

Coordination and Response

Mark Scheme

Level	IGCSE
Subject	Biology
Exam Board	CIE
Topic	Coordination and Response
Sub-Topic	
Paper Type	Alternative to Practical
Booklet	Mark Scheme

Time Allowed: 42 minutes

Score: /35

Percentage: /100

- 1 (a) **A** axes – orientation and labels y-axis temperature °C and x-axis time in minutes;
S scale – even scale to fill over ½ the printed grid; [*check plots*]
[R inverted scale]
K suitable key or lines labelled;
L line joining point to point by ruler;
(not: curve/line of best fit/free-hand/extrapolation)
P allow +/- 1mm, lose 1 P per error;
P;

If a histogram, award **A** and **K** marks only.

[max 5]

(ii)

Flask	Explan	End points °C	Difference °C	Decrease °C
A v B	A loses more heat/cools quicker or converse for B	45 and 60	15	25 and 10 or A 2.5 x B
B v C	C loses more heat/cools quicker or converse for B	40 and 60	20	30 and 10 or C 3 x B
C v A	C loses more heat/cools quicker or converse for A	40 and 45	5	30 and 25 or use of figures

1 mark per row for **figures**. All figure columns are alternatives.
1 mark only for all 3 trends given correctly. [*explanation column*]

[max 3]

(iii)

- (dry) cotton wool/flask **B** – link to insulation;
- traps (warm) air or heat/does not let heat escape/keeps heat in;
- wet cotton wool/flask **C** – link to evaporation;
- latent heat/evaporation takes heat;
- (no cover on **A**) – loss of heat by radiation;

[max 3]

(b) (i)

- same size containers/same (shape) apparatus;
- thermometers similar range/suspended in same position/did not touch glass;
- same volume/amount of water;
- start at same temperature/70 °C;
- readings at same time intervals/AW;
- lids (the same);

[max 3]

(ii)

- same (external) conditions/surrounded by shield/prevent draughts;
- equal cotton wool for B and C;
- repeats/calculate the average;
- more frequent readings (not continuing for longer time);
- more accurate/digital thermometer;
- stirring water/heat evenly distributed;
- use of stop clock/own watch;

AVP;

[max 2]

[Total: 16]

2 (a) (i) shoot tip curved upwards towards light;
leaves expanded;
stem wider and longer;
credit use of figures;

[max: 2]

(ii) root bending downwards into soil/sand;
side roots developing;
roots longer and wider;
larger surface area with side roots;
credit use of figures;

[max: 2]

(b) 1 phototropism;
2 geotropism;
3 positive or negative (in context);
4 growth;
5 mitosis;
6 leaf / cell enlargement;
7 differentiation into xylem or phloem;
8 photosynthesis;
9 respiration;
10 auxins;
11 AVP;

[max: 6]

[total: 10]

- 3 (a) (i) red blood cell / erythrocyte;
white blood cell / leucocyte / lymphocyte / phagocyte;;
platelet / thrombocyte; [MAX 3]
- (ii) white blood cells / AW;
plasma / tissue fluid; [2]
- (b) 5 +/- 0.5mm; [1]
- (ii) working measurement from (i); ecf
800
correct answer with units; (*accept units wherever mentioned*)
 $4.5/800 = 0.005625$ or 5.625×10^{-3} or round to 0.0056 or 5.6×10^{-3}
 $5/800 = 0.00625$ or 6.25×10^{-3} or round to 0.006 or 6×10^{-3}
 $5.5/800 = 0.006875$ or 6.875×10^{-3} or round to 0.007 or 7×10^{-3} [2]
- (iii) to carry oxygen / oxyhaemoglobin; [1]

[Total: 9]