

## 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.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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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:
- |                                      |                                    |
|--------------------------------------|------------------------------------|
| <b>W1</b>                            | <b>W2</b>                          |
| wide/thick                           | thin/narrow;                       |
| closer/more/rows of vascular bundles | single layer/few vascular bundles; |
| yellow/pale green                    | dark and light green etc.;         |
| angular/rough/ridged                 | smooth; [3]                        |
| OVP;                                 |                                    |
- (iii) in Table 2.2 two from:
- |                 |                              |
|-----------------|------------------------------|
| <b>W1</b>       | <b>W2</b>                    |
| no/small seeds  | seeds present/large;         |
| firm/fleshy/dry | succulent/moist/jelly, etc.; |
| brown seeds     | green/white seeds; [2]       |
| OVP;            |                              |
- (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]**