

**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**

International General Certificate of Secondary Education

**MARK SCHEME for the June 2005 question paper**

**0654 CO-ORDINATED SCIENCES**

**0654/02**

**Paper 2 Core (Theory), maximum raw mark 100**

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

- CIE will not enter into discussion or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the June 2005 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



**Grade thresholds** for Syllabus 0654 (Co-ordinated Sciences) in the June 2005 examination.

	maximum mark available	minimum mark required for grade:			
		AA	CC	EE	FF
Component 2	100	N/A	50	32	24

The threshold (minimum mark) for DD is set halfway between those for Grades CC and EE.  
The threshold (minimum mark) for GG is set as many marks below the FF threshold as the EE threshold is above it.

June 2005

IGCSE

MARK SCHEME

MAXIMUM MARK: 100

SYLLABUS/COMPONENT: 0654/02

CO-ORDINATED SCIENCES  
Paper 1 Core (Theory)



Page 1	Mark Scheme	Syllabus	Paper
	IGCSE – June 2005	0654	2

1	(a)	(i)	hydrogen;	[1]
		(ii)	R (most) Q S (least);	[1]
		(iii)	increase in temperature of reactants/tube feels warm/owtte;	[1]
	(b)	(i)	water;	[1]
		(ii)	two electrodes dipping into electrolyte; electrodes connected across voltmeter;	[2]
		(iii)	reacts with water/it will dissolve/is very reactive;	[1]
2	(a)	(i)	as force increases length of wool fibre increases; proportionally/owtte;	[2]
		(ii)	breaks/will not return to normal length/loses elasticity/ past elastic limit	[1]
	(b)	traps air; acts as insulator; less convection/less heat loss by radiation;	[max 2]	
	(c)	genes; environment; <u>or</u> two environmental factors e.g. temperature/climate; food/diet;	[2]	
	(d)	(i)	scaly;	
		(ii)	no covering/smooth/moisture;	[2]
3	(a)	(i)	B no mark mass/weight ratio = 10/owtte;	[1]
		(ii)	A and D;	[1]
		(iii)	C no mark has least mass;	[1]
	(b)	particles; vibrate;	[2]	
	(c)	time = distance/speed; = 400 000/300 000 = 1.33 seconds;	[2]	
4	(a)	violet and green;	[1]	
	(b)	would not contain manganese oxide; would not contain iron oxide; reference to avoiding transition metal compounds/ transition metal compounds impart the colour;	[3]	
	(c)	B; reference to giant structure or description/B shows a compound; reference to random arrangement of atoms;	[3]	

- (d) (i) oxygen; [1]  
(ii) sulphur dioxide is formed;  
sulphur dioxide harmful to humans;  
amount of sulphur dioxide must be kept as low as possible; [max: 2]
- 5 (a) **A** stamen/anther; [3]  
**B** ovary/ovule;  
**C** petal;
- (b) insects attracted by petals/scent;  
visits flower to obtain nectar;  
picks up pollen;  
from anthers;  
deposits it on stigma; [max: 3]
- (c) (i) photosynthesis; [1]  
(ii) absorbs sunlight;  
which is used to make carbon dioxide and water react;  
energy transferred to  
sugar/glucose/starch/carbohydrates; [max: 2]
- (d) (i) plant/flower → bee → bee eater  
organisms in correct order;  
arrows drawn pointing the right way; [2]  
(ii) bees and bee eaters; [1]

6 (a) (i)

	<b>using wind</b>	<b>using nuclear</b>
<b>advantage</b>	no pollution/ saves fossil fuels/ renewable	no air pollution/ one nuclear power station provides lots of energy
<b>disadvantage</b>	need lots of turbines/ damages landscapes/ noisy/ no use without wind	waste needs safe disposal/ radioactive waste harms people/ waste needs safe disposal

- ;;; [4]  
(ii) fossil fuels are running out/causing pollution; [1]
- (b) (i) transformers; [1]  
(ii) to reduce heat/energy losses; [1]
- 7 (a) protein to chicken and fat to butter;  
protein to making new cells and fat to providing  
new energy; [2]
- (b) (i) liver; [1]  
(ii) by kidneys;  
detail of how they work e.g. filtration from blood;  
(excreted in) urine; [2]

Page 3	Mark Scheme	Syllabus	Paper
	IGCSE – June 2005	0654	2

8	(a)	light can pass through/you can see through	[1]	
	(b)	contain the same elements/covalent; different numbers of atoms one more atom of oxygen in the peroxide/peroxide molecule larger/heavier;	[2]	
	(c)	(i)	glowing splint; relights;	[2]
		(ii)	1.0g/the same; catalyst is not used up/owtte;	[2]
	(d)	add detergent to water; use a non-aqueous solvent;	[2]	
9	(a)	(i)	not a complete circuit/no connection between cell and lamp;	[1]
		(ii)	ampere;	[1]
	(b)	(i)	ammeter in series; voltmeter in parallel; rest of circuit correct;	[3]
		(ii)	$R = V/I$ ; evidence of working; = 1 ohm;	[3]
		(iii)	$0.4 \times 0.4 = 0.16$ ;	[1]
(iv)		0.16;	[1]	
10	(a)	cannot be created nor destroyed; always converted into another form;	[2]	
	(b)	energy initially used to make the particles move faster; at boiling point energy used to separate particles/overcome forces of attraction	[2]	
	(c)	water is a good conductor of electricity; danger of electric shock/electrocution;	[2]	
	(d)	smaller volume; means more collisions with walls of container; more collisions with wall means more pressure;	[2]	
11	(a)	electrolyte; anode;	[2]	
	(b)	solution becomes alkaline; sodium hydroxide produced;	[2]	
	(c)	(i)	five;	[1]
		(ii)	five;	[1]
(iii)		seven;	[1]	
(iv)		neutron;	[1]	

Page 4	Mark Scheme	Syllabus	Paper
	IGCSE – June 2005	0654	2

- 12 (a) (i) protects the brain; [1]  
(ii) cartilage softer; [1]  
(iii) any named synovial joint e.g. elbow, knee;  
reduced friction/provides smooth surface;  
or  
in nose/ear;  
support with flexibility; [2]
- (b) (i) chewing/grinding; [2]  
increase surface area of food;  
(ii) food more likely to stay on them;  
because they have uneven surface;  
bacteria feed on the food/bacteria produce acids; [max: 2]