Tenepak

## CAMBRIDGE INTERNATIONS

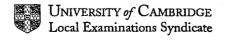
## **NOVEMBER 2002**

## INTERNATIONAL GCSE

## WARKSCHEME

**MAXIMUM MARK: 100** 

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



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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
(c),	reference to (large chain) molecules made of repeating units / monomers; which soften / melt when heated / can be repeatedly remoulded by heating	; 2

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<ul><li>(ii) ovule;</li><li>(b)(i) warm temperature needed;</li></ul>	1
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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
<ul> <li>(b)(i) cleaner/less pollution;</li> <li>fossil fuels have other uses apart from burning;</li> <li>fossil fuels are running out/non renewable;</li> <li>(ii) source;</li> <li>description;</li> </ul>	MAX 2 2
(c)(i) transformer;	1
(ii) reduce energy losses;	1
6(a)(i) 29; 48; 29; 1;	4

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(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;	
<i>0(a)</i>	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
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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)	<b>7;</b>	1
(ii)	pH increases; potassium hydroxide neutralises the acid;	
	temperature increases; because the reaction is exothermic / gives out heat (energy);	 4
(iii)	→ potassium chloride; + water;	2
(b)	bubbles / effervescence; reaction produces carbon dioxide;	2