



GCSE

Additional Science A

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

Unit 4: Ideas in Context (Foundation Tier)

Mark Scheme for June 2010

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

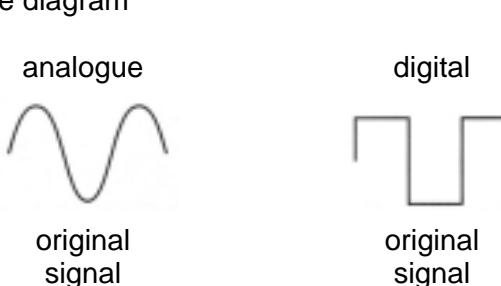
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Question		Expected Answers	Marks	Additional Guidance
1	a	analogue [old] signals not being transmitted / only digital [new] signals are being transmitted / any reference to switchover (1)	[1]	accept 'changing to digital' ignore reference to regions
	b	analogue – any continuously varying wave or set of waves (1) digital – any attempt at a square wave (1)	[2]	example diagram  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 <u>absorbed</u> (by atmosphere) (1)	[1]	reject not absorbed by ionosphere accept can reflect off ionosphere
		ii	microwaves (1) can go through <u>ionosphere</u> / radio waves cannot go through <u>ionosphere</u> (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 $668\ 000 \times 1/80$ $668\ 000 \times 0.0125$ 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

Question			Expected Answers				Marks	Additional Guidance
2	d	i	stage	only mitosis	only meiosis	neither		
			1 Fertility drugs ...		✓		[2]	correct mitosis column = 1 mark correct meiosis column = 1 mark ignore third column
			2 Egg cells are ...			✓		
			3 Sperm ... incubated ...			✓		
			4 A sperm fertilises ...			✓		
			5 ... egg (zygote) ...	✓				
			6 ...embryo is placed ...			✓		
		ii	similarity: (egg and) sperm / gametes involved (1) difference: (IVF) happens in Petri dish / outside the body / does not involve intercourse (1)				[2]	ignore 'both form a zygote' ORA ignore 'is not natural'
		iii	46 (1)				[1]	accept '23 pairs'
			Total				[13]	

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 <u>direction</u> 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) 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	[4]	reject copper accept - copper hydroxide if more than one substance is suggested, all must be correct to score ignore – <u>metal</u> oxide, hydroxide, carbonate 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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