

# **Additional Applied Science A**

General Certificate of Secondary Education

Unit **A326/01**: Communication

## **Mark Scheme for January 2012**

---

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, OCR Nationals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

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.

© OCR 2012

Any enquiries about publications should be addressed to:

OCR Publications  
PO Box 5050  
Annesley  
NOTTINGHAM  
NG15 0DL

Telephone: 0870 770 6622  
Facsimile: 01223 552610  
E-mail: [publications@ocr.org.uk](mailto:publications@ocr.org.uk)

## 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

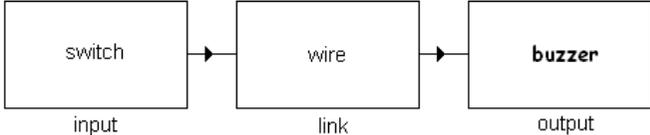
<b>Edinburgh</b>	
<b>Manchester</b>	
<b>Paris</b>	
<b>Southampton</b>	

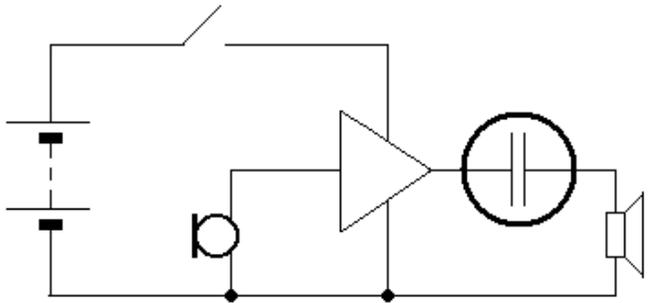
the second and fourth boxes should have ticks (or other clear indication of choice) and the first and third should be blank (or have indication of choice crossed out).

<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>

## MARK SCHEME:

Question		Answer	Mark	Guidance
1	(a)	any of the following, (1) each: <ul style="list-style-type: none"> <li>• size, so that it fits into my pocket</li> <li>• weight, so that it isn't too heavy</li> <li>• battery life, so that it doesn't run out of charge</li> <li>• controls, easy for me to use</li> <li>• speaker, good sound quality</li> <li>• rugged, so that it doesn't break</li> <li>• waterproof, so that it works in the rain</li> <li>• screen, bright and easy to see ...</li> </ul>	2	<b>accept</b> anything reasonable eg GPS - so that I don't get lost, camera for taking photos, large memory to store lots of numbers .. camera, so can take pictures/videos memory, hold lots of information insurance, in case it gets lost internet, check emails apps, find out places etc
1	(b)		2	correct pattern for 2 marks one or two mistakes for 1 mark
1	(c)	ferrite rod	1	
2	(a)	analogue sample binary	3	
2	(b) (i)	4 000 s	1	<b>accept</b> 66/67 minutes
2	(b) (ii)	USB stick / flash memory / memory card / floppy disc / CD ...	1	<b>accept</b> any digital storage medium used solely for memory <b>not</b> just USB/memory <b>not</b> hard disk <b>not</b> laptop

Question		Answer	Mark	Guidance
2	(c)		2	all correct for 2 marks one or two mistakes for 1 mark
3	(a)		3	first block scanner for 1 mark last block printer for 1 mark encoder anywhere before decoder for 1 mark
3	(b)	pixels word	2	
3	(c)	telephone / fire alarm / doorbell / baby monitor; cheap / easy / good conductor	2	<b>accept</b> any communication system where the entire link could realistically be wire.
3	(d) (i)	800 000 bits	1	
3	(d) (ii)	5 s	1	ecf from incorrect 3c(i)
4	(a) (i)	to keep it secret	1	
4	(ii)	eg internet banking / police / army /mobile phone/text messages; what information is being kept secret / consequences of not keeping it secret	2	any realistic example where encryption is likely e.g. texting, mobile phone ... <b>accept</b> ecf from (i) for compression / pin numbers etc.
4	(b)	telephone/ telegraph / cellphone (texting) / TV /radio...	1	must be a complete system, not just a device such as a computer or software such as Facebook
5	(a)		2	
5	(b)	how to connect the components together	1	<b>accept</b> shows components required <b>accept</b> a description of circuit e.g. series circuit

Question			Answer	Mark	Guidance
5	(c)	(i)	EITHER digital codes use just two values (long and short, 1 and 0); OR analogue use a range of values (eg loud to soft)	1	<b>accept</b> sketch e.g.
5		(ii)	Any two 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> <li>• can be any information (text, picture, sound)</li> </ul>	2	<b>not</b> faster / easier <b>accept</b> clearer
6	(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 ... <b>not</b> communication engineer / technician <b>accept</b> computer repairer
6	(b)	(i)		1	
6	(b)	(ii)	increase; the voltage / power / current (of the signal)	2	<b>accept</b> boosts/strengthens <b>ignore</b> louder/sound/volume <b>ignore</b> amplifies
6	(b)	(iii)	1.5 W	1	
<b>Paper Total</b>				<b>36</b>	

**OCR (Oxford Cambridge and RSA Examinations)**  
**1 Hills Road**  
**Cambridge**  
**CB1 2EU**

**OCR Customer Contact Centre**

**Education and Learning**

Telephone: 01223 553998

Facsimile: 01223 552627

Email: [general.qualifications@ocr.org.uk](mailto:general.qualifications@ocr.org.uk)

**[www.ocr.org.uk](http://www.ocr.org.uk)**

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

**Oxford Cambridge and RSA Examinations**  
is a Company Limited by Guarantee  
Registered in England  
Registered Office; 1 Hills Road, Cambridge, CB1 2EU  
Registered Company Number: 3484466  
OCR is an exempt Charity

**OCR (Oxford Cambridge and RSA Examinations)**  
Head office  
Telephone: 01223 552552  
Facsimile: 01223 552553

© OCR 2012

