CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2012 series

0608 TWENTY FIRST CENTURY SCIENCE

0608/05 Paper 5 (Analysis and Interpretation), maximum raw mark 60

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

1	(a)	(i)	planets	[1]	
		(ii)	moons	[1]	
	(b)	(i)	dinosaurs	[1]	accept any named dinosaur species
		(ii)	asteroid breaks up / cloud of dust (1); spread throughout atmosphere / around planet (1); blocked Sun (for a long time) (1); living things die (from consequences of impact) (1); Earth gets cold (1)	[3]	any three points not just 'kill people'
	(c)		massive / heavy so hard to move (1); moving fast (so easy to miss) (1); difficult to see far enough in advance (to be able to shift them enough) (1); may miss many asteroids (1); need rockets etc ready (1);	[3]	
	(d)	(i)	gold, platinum, titanium or nickel (1); valuable / expensive / rare / useful (1);	[2]	reject iron allow 2nd mark without first
		(ii)	iron / titanium / nickel or water (1); building spacecraft / water for drinking etc. (1);	[2]	'drinking water' gets (2) allow 2nd mark for 'saves bringing it from Earth'
	(e)		consequence (of impact) very severe (1); so must be worth any expense (1); gives new scientific information (e.g. on early solar system) (1)	[2]	any two points can explain specific reasons not just 'have valuable stuff in them'
			Total	**[15]**	

2	(a)	(i)	stops (bacteria / mould / microbes) from spoiling food / increases shelf life of food / keeps food safe to eat for longer;	[1]	not 'it preserves fo
		(ii)	as a flavouring / to improve taste	[1]	
	(b)	(i)	can lead to/increases risk of strokes (1); heart disease(1);	[2]	
		(ii)	retention of water / swelling of the ankles / weight gain / thinning of bones / osteoporosis / asthma / kidney disease / cancer of the stomach;	[1]	not stroke or heart disease unless omitted from b(i). accept other valid answers.
	(c)	(i)	most of salt intake comes from processed food;	[1]	or 'not much comes from salt added at home'
		(ii)	reduce amount of processed foods eaten / look at labels to avoid high salt foods/ avoid fast food/don't eat in restaurants and canteens	[1]	e.g. pizza, Macdonalds, KFC, etc
	(d)		people like food flavoured with salt / are addicted to salt (1); benefit outweighs risk (1); people think the risk is small / perceived risk is less than real risk (1); people are not aware of the risk (1); people are not aware of which foods have high salt content / people stop adding salt but still eat processed foods / people don't have enough time to cook so eat processed foods (1); risk is not certainty – you may not get ill (1)	[3]	any three
	(e)	(i)	0.5 + 0.5 + 2.0 + 1.0 + 1.5 + 1.0 (2) = 6.5 (1)	[3]	1st mark for selecting right foods 2nd mark for doubling both chips & hamburger 3rd mark for correct sum
		(ii)	replace chips with baked potato / leave out chips / eat smaller portion of hamburger / pizza / baked beans;	[1]	must be from list allow completely new menu with smaller total salt content
	(f)		0.3 × 2.5 = 0.75	[1]	
			Total:	**[15]**	

3	**(a)**		put soil in pots (1); plant seedlings in each pot (1); water soil (1); leave seedlings for a certain time (1); record number of seedlings that have grown (1); calculate % of seedlings that have grown (1);	[3]	any 3
	(b)		volume of soil in each pot (1); length of time seedlings are left for (1);	[2]	
	(c)		12 / 16 × 100 = 75%;	[1]	
	(d)	**(i)**	the more seedlings in the pot, the lower the percentage of seedlings that grow (1);	[1]	
		(ii)	named resource (1); has to be shared between the seedlings so they get less each / competition (1);	[2]	examples of resources include water, space, nutrients
	(e)		more in pot would give smaller plants / fewer in pot would give taller plants because competing for resources	[1]	explained correlation needed to get the mark
			Total:	**[10]**	

4	**(a)**	**(i)**	24.0 19.0 5.0	[2]	all three for 2 mark one error in reading o subtraction = 1 mark
		(ii)	100 × 6 / 33 = 18 %;	[1]	allow more s.f. e.g. 18.2%, 18.18%, etc allow 18.1%
	(b)	**(i)**	narrower graduated tube / finer divisions in tube;	[1]	allow 'have less water in tube'
		(ii)	narrower tube give more height difference for same volume (1); so error in reading value smaller proportion (1); OR finer divisions make it easier to read values between 0.5 cm^3 marks (1); less likely to get wrong estimate of value (1);	[2]	allow idea of removing parallax error if it follows from b(i) 'less water in tube' needs 'larger readings (1)' and 'error will be smaller fraction (1)'
	(c)	**(i)**	repeat experiment several times (1); calculate mean / average (1) (even if 1st mark not awarded);	[2]	allow also other valid responses, e.g. replace iron with to which take out all O_2, use more iron
		(ii)	can identify and omit outliers (1); one result could be an error (1); average smoothes out variation in results (1);	[2]	any two; if other factor allowed in c(i), explanation here is a marking point
			Total:	**[10]**	

5	**(a)**		(3 + 4 + 3 + 5 + 5)/5 = 4 (1) method; (1) evaluation	[2]	4 with no working g method mark is addi together values and dividing by something
	(b)		plotting: all correct = (3); 1 error = (2); 2 errors = (1); > 2 errors = 0 best-fit curve (not dot-to-dot or straight line: it should be a smooth curve) (1) If line goes through correct places and points not visible, assume they are under the line	[4]	Scoris overlay first mark has ecf from (a) judge curve by eye – does not need to go to axis for this mark
	(c)		ecf own line ± 0.1	[1]	should be 0.7 for correct line
	(d)		27.5	[1]	own line value ± 1.0
	(e)		intensity drops as water gets deeper /they are inversely related(1); differences get less with increasing depth (1); each value is about 2/3 of the preceding one (1);	[2]	any two points
			Total:	**10**	