

Mark Scheme for June 2011

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, OCR Nationals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support which keep pace with the changing needs of today's society.

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.

© OCR 2011

Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL











Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk




Annotations

Used in the detailed Mark Scheme:

Annotation	Meaning
/	alternative and acceptable answers for the same marking point
(1)	separates marking points
not/reject	answers which are not worthy of credit
ignore	statements which are irrelevant - applies to neutral answers
allow/accept	answers that can be accepted
(words)	words which are not essential to gain credit
<u>words</u>	underlined words must be present in answer to score a mark
ecf	error carried forward
AW/owtte	credit alternative wording / or words to that effect
ORA	or reverse argument

Available in scoris to annotate scripts:

	indicate uncertainty or ambiguity
	benefit of doubt
	contradiction
	incorrect response
	error carried forward
	draw attention to particular part of candidate's response
	draw attention to particular part of candidate's response
	draw attention to particular part of candidate's response
	no benefit of doubt
	reject

	correct response
	draw attention to particular part of candidate's response
	information omitted

Subject-specific Marking Instructions

- a. Accept any clear, unambiguous response (including mis-spellings of scientific terms if they are *phonetically* correct, but always check the guidance column for exclusions).
- b. If a candidate alters his/her response, examiners should accept the alteration.
- c. Crossed out answers should be considered only if no other response has been made. When marking crossed out responses, accept correct answers which are clear and unambiguous.
- d. The list principle:
If a list of responses greater than the number requested is given, work through the list from the beginning. Award one mark for each correct response, ignore any neutral response, and deduct one mark for any incorrect response, e.g. one which has an error of science. If the number of incorrect responses is equal to or greater than the number of correct responses, no marks are awarded. A neutral response is correct but irrelevant to the question.

Question			Answer	Mark	Guidance
1	a	i*	organic food not better (based on nutrient content)	1	"it's no better"
		ii*	diet already contains phosphorus (1)	1	
	b	i*	any two from: used at low level (1); test/approved/assessed before use (1); legal limits applied (1); levels on food monitored after use (1); not considered a risk to health/ is safe(1); break down rapidly (1)	2	'tested to be safe' = (2) (2 nd & 5 th marking points)
		ii	The risk is not known / you cannot be certain that the chemical residues in non-organic food will not harm you (1); best to avoid these chemicals as much as you can (1)	2	"There's a chance it could harm you" is OK for the 1st mark 'it is better to be safe than sorry' gets the 2nd mark 'reduce pesticide intake' is not enough: 'avoid' must be stated or implied
	c		any two from: many people could no longer afford the higher price of organic produce (1); because of the recession/money market collapse/high unemployment (1); food agencies report no benefit of organic food/ people became aware that pesticides in non-organic food were not harmful (1); bad summers / lower yields (1)	2	This question is about consumers . Watch for answers to (d) appearing here! e.g. 'people had less money in 2008/2009' is 1 st marking point 2 nd point is a suggested reason for lack of money e.g. climate change but must be explained
	d		any two from: organic methods produce lower yields/will be eaten by pests (1); not enough manure/compost (1); expensive process (1); organic farming is more labour intensive/time consuming (1)	2	This question is about farmers . Watch for answers to (c) appearing here! Will not be enough food to go around/ need more land

Question			Answer	Mark	Guidance
1	e	i	Best estimate obtained from mean = sum of (appropriate) values divided by number of values (1); Identifies that 19.1 is an outlier/leaves that value out (1)	2	Can get one mark for all 6 data added and divided by 6 even if wrong data set is used; NOT (sum of all values including the best estimate)/7 For both marks, need $(20.2+20.0+19.8+19.9+19.7)/5 = 19.9$ Correct median calculation <u>of all 6</u> = $19.8-19.9 = 19.85 \approx 19.9$ gets both marks No marks for use of mode '19.9 is the commonest value' as it confuses two sample sets.
		ii	mean for organically grown tomatoes lies within range for intensively grown tomatoes or other way round	1	'the ranges overlap' is not enough
			Total	[13]	
2	a*		$100 \times 107/280$ (1); = 38% (1)	2	Bald 38%/38.2% gets both marks (387-280) for 107 is OK no e.c.f. from wrong substitution ignore excessive precision e.g. 38.214%.
	b		Adverse consequence of global warming (1); associated reason for severity (1). Mark both answer spaces together, and award marks if 'consequence' is given in 'reason' space.	2	Climate change alone is insufficient e.g. flooding people displaced/land lost crops don't grow in some places loss of income/famine sea level rise people displaced/land lost ice caps melt Sea levels rise / floods permafrost / ice caps melt More methane released

