OCR
RECOGNISING ACHIEVEMENT

GCSE

Applied Science (Double Award)

General Certificate of Secondary Education **GCSE 1497**

Mark Schemes for the Units

June 2006

1497/MS/R/06

Oxford Cambridge and RSA Examinations

OCR (Oxford, Cambridge and RSA Examinations) is a unitary awarding body, established by the University of Cambridge Local Examinations Syndicate and the RSA Examinations Board in January 1998. OCR provides a full range of GCSE, A level, GNVQ, Key Skills and other qualifications for schools and colleges in the United Kingdom, including those previously provided by MEG and OCEAC. It is also responsible for developing new syllabuses to meet national requirements and the needs of students and teachers.

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

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 should be read in conjunction with the published question papers and the Report on the Examination.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annersley
NOTTINGHAM
NG15 0DL

Telephone: 0870 870 6622
Facsimile: 0870 870 6621
E-mail: publications@ocr.org.uk

CONTENTS

General Certificate of Secondary Education

GCSE Applied Science (Double Award) 1497

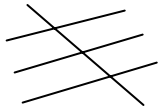
MARK SCHEMES FOR THE UNITS

Mark Scheme 4882/01
June 2006

Qn	Expected Answers	Marks	Additional Guidance
1 a	cotton – plant; leather animal; nylon – artificial; wool – animal;	1 1 1 1	
1 b i	any 2 from: membrane; nucleus; cytoplasm;	2 max	3 = 2 2 or 1 = 1
1 b ii	any 2 from: vacuole; chloroplast; (cell) wall;	2 max	3 = 2 2 or 1 = 1
1 c i	A; because it will allow air to circulate / allows sweat or heat to escape;	1 1	
1 c ii	C; because tight mesh / has no or tiny holes / water cannot get through;	1 1	
	Total	**12**	

Qn	Expected Answers	Marks	Additional Guidance
2 a	polythene;	1	
2 b i	HDPE does not melt or go soft / LDPE does melt or go soft; correct ref to boiling point of water; stronger; shape does not change;	2 max	ACCEPT 2 reasons or one reason and one explanation
2 b ii	flexible; stretchy;	1 1	
2 b iii	carbon;	1	
2 c i	made from two or more (different) materials / mixture;	1	difference is implied or stated
2 c ii	idea of improved properties; stronger / tougher / harder ; idea of combined properties;	2 max	NEUTRAL = lighter / flexible
	Total	**9**	

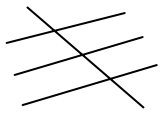
Qn	Expected Answers	Marks	Additional Guidance
3 a	(0)29156(.1) (0)2836(.8);	 1	ACCEPT .11 ALLOW 2837 both needed
3 b i	kilo watts / 1000 W hour;	1	REJECT per
3 b ii	548 1106;	 1	both needed for 1 mark
3 b iii	use more during night / less during day; because it's cheaper; turn off lights / appliances; turn off standby;	2 max	ACCEPT energy saving measures e.g. insulation / double glazing. plus consequence REJECT plug sockets
3 c	500 x 6; 3000; 30 = 3 marks;	3 max	
3 d	iron;	1	
3 e	power = voltage x current / P=VI; 8.6 X 230; 1978;	1 1 1	 ACCEPT words or symbols NOT power = volts x amps
	Total	**12**	

Qn	Expected Answers	Marks	Additional Guidance
4 a i	melting point; above 20^{o}C / above daytime temp; daytime temp below 113^{0}C;	2 max	REJECT BPt ORA does not melt below 113^{o}C =2
4 a ii	melting point below 200 ^{o}C; boiling point is above 200 ^{o}C;	1 1	ORA It's in between MPt & BPt = 2 identifies both MPt & Bpt allow 1
4 a iii	8:	1	
4 b	element; non-metal;	1 1	all 4 correct =3
4 c		3	3 or 2 correct =2 1 correct =1
4 d i	oxygen; sulphur dioxide; O_2;	1 1 1	
4 d ii	thorax;	1	
	Total	**14**	

Qn	Expected Answers	Marks	Additional Guidance
5 a	both increase; industrialised countries increase faster; industrialised countries start use earlier; developing countries steady increase; industrialised use more land / more crops;	1 1 max	
5 b	D left of B; B left of A; A left of C;	1 1 1	DBAC = 3
5 c	benefit; neither; risk; benefit;	1 1 1 1	
5 d	interfering with nature / playing God;;	1	ACCEPT not natural
	Total	**10**	

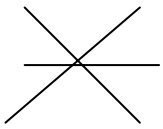
Qn	Expected Answers	Marks	Additional Guidance
6 a i		2	3 correct = 2 2 or 1 correct = 1
6 a ii	further away idea; energy spreads out / OWTTE; metal / lamp heated by conduction; glass by radiation / convection; metal heats up more easily / quickly than glass;	2 max	
6 b	insulate; names of material e.g. polystyrene; trapped air in insulation keeps in heat; cover with lid; stops hot air rising / convection; use reflective material / foil; heat reflected back into tank;	3 max	
6 c	90%;; OR 180 over x = 1 mark;	2 max	ecf 10% scores (1)
6 d	less energy input used; lower electricity bill / cheaper to run (in long run); longer lifetime; less heat output / less energy wasted; more (energy) efficient;	3 max	
6 e	doesn't give of enough heat;	1	
	Total	**13**	
	Paper total	**70**	

