RECOGNISING ACHIEVEMENT

GCSE

Additional Science A

General Certificate of Secondary Education **A218-01**

Unit 4: Ideas in Context (Foundation Tier)

Mark Scheme for June 2010

Oxford Cambridge and RSA Examinations

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Question			Expected Answers	Marks	Additional Guidance
1	a		analogue [old] signals not being transmitted / only digital [new] signals are being transmitted / any reference to switchover (1)	[1]	**accept** 'changing to digital' **ignore** reference to regions
	b		analogue – any continuously varying wave or set of waves (1) digital – any attempt at a square wave (1)	[2]	example diagram analogue digital  original signal original signal if the diagrams are 'correct', but the wrong way round, no marks **accept** non-constant in amplitude and/or frequency in either wave **ignore** reference to '1's and '0's **ignore** diagrams showing wave fronts **ignore** diagrams showing coils
	c		noise (1) quality (1) pattern (1) amplified (1)	[4]	**allow** 'quality' for third space
	d		660 x 0.5 (1) 330 (1)	[2]	correct numerical answer gains both marks **no** ECF **allow** 660/2 as alternative to 660 X 0.5

Question			Expected Answers	Marks	Additional Guidance
1	e	i	not absorbed (by atmosphere) (1)	[1]	**reject** not absorbed by ionosphere **accept** can reflect off ionosphere
		ii	microwaves (1) can go through ionosphere / radio waves cannot go through ionosphere (1)	[2]	**mark independently** **accept** microwaves not stopped / not absorbed / not blocked / not prevented / not reflected / ORA **accept** ionosphere prevents transmission (of radio waves) **ignore** atmosphere **ignore** references to speed
		iii	idea of reflection (1)	[1]	**ignore** conduction
			Total	[13]	

Question			Expected Answers	Marks	Additional Guidance
2	a	i	668 000/ 80 (1) 8350 (1)	[2]	correct numerical answer gains both marks no ecf **accept** different ways of writing the working eg 668 000 x 1/80 668 000 x 0.0125 do **not** credit working if it is only one stage of a longer, incorrect calculation
	b	i	nucleus / chromosomes / DNA (1)	[1]	
		ii	4 (1)	[1]	**accept** 'GCAT'
		iii	proteins (1) inactive (1)	[2]	responses must be in the correct order
	c		**any two from:** any reference to cloning; any therapeutic context; any reference to <u>making</u> tissue/cells/organs;	[2]	look for a **use** of stem cells, not just a description therapeutic – any reference to medical intervention (apart from IVF) eg 'treating patients' 'replace/repair tissues' = 1 mark for therapeutic, but has not told us that tissues are being <u>made</u>, only used for replacement, so **not** the second mark **ignore** 'to do research' if part of the answer is in terms of plants, do **not** give credit for that part but treat as neutral

<table>
<tr><th colspan="3">Question</th><th>Expected Answers</th><th>Marks</th><th>Additional Guidance</th></tr>
<tr><td>2</td><td>d</td><td>i</td><td>
<table>
<tr><th>stage</th><th>only mitosis</th><th>only meiosis</th><th>neither</th></tr>
<tr><td>1 Fertility drugs …</td><td></td><td>✓</td><td></td></tr>
<tr><td>2 Egg cells are …</td><td></td><td></td><td>✓</td></tr>
<tr><td>3 Sperm … incubated …</td><td></td><td></td><td>✓</td></tr>
<tr><td>4 A sperm … ... fertilises …</td><td></td><td></td><td>✓</td></tr>
<tr><td>5 … egg (zygote) …</td><td>✓</td><td></td><td></td></tr>
<tr><td>6 …embryo is placed …</td><td></td><td></td><td>✓</td></tr>
</table>
</td><td>[2]</td><td>correct mitosis column = 1 mark
correct meiosis column = 1 mark
ignore third column</td></tr>
<tr><td></td><td></td><td>ii</td><td>similarity:
(egg and) sperm / gametes involved (1)

difference:
(IVF) happens in Petri dish / outside the body / does not involve intercourse (1)</td><td>[2]</td><td>ignore ‘both form a zygote’

ORA
ignore ‘is not natural’</td></tr>
<tr><td></td><td></td><td>iii</td><td>46 (1)</td><td>[1]</td><td>accept ‘23 <u>pairs</u>’</td></tr>
<tr><td></td><td></td><td></td><td>Total</td><td>[13]</td><td></td></tr>
</table>

Question			Expected Answers	Marks	Additional Guidance
3	a		nitric (acid) (1) hydrochloric (acid) (1)	[2]	
	b		carbon dioxide (1)	[1]	if more than one chemical named, no marks **ignore** formula [given in the paper]
	c	i	goes down (1)	[1]	something about direction of change needed **ignore** any numbers except for the candidate who does not give direction of change, but does quote the correct start and end masses, eg 'the mass goes from 201 to 200.25'
		ii	carbon dioxide is given off / a gas is given off (1)	[1]	**ignore** evaporation arguments **ignore** explanations of change in rate
		iii	60 seconds / 1 minute (1)	[1]	**allow** 59 seconds **allow** '60' without units **accept** 'A further 30 seconds'
		iv	higher temperature / higher concentration of acid / grind up the solid / smaller lumps / bigger surface area / agitate the solution / shake it / stir it (1)	[1]	**ignore** change in amount of any reagent **allow** 'use stronger acid' **accept** 'less dilute' for 'more concentrated' **allow** use a catalyst
	d	i	not safe (1)	[1]	**accept** 'hazard' or 'explosive' but **not** 'flammable' or 'violent' **ignore** references to increased rate of reaction – the candidate must specifically discuss safety.

Question			Expected Answers	Marks	Additional Guidance
3	d	ii	titrate [metal hydroxide with acid] (1)	[1]	**accept** words such as 'titre' **allow** specified flow chart route eg 'no then yes' or 'yes, no, yes'
	e		**first mark:** copper oxide / copper carbonate (1)	[4]	 **reject** copper **accept** - copper hydroxide if more than one substance is suggested, all must be correct to score **ignore** – metal oxide, hydroxide, carbonate
			any three marks from: add excess (solid) / too much (solid) idea; when reaction stops; filter off (the solid); evaporate/ leave to crystallise; dry in an oven/desiccator/ dry with paper; QWC: one mark for correct spelling, punctuation and grammar in the first two lines	 [1]	 **ignore** references to excess acid 'after the experiment' not enough **allow** filter in context of either excess solid or crystals formed **allow** any idea of time taken for crystals to form **ignore** any references to 'heating' alone max one mistake in the first 2 lines - ignore words of more than two syllables must have at least two lines to score QWC
			Total	[14]	

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