

Additional Applied Science A

General Certificate of Secondary Education

Unit **A326/01**: Communication

Mark Scheme for June 2012

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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.

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1. 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
words	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
	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

2. Subject-specific Marking Instructions

- a. If a candidate alters his/her response, examiners should accept the alteration.
- 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 boxes 3 and 4 are required for the mark:

Put ticks (✓) in the two correct boxes.

<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

This would be worth 1 mark.

Put ticks (✓) in the two correct boxes.

<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

This would be worth 0 marks.

Put ticks (✓) in the two correct boxes.

<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

This would be worth 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 boxes:

Always check the additional guidance.

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. If there are no ticks, accept clear, unambiguous indications, e.g. shading or crosses.

Credit should be given for each box correctly ticked. 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.

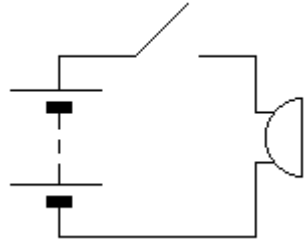
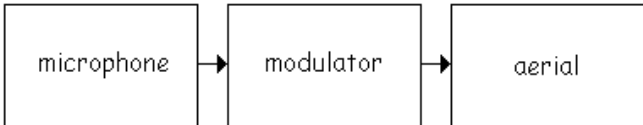
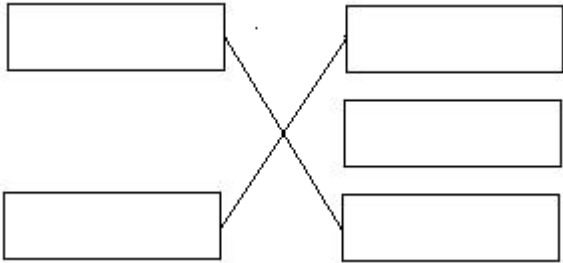
E.g. If a question requires candidates to identify a city in England, then in the boxes

Edinburgh	
Manchester	
Paris	
Southampton	

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

Edinburgh			✓			✓	✓	✓	✓	
Manchester	✓	x	✓	✓	✓				✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	x		✓		✓	✓		✓	
Score:	2	2	1	1	1	1	0	0	0	NR

Question			Answer	Marks	Guidance
1	(a)			1	
	(b)	(i)		2	<p>accept (light) sensor / light resistor / for LDR accept MRB33 / chip / ic / timer for integrated circuit accept alarm / siren / bell /(loud)speaker for buzzer all correct for [2] any one or two correct for [1]</p>
1	(b)	(ii)	<p>connection to the battery <input type="checkbox"/></p> <p>flow of information through the system <input checked="" type="checkbox"/></p> <p>direction of the current between components <input type="checkbox"/></p> <p>order in which the circuit should be assembled <input type="checkbox"/></p>	1	
1	(c)		<p>for example</p> <ul style="list-style-type: none"> • car horn • morse code • fire alarm / burglar alarm • telephone / mobile phone / walkie-talkie • radio / TV • personal safety alarm 	1	<p>accept anything which communicates via sound waves</p> <p>reject theft / car alarm</p> <p>not mp3 player</p>
1	(d)	(i)	<p>$9 \times 0.2 = 1.8 \text{ W}$</p>	1	<p>accept just 1.8 accept $9 \times 0.2 = 2$</p>
1	(d)	(ii)	<p>more than; the same as;</p>	2	

Question			Answer	Marks	Guidance
1	(d)	(iii)		2	recognisable series circuit with three items in a loop [1] recognisable circuit symbols for battery, switch, buzzer [1] accept only one cell ignore extra components accept power supply symbol
2	(a)		10 GHz	1	
2	(b)			2	all correct for 2 marks one or two correct for 1 mark
2	(c)	(i)		1	
2	(c)	(ii)	can be kept secret (owtte)	1	
2	(c)	(iii)	any of the following <ul style="list-style-type: none"> • clearer signal / fewer errors / higher quality • can send pictures / text as well as sound • easy to store • easy to edit /manipulate • can be compressed 	1	ignore faster / easier / modern / encryption / more data accept email, facebook, texting ...

Question			Answer	Marks	Guidance
2	(d)	(i)	email <input checked="" type="checkbox"/> doorbell <input type="checkbox"/> fire alarm <input type="checkbox"/> police radio <input type="checkbox"/>	1	
2	(d)	(ii)	example • doorbell • telephone • baby monitor • fire alarm • school bells; because its cheap / easy to install or repair or use / conducts electricity / low resistance	2	accept anything plausible, short range and immobile accept TV cable from aerial to TV / computer-printer cable / computer-mouse cable / internet ignore references to corrosion, melting point ...
3	(a)			2	all three correct for 2 marks any one or two correct for 1 mark
3	(b)	(i)	he could get a shock / kill himself / be electrocuted	1	

Question			Answer	Marks	Guidance
3	(b)	(ii)	any two of the following, [1] each <ul style="list-style-type: none"> • wear rubber / plastic / safety / protective gloves • use an earth-leakage device • use an over-current trip switch • unplug from the mains • remove the fuse • switch off the mains • don't touch circuit / plug 	2	ignore employ a qualified person / protective clothing / keep dry / be careful / read the manual not switch off the amp(lifier)
3	(c)		any one of the following <ul style="list-style-type: none"> • no need for wires to connect to power supply • allows use away from mains supply • portable in use • works in a power cut 	1	ignore safer / no risk of electrocution / can be recharged
4	(a)			3	five correct for 3 marks four or three correct for 2 marks two or one correct for 1 mark
4	(b)		any of the following, <ul style="list-style-type: none"> • paid the government / OFCOM • they have a licence • to prevent you listening to two stations at once • stops radio stations interfering with each other 	1	

Question		Answer	Marks	Guidance
4	(c)	example: eg <ul style="list-style-type: none"> • DAB • HDTV • hearing aid • telephone / mobile phone effect on lives:	2	accept anything realistic which communicates with less noise than previous technology look for anything which mentions a sensible advantage or disadvantage in the use of their example both marks are independent
5	(a) (i)		3	correct pair of inputs (1) processors in correct place (1) correct pair of outputs (1)
5	(a) (ii)	transmitter	1	ignore processor ecf if incorrect, accept name of processor before link
5	(b)	pixels (lit up one after the other) in rows (over the whole frame)	1	accept spots / dots for pixels accept screen for frame ignore megapixels
Paper Total			36	

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