

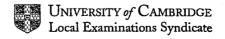
## **NOVEMBER 2002**

## **INTERNATIONAL GCSE**

## MARK SCHEME

**MAXIMUM MARK: 100** 

SYLLABUS/COMPONENT: 0654/2
CO-ORDINATED SCIENCES
(CORE)



Page 1	Mark Scheme	Syllabus	Paper	
	IGCSE Examinations – November 2002	0654	2	

1(a)	the community / all the living things; + the habitat / all the non-living things;	2
(b)(i)	blackjack/cotton plant ▶ aphid ▶ ladybird ▶ pied wagtail;	1
(ii)	cotton plant/blackjack;	1
(c)(i)	sunlight; photosynthesis/description of photosynthesis;	2
(ii)	jackal eats rabbit; energy is (stored) in food / chemical energy;	2
(iii)	black shouldered kite; energy lost along food chains / kite is at end of food chain;	2
2(a)	gravity downwards in both; tension upwards in fig C;	2
(b)	stage B; greatest velocity so greatest KE;	2
(c)	straight line; through origin;	2
3(a)	B; A; D;	3
(b)(i)	formed over a very long time scale; from once living material;	2
(ii)	biogas contains carbon dioxide (as well as methane); carbon dioxide does not burn / less combustible material in biogas so less heat evolved / owtte;	2
<b>(c)</b> <sub>1</sub> = 1	reference to (large chain) molecules made of repeating units / monomers; which soften / melt when heated / can be repeatedly remoulded by heating	; 2

Page 2	Mark Scheme	Syllabus	Paper
	IGCSE Examinations – November 2002	0654	2

	4(a)(i)	radicle; cotyledon	2
	(ii)	ovule;	1
·	(b)(i)	warm temperature needed; light not needed;	2
	(ii)	greener/more starch; because more chlorophyll/photosynthesis;	•
		leaning towards light; positive phototropism / plant shoots grow towards the light;	MAX2
	5 (a)(i)	250 MJ;	1
	(ii)	lost as (waste) heat/sound etc;	1
	(iii)	100MW;	1
	(b)(i) (ii)	cleaner/less pollution; fossil fuels have other uses apart from burning; fossil fuels are running out/non renewable; source; description;	MAX 2
	(c)(i)	transformer;	. 1
	(ii)	reduce energy losses;	1
	6(a)(i)	29; 48; 29;	4
		29; 1;	

Page 3	Mark Scheme	Syllabus	Paper
:	IGCSE Examinations – November 2002	0654	2

	IGCSE Examinations - November 2002 0034 2	
(b)(i)	transition;	1
(ii)	reference to physical differences e.g. copper has higher fixed points / harder / stronger reference to chemical properties copper less reactive / forms coloured compounds / acts as catalyst; MAX	1
(c)(i)	→ copper + carbon dioxide / monoxide;	1
(ii)	reference to mass of oxygen lost /copper oxide has the mass of oxygen in it copper does not / owtte;	1
7(a)(i)	vibrate more/faster /have more KE; particles move further apart;	2
(ii)	particles vibrate more at hot end; KE /energy passed by collision from one particle to the next;	2
(b)	strong attractive force between atoms	1
(c)	400 J/kg/°C; doesn't depend on mass;	2
(d) .	energy supplied used to weaken bonds; to allow particles to separate;	2
8(a)	cell membrane; controls what goes in and out of the cell;	2
(b)(i)	line to nucleus;	1
(ii)	sperm will fuse with/fertilise egg; to restore 46 chromosomes;	2
(iii)	genetic material / genes; instructions for making proteins/determine characteristics of cell;	2

Page 4	Mark Scheme	Syllabus	Paper
	IGCSE Examinations – November 2002	0654	2

(c)(i)	testes;	1
(ii)	controls puberty in males/any correct stated secondary sexual characteristic;	1
Seemen Land Control		is in infilte webser
9(a)	paper; ceramics;	
	steel; glass;	. 4
(b)(i)	atoms of <u>different</u> elements bonded in compound not in mixture/ elements retain properties in mixture and not in compound/	
	mixture has variable composition compound has formula/ often easier to separate elements in mixture;	1
(ii)	increase pressure; reduce temperature;	2
(iii)	components have different boiling points;	1
(c)(i)	speeds up reaction;	1
(ii)	nitrogen molecules very stable / unreactive / held by strong bonds;	1
10(a)	100W;	1
(b)	less resistance(brighter bulb/more current);	1
(c)	electrical;	
	into heat; and light;	3
(d)	name; use;	2

Page 5	Mark Scheme	Syllabus	Paper	
	IGCSE Examinations – November 2002	0654	2	

11(a)(	i) iodine (solution);		1
(ii)	starch present inside tubing but not outside; starch molecules too big to get through membrane;		2
(iii)	glucose present inside tubing and outside; glucose <u>diffuses</u> through membrane;	·	2
(b)	breaks down/digests starch; to maltose;	•	2
12(a)(i)	7;	· ·	1
(ii)	pH increases; potassium hydroxide neutralises the acid;		
	temperature increases; because the reaction is exothermic / gives out heat (energy);	. 4	4
(iii)	→ potassium chloride; + water;	2	2
(b)	bubbles / effervescence; reaction produces carbon dioxide;		2