GCSE

Science A

General Certificate of Secondary Education

Unit **A214/01:** Unit 4: Ideas in Context (Foundation Tier)

Mark Scheme for June 2012

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	alternative wording
ORA	or reverse argument

Available in scoris to annotate scripts

?	indicate uncertainty or ambiguity
BOD	benefit of doubt
CON	contradiction
✖	incorrect response
ECF	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
NBOD	no benefit of doubt
R	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.   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.

e.g. for a one-mark question where ticks in the third and fourth boxes are required for the mark:

This would be worth   *This would be worth*   *This would be worth*
1 mark.   *0 marks.*   *1 mark.*

c.   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.

d.   Marking method for tick-box questions:

If there is a set of boxes, some of which should be ticked and others left empty, then judge the entire set of boxes.
If there is at least one tick, ignore crosses and other markings. If there are no ticks, accept clear, unambiguous indications, e.g. shading or crosses. Credit should be given according to the instructions given in the guidance column for the question. If more boxes are ticked than there are correct answers, then deduct one mark for each additional tick. Candidates cannot score less than zero marks.

e.g. if a question requires candidates to identify cities in England:

Edinburgh

Manchester

Paris

Southampton

the second and fourth boxes should have ticks (or other clear indication of choice) and the first and third <u>should be blank</u> (or have indication of choice crossed out).

Edinburgh			✓			✓	✓	✓	✓	
Manchester	✓	✗	✓	✓	✓				✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	✗		✓		✓	✓		✓	
Score:	**2**	**2**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**NR**

e.   For answers marked by levels of response:
      i.   **Read through the whole answer from start to finish**
      ii.   **Decide the level** that **best fits** the answer – match the quality of the answer to the closest level descriptor
      iii.   **To determine the mark within the level**, consider the following:

Descriptor	Award mark
A good match to the level descriptor	The higher mark in the level
Just matches the level descriptor	The lower mark in the level

      iv.   Use the **L1**, **L2**, **L3** annotations in Scoris to show your decision; do not use ticks.

Quality of Written Communication skills assessed in 6-mark extended writing questions include:
- appropriate use of correct scientific terms
- spelling, punctuation and grammar
- developing a structured, persuasive argument
- selecting and using evidence to support an argument
- considering different sides of a debate in a balanced way
- logical sequencing.

Question			Answer	Marks	Guidance
1	(a)	(i)	*any two from*: asthma ; (1) (lung) cancer ; (1) cardiovascular disease ; (1)	1	**two** needed for the mark **ignore** coronary disease
		(ii)	small (1) they can penetrate the deepest part of the lungs (1)	2	
	(b)		*any two from:* burn in limited air supply / incomplete combustion ; (1) not all carbon forms carbon dioxide ; (1) produces soot / carbon (particulates) ; (1)	2	**accept** smoke **reject** particulates on its own without carbon
	(c)		idea that particulates coat / settle / land on glaciers / ice(1) particulates absorb heat / solar radiation / light (from sun) (1) (ice) melts (1)	3	
	(d)		particulate / PM_{10} (concentration) (number of) deaths (1)	1	**ignore** hospital admissions
	(e)	(i)	3 (1) 6 (1)	2	one mark each one mark lost for each additional day
		(ii)	taking **more** measurements (1) calculate a mean/average (1)	2	
			Total	**13**	

Question			Answer	Marks	Guidance
2	(a)	(i)	instructions / job / code /information (1) to make proteins (1)	2	
		(ii)	*any one from*: to find what alleles/genes were present ; (1) check for genetic diseases / illnesses ; (1)	1	**accept** idea of working out the order / position of genes **accept** idea of looking for genetic mistakes
	(b)	(i)	*any two from:* whether or not to have children ; (1) effect on his family / others ; (1) planning for the future ; (1) financial implications ; (1) employment implications ; (1) social implications ; (1) how to prevent it / get treatment ; (1) should he change his lifestyle ; (1)	2	**accept** realistic life choices e.g. going on world cruise, telling his family **ignore** he will die suddenly "he needs to **deal** with the information" is not sufficient to score. e.g. diet / exercise / be healthy
		(ii)	it may be possible (in the future) to replace faulty genes / alleles / cure him / get treatment / save him / prevent (1)	1	**ignore** reduces risk of disease
	(c)	(i)	Peter (1)	1	
		(ii)	Mary (1)	1	
		(iii)	*any two from:* Mike Peter Mary	1	**two** needed for the mark

Question			Answer	Marks	Guidance
	(d)		one statement for and one against (1) *then any two from:* idea of not being ethical / God ; (1) not natural / against nature ; (1) idea of helping people ; (1) planning for the future ; (1) reliability of tests (false positives false negatives) ; (1) whether or not to have children ; (1) idea of freedom of information ; (1) getting insurance ; (1) getting a job ; (1) idea of storing all the extra information generated ; (1) cost of procedure ; (1)	3	QWC mark is for presenting conflicting points of view **ignore** stress arguments **ignore** not want to know
	(e)		*any two from:* idea that the risk is only a possibility ; (1) genes not switched on/off ; (1) they have different genes ; (1) effect of environmental factors / different lifestyles ; (1)	2	**ignore** any reference to dominant and recessive **allow** idea genes interact to produce different phenotypes **allow** any epigenetic ideas **allow** treatment as an example of lifestyle factors
			Total	**14**	

Question			Answer	Marks	Guidance
3	(a)		*any two from:* tail ; (1) not a point /blurry/smudge ; (1) appears to move ; (1)	2	**allow** marking points from anywhere on the two answer lines
	(b)		*any two from:* Uranus ; (1) idea of lots of stars (in the Milky Way) ; (1) nebulae ; (1) galaxies ; (1) new stars being created ; (1)	2	"all starry nebulae are galaxies" = 1 mark do not credit "the Milky Way" or "the galaxy" must infer other galaxy
	(c)		*any two from:* gas ; (1) dust ; (1) ice ; (1)	2	**accept** any 2 named elements **accept** energy **accept** atoms
	(d)		galaxies/nebulae outside the Milky Way (1) (Hubble) measured the distance (to the nebula) (1)	2	**ignore** name
	(e)		galaxies started at the same point / big bang **and** microwave data / more distance / speed data (1) OR Hershel's comet/planet(Uranus) **and** observations of its motion (1)	1	either pair both prediction **and** observation needed for the mark
	(f)	(i)	plots within half a square on each side (2)	2	all correct = (2); 2 correct = (1)
		(ii)	best fit line must be **straight** and **single** and not have all points on one side (1)	1	need not pass through (0,0) judge by eye does not need to extend beyond plotted points
		(iii)	x-axis reading off candidate's graph where line cuts 300 km/s gridline (1)	1	expect 14 ± 1 million light-years
			Total	13	

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

OCR Customer Contact Centre

Education and Learning
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

PART OF THE
CAMBRIDGE ASSESSMENT
GROUP

UKAS
MANAGEMENT
SYSTEMS

001