheep A; (1)
- (b) uses surrogate mother; / does not need sperm; eq; (max 2)
- (c) can be used to produce useful chemicals / eq;
produce many / that are the same / animals with
desired characteristics / eq; (2)
- (Total 7 marks)**

TOTAL FOR PAPER: 100 MARKS

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