

MARK SCHEME for the October/November 2008 question paper

5090 BIOLOGY

5090/03

Paper 3 (Practical Test), maximum raw mark 40

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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- 1 Table 1.1 completed realistically to 10 min ;
alternating correctly;
starting (of both) and final air temperatures recorded, with units; [3]
- (a) (i) Graph marks:
1. axes labelled 'time/min' & 'temp/°C'
[N.B. correct origin for y-axis]
2. orientation (x – horizontal), suitable size (> 6 × 6 cm) and scale
[at least 1 cm between curves]
3. plots clear and accurate
4. both curves well done (ruled or best fit curve)
5. curves distinguished and identified [5]
- (ii) still diverging;
(both) levelling out/constant/reduced gradient;
(both) decreasing;
B always above **A**; [max 2]
- (b) (i) evaporation;
latent heat;
(heat) from cup/water; [max 2]
- (ii) (sweat) glands (secrete sweat);
evaporation takes heat/causes cooling;
cooling skin/blood/body; [max 2]
- (iii) variable sweating/receptor control AW;
ref. constant body temperature;
ref. vasodilation/ref. hair; [max 2]
- (c) three from:
replicate;
stir contents (with thermometer);
lid with hole allowing it to remain in place;
2 thermometers;
qualified wetting (time, volume, etc.);
equal volumes of water;
qualified more cups;
OVP e.g. constant environment/no draught; [3]
- [Total: 19]**
- 2 (a) (i) drawing marks:
1. at least 5 cm realistic, clear and clean
2. tri-partite, (good proportions)
3. vascular bundles shown in skin [3]
- (ii) drawing marks:
2–5 rows of vascular bundles
inner bundles larger
indication of vessels/staining [3]

| | | | |
|---------------|--|-----------------|--------------|
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(iii) clearly shown where measured;
 both dimensions clear, units once at least;
 correct expression for calculation;
 correctly expressed; [4]
 up to 2 d.p. rounded up/down no more than 0.2

(b) (i) two from: fruit wall/pericarp/epicarp;
 tripartite/other division/placentas;
 vascular tissue/veins; [2]

(ii) in Table 2.1 three from:

| | |
|---|---|
| W1 | W2 |
| wide/thick closer/more/rows of vascular bundles yellow/pale green angular/rough/ridged OVP; | thin/narrow; single layer/few vascular bundles; dark and light green etc.; smooth; |

[3]

(iii) in Table 2.2 two from:

| | |
|--|--|
| W1 | W2 |
| no/small seeds firm/fleshy/dry brown seeds OVP; | seeds present/large; succulent/moist/jelly, etc.; green/white seeds; |

[2]

(c) bananas of different age/same banana ageing;
 apply iodine test;
 colour lessens AW; [R: blue]
 apply Benedict's test;
 more positive result/green – yellow – red, later/when riper;
 verifies the hypothesis;
 ref. uniform samples/test reagents;
 replicates; [max 4]

[Total: 21]