

NOVEMBER 2001

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK : 60

SYLLABUS/COMPONENT : 0654/6

**CO-ORDINATED SCIENCE
(ALTERNATIVE TO PRACTICAL)**



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- 1 (a) model B has a larger surface area than A [1]
- (b) A 51 B 46 [2]
- (c) (i) $80 - 51 = 29$
- (ii) $80 - 46 = 34$ [2]
- (d) (i) B
- (ii) long thin shape loses energy faster OWTTE
- (iii) heat loss goes with surface area OWTTE
(credit reference to radiation or conduction) [3]
- (e) they will cool until steady (room) temp is reached [1]
- (f) respiration [1]
- [Total 10]**
- 2 (a) (i) correct normal drawn [1]
- (ii) correct angle marked [1]
- (iii) 35° e.c.f. [1]
- (iv) angles of incidence and reflection equal [1]
- (b) (i) all rays meeting at focus [1]
- (ii) focal length marked [1]
- (iii) 50 mm e.c.f. [1]
- (c) ray refracted on entering and leaving, through opposite face of block (1)
refraction towards normal and parallel with incident ray on leaving (1) [2]
- [Total 9]**
- 3 (a) insoluble metal hydroxide formed / transition metal / iron present, Fe(II) NOT Fe(III) [1]
- (b) ammonia [1]
- (c) solid formed from a solution OWTTE [1]
- (d) sulphate (ions) present [1]
- (e) chloride (ions) present (NOT chlorine) [1]
- (f) one of Cl^- , SO_4^{2-} , Fe^{2+} , NH_4^+ (allow Fe^{3+}) [1]
- (g) weighed sample (1)
heat gently (1)
until no further weight loss (1)
reweigh (1)
 $\frac{\text{mass at first}}{\text{mass after heating}} \times 100$ (1)
(allow this formula including volume instead of mass)
- (ANY 4 points including the last one) [4]
- [Total 10]**

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- 4 (a) 2.7, 4.1 N correctly read [2]
- (b) points plotted, (-1 for each mistake) (2)
best fit line NOT passing through the origin (1) [3]
- (c) force needed increased with weight / linear / (proportional) [1]
- (d) y-intercept gives force for slider alone OWTTE
(or comment that slider has mass therefore force needed) [1]
- (e) y and x dimensions of slope indicated on the graph (1)
correct calculation y/x (1) [2]
- (f) insert thermometer into hole bored in slider to take temperature at first and at end or some means of monitoring temperature (1)
pull slider along surface for stated time or distance (1) [2]

[Total 11]

- 5 (a) (i) A = blue-black / blue / black
B = blue-black / blue / black [2]
- (ii) starch molecules cannot pass through walls (1)
but iodine molecules can do so (1) OWTTE [2]
- (b) (i) blood [1]
- (ii) to make molecules small enough to pass through the wall of the intestine OWTTE [1]
- (c) (i) C stayed blue / no change
D went red / orange / green / yellow (singly or any combination) [2]
- (ii) (to see if) the glucose had moved out of the visking tubing into the water [1]
- (iii) no, they are already small enough to pass through the walls of the tubing / intestine [1]

[Total 10]

- 6 (a) (i) oxygen (1)
- (ii) nitrogen / argon / neon / other noble gas(1) [2]
- (b) syringe B 84 cm^3
syringe C 79.5 cm^3 [2]
- (c) 1 breathed out air has less oxygen (1) greater volume left in syringe (1)
2 breathed out air has more CO_2 (1) greater decrease in volume when passed through soda-lime (1)
(OWTTE any order) [4]
- (d) oxygen is absorbed and carbon dioxide given out (1)
suitable reference to volumes shown in the experiment (1) [2]

[Total 10]