Question			Answer	Mark	Guidance
2	c	i*	these gases absorb/trap (infrared) radiation/heat (1) from the Earth (1)	2	ignore references to ozone ignore reference to long/short wavelength radiations unless the answer tackles absorption and re-radiation.
		ii	Any plausible consequence of increase in water vapour (1); Correct explanation of consequence (1)	2	A consequence with a wrong explanation still gets the consequence mark. 'Water vapour is also a greenhouse gas' is 2 nd marking point Allow other approaches, e.g 'more rain/storms✓ causing floods✓', 'less rain/drought causing desert spread', gets both marks. 2 independent consequences/explanations may gain two marks if two predictions attempted.
	d		a single result can be questioned/could be wrong/check findings (1) ; replication increases confidence/makes the results more reliable (1); Alaska findings could be unique/due to particular local circumstances/check if it's the same elsewhere (1)	2	'Fair test' without explanation gets no marks
	e		Any two of: advantages: prevents escape of CH ₄ , a greenhouse gas (more powerful than CO ₂) (1); asset for local people for heating/lighting/transport/etc. (1); reduce dependence on fossil fuel (1); disadvantages: CH ₄ produces CO ₂ /greenhouse gas when burnt (1); need to develop method of collecting over wide area (1); difficulty of collection/storage/distribution to a dispersed population (1); pipes etc. will damage environment (1) QWC: one advantage and one disadvantage given (1)	3	Please annotate this question with ticks. Not just 'can be used as fuel' without qualification QWC mark (considering both sides of the argument) is awarded if both sides are given, even if not correct
	f		Top layer gets colder in winter making permafrost colder (1)	1	must refer to 'cold penetrating' owtte through top layer into permafrost. 'snow is an insulator' is not enough without the idea that its removal allows the permafrost to become colder in the winter.
Total				[14]	

Question		Answer	Mark	Guidance
3	a	any two from: pump doesn't provide enough blood (per second) (1); wrong amount of oxygen/glucose supplied by pump (1); CO ₂ /urea/waste products not removed effectively by pump (1); potential to cause blood clots/other possible damage caused by invasive system (1)	2	e.g. 'not enough blood to brain'/'insufficient pressure in blood supply' etc. If HL machine blamed for reduced brain function, need to have a suggested effect e.g. pressure, introducing contaminants
	b	(during the five year period/in this time) brain function of people changes irrespective of age at surgery (1)	1	This question is not about age related brain ability. There is a difference <u>even after you take account of</u> the fact that they are 5 years older so e.g. 'brain function decreases with age' does not get the mark (as age 5-10 years should increase)
	c*	any two from: no control group/ did not include patients having surgery but not on HL machine (1); only included patients on HL machine (during surgery) (1); did not include patients with heart disease but no surgery (1); sample too small/ only 261 in study (1)	2	
	d*	42% of 152/correct alternative method; (1) 63.84 (1)	2	Bald 63/64/63.8 gets both marks Alternative method could be repeated division and then addition, 40% + 2%
	e i	any one from: no coronary heart disease = 69 (1); heart surgery without using the HL machine = 75 (1); no surgical treatment = 99 (1);	1	Need number + description. "Examined 326 with disease and 69 without" scores zero according to list principle, marking instruction d.
	ii	any one from: (if 69) to see if the symptoms were due to CHD; (if 75) to see if the symptoms were due to the HLM; (if 99) to see if the symptoms were due to the surgery;	1	Must follow from answer to (e)(i)
	f	healthy patients could die as a result of surgery (1); patients with heart disease could die without surgery (1)	2	any mention of ethical concern gets (1) 'make sure it's safe' is not enough to tackle the issues

Question		Answer	Mark	Guidance
3	g	any one from: Limited range/size/number of people to study (1); many ill people available for study in hospital (1); difficulty of finding enough volunteers without CHD (1); must wait to find patients as they present symptoms (1);	1	type of treatment given depended on the needs of patients, not to meet the requirements of the study (1);
	h	Age/other identified factor e.g. Alzheimer's, traumatic injury, disease, genetic predisposition (1)	1	
		Total	[13]	
		Paper Total	[40]	

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

OCR Customer Contact Centre

14 – 19 Qualifications (General)

Telephone: 01223 553998

Facsimile: 01223 552627

Email: general.qualifications@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