

# **Additional Applied Science A**

General Certificate of Secondary Education

Unit **A326/02**: Communication

## **Mark Scheme for January 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.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

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## Annotations

Used in the detailed Mark Scheme:

Annotation	Meaning
/	alternative and acceptable answers for the same marking point
(1)	separates marking points
<b>not/reject</b>	answers which are not worthy of credit
<b>ignore</b>	statements which are irrelevant - applies to neutral answers
<b>allow/accept</b>	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

### Subject-specific Marking Instructions

- If a candidate alters his/her response, examiners should accept the alteration.
- 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.

Eg

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 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, eg 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, eg shading or crosses.

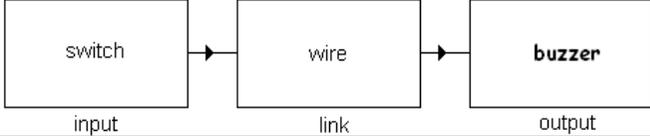
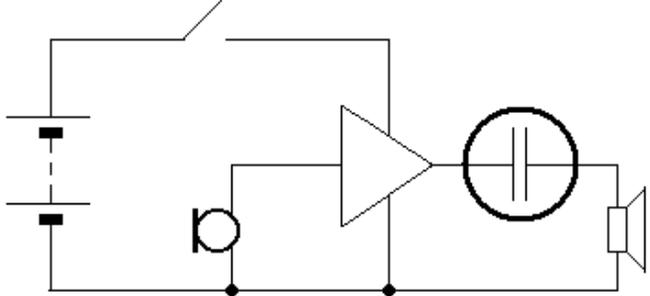
Credit should be given for each box correctly ticked. If more boxes are ticked than there are correct answers, then deduct one mark for each additional tick. Candidates cannot score less than zero marks.

Eg If a question requires candidates to identify a city in England, then in the boxes

<b>Edinburgh</b>	
<b>Manchester</b>	
<b>Paris</b>	
<b>Southampton</b>	

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).

<b>Edinburgh</b>			✓			✓	✓	✓	✓	
<b>Manchester</b>	✓	x	✓	✓	✓				✓	
<b>Paris</b>				✓	✓		✓	✓	✓	
<b>Southampton</b>	✓	x		✓		✓	✓		✓	
<b>Score:</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>NR</b>

Question		Answer	Mark	Guidance
1	(a)		2	
1	(b)	how to connect the components together	1	<b>accept</b> a description of the circuit <b>accept</b> series circuit
1	(c) (i)	EITHER digital codes use just two values (e.g long and short, on & off, 1 and 0); OR analogue use a range of values (eg loud to soft)	1	<b>accept</b> a sketch of analogue or digital waveform
1	(c) (ii)	any <b>two</b> of the following: <ul style="list-style-type: none"> <li>• less affected by noise/interference</li> <li>• can be encrypted</li> <li>• can be compressed</li> </ul>	2	<b>accept</b> clearer <b>reject</b> faster/easier
2	(a)	eg TV satellite aerial installer, TV editor, telephone engineer ...	1	must be a job in communications which involves expert handling of equipment - so not a salesperson, advertising manager ...
2	(b)		1	
2	(c)	increase; the voltage / power / current / signal	2	<b>accept</b> boosts / strengthens / increases <b>ignore</b> louder/volume/sound/amplifies
2	(d)	1.5 W	1	
3	(a)	10 GHz	1	

Question		Answer	Mark	Guidance	
3	(b)		2	correct pattern for (1) one or two mistakes for (1)	
3	(c)	any <b>three</b> of the following, [1] each: <ul style="list-style-type: none"> <li>• waves are absorbed / lose strength as they pass through things;</li> <li>• waves reflect off objects that they hit;</li> <li>• waves interfere and cancel when they cross;</li> <li>• lose strength as they spread out from transmitter;(diffract)</li> </ul>	3	each description of a key property for (1)	
4	(a)	analogue signal from microphone; is sampled many times a second; and converted to a binary word / code	3	correct use of each key term for (1)	
4	(b)	4 kilobytes	1		
4	(c)	(i)	number of bits reduced/ gets rid of redundant information	1	<b>accept</b> reduced file size
		(ii)	to use less memory / increase recording time	1	<b>accept</b> send it faster
4	(d)	any three of the following, (1) each: <ul style="list-style-type: none"> <li>• less affected by noise;</li> <li>• easy to store in memory;</li> <li>• easy to edit;</li> <li>• allows compression;</li> <li>• allows encryption;</li> <li>• allows multimedia</li> </ul>	3		
5	(a)		3	each correct entry owtte for [1]	

Question		Answer	Mark	Guidance
5	(b)	frame; pixels	2	each correct use of a key term for (1)
5	(c)	any three of the following, for [1] each: <ul style="list-style-type: none"> <li>• increased range</li> <li>• improved SNR</li> <li>• improved security</li> <li>• less interference from other systems</li> <li>• increased data rate</li> </ul>	3	<b>not</b> cheaper  <b>accept</b> faster
5	(d)	bits per picture = 800 000; time = 5	2	
		<b>Paper Total</b>	<b>36</b>	

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