Mark Scheme 4882/02
June 2006

Qn	Expected Answers	Marks	Additional Guidance
1 a i	melting point; above 20^{o}C / above daytime temp; daytime temp below 113^{0}C;	2 max	REJECT BPt ORA does not melt below 113^{o}C =2
1 a ii	melting point below 200 ^{o}C; boiling point is above 200 ^{o}C;	1 1	ORA It's in between MPt & BPt = 2 identifies both MPt & Bpt allow 1
1 a iii	8:	1	
1 b	element; non-metal;	1 1	all 4 correct =3
1 c		3	3 or 2 correct =2 1 correct =1
1 d i	sulphur + oxygen → sulphur dioxide; $S + O_2$; SO_2 ;	1 1 1	
1 d ii	thorax;	1	
	Total	**14**	

Qn	Expected Answers	Marks	Additional Guidance
2 a	both increase; industrialised countries increase faster; industrialised countries start use earlier; developing countries steady increase; industrialised use more land / more crops;	1 1 max	
2 b	D left of B; B left of A; A left of C;	1 1 1	DBAC = 3
2 c	benefit; neither; risk; benefit;	1 1 1 1	
2 d	Interfering with nature / playing God;;	1	ACCEPT not natural
	Total	**10**	

Qn	Expected Answers	Marks	Additional Guidance
3 a i		2	3 correct = 2 2 or 1 correct = 1
3 a ii	further away idea; energy spreads out / OWTTE; metal / lamp heated by conduction; glass by radiation / convection; metal heats up more easily / quickly than glass;	2 max	
3 b	insulate; names of material e.g. polystyrene; trapped air in insulation keeps in heat; cover with lid; stops hot air rising / convection; use reflective material / foil; heat reflected back into tank;	3 max	
3 c	90%;; OR 180 over x = 1 mark;	2 max	ecf 10% scores (1)
3 d	less energy input used; ACCEPT lower w / power lower electricity bill / cheaper to run (in long run); longer lifetime; less heat output / less energy wasted; more (energy) efficient;	3 max	
3 e	doesn't give of enough heat;	1	
	Total	**13**	

Qn	Expected Answers	Marks	Additional Guidance
4 a i	(natural) gas; coal; oil;	any 2	
4 a ii	water is heated / boiled; to make steam;	2	
4 b		2	all 3 correct = 2 1 correct = 1
4 c	both good conductors; clear statement: Cu better conductor than Al; Al less dense than Cu; links density to use overhead;	any 3	discussion of melting point - list principle, max 2.
4 d i	mixture (of metals)	1	
4 d ii	stronger / improved properties	1	NOT better conductor IGNORE mix of properties
	Total	**11**	

Qn	Expected Answers	Marks	Additional Guidance
5 a	(red cells) carry oxygen; haemoglobin in red cells; to body (cells); for respiration; respiration produces energy;	any 3	
5 b i	white blood cell / nucleus; red blood cell; platelet	3	
5 b ii	X in the plasma	1	
5 b iii	white cell has nucleus / red cell has haemoglobin;	1	ORA
5 c	insulin, tablets insulin, injections; control / reduce sugar in diet; lowering / stabilising <u>blood</u> sugar levels	3	ALLOW treating with insulin = 1 mark
	Total	**11**	

Qn	Expected Answers	Marks	Additional Guidance
6 a i	aerosol; liquid and gas identified; correct way round;	3	
6 a ii	solution	1	
6 b i	two bonding electrons only circled.	1	
6 b ii	covalent	1	
6 b iii	H with 1; C with 4 electrons; Cl with 7;	3	
6 c	H_2;	1	
6 d	quality control ideas	1	
	Total	**11**	

General Certificate of Secondary Education

Applied Science (Double Award) 1497

June 2006 Assessment Series

Unit Threshold Marks

Unit		Max Mark	a*	a	b	c	d	e	f	g	Total Number of Candidates
4881	Raw	50	45	41	37	33	27	21	15	9	9095
	UMS	100	90	80	70	60	50	40	20	30	
4882/1	Raw	70	-	-	-	45	36	27	18	9	6207
	UMS	69	-	-	-	60	50	40	20	30	
4882/2	Raw	70	58	50	42	34	20	13	-	-	1841
	UMS	100	90	80	70	60	50	40	-	-	
4883	Raw	50	47	42	37	33	27	21	16	11	9786
	UMS	100	90	80	70	60	50	40	20	30	

Specification Aggregation Results

Overall threshold marks in UMS (i.e. after conversion of raw marks to uniform marks)

	Max Mark	A*A*	AA	BB	CC	DD	EE	FF	GG
1497	300	270	240	210	180	150	120	90	60

The cumulative percentage of candidates awarded each grade was as follows:

	A*A*	AA	BB	CC	DD	EE	FF	GG	Total Number of Candidates
1497	0.2	2.0	10.3	38.1	62.9	81.9	93.7	98.9	9817

For a description of how UMS marks are calculated see:
www.ocr.org.uk/OCR/WebSite/docroot/understand/ums.jsp

Statistics are correct at the time of publication.

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Information Bureau

(General Qualifications)
Telephone: 01223 553998
Facsimile: 01223 552627
Email: helpdesk@ocr.org.uk

www.ocr.org.uk

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

Oxford Cambridge and RSA Examinations
is a Company Limited by Guarantee
Registered in England
Registered Office; 1 Hills Road, Cambridge, CB1 2EU
Registered Company Number: 3484466
OCR is an exempt Charity

OCR (Oxford Cambridge and RSA Examinations)
Head office
Telephone: 01223 552552
Facsimile: 01223 552553