

Additional Applied Science A

General Certificate of Secondary Education

Unit **A326/01**: Communication

Mark Scheme for January 2011

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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 Abbreviations, annotations and conventions used in the detailed mark scheme:
- / = 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

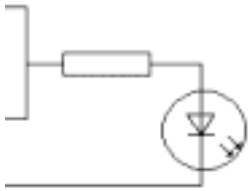
Question		Expected Answers	Marks	Additional Guidance			
1	(a)		[2]	correct pattern = 2 marks one mistake = 1 mark			
	(b)	(i) one from: cheaper to run; less likely to fail; no need to change / recharge batteries; constant / steady power; more current / energy / power;	[1]	not more voltage			
		(ii) <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px; text-align: center;">✓</td></tr> <tr><td style="width: 20px; height: 20px;"></td></tr> </table>		✓		[1]	
✓							
	(c)	(i) to stop outsiders listening in / idea of secrecy;	[1]	accept idea of (secret) code			
		(ii) one from: cash machine; email; internet (banking/shopping); mobile phones (voice or text); armed forces communications; (satellite / cable / broadcast) TV;	[1]	not police communications reject anything which is not a system e.g. computer			
	(d)	(i)	[2]	one mark for each correct block accept aerial followed by receiver for 1 mark			

		(ii)	encodes; (1) increases; (1)	[2]	each correct word = 1 mark
Total				[10]	

Question			Expected Answers	Marks	Additional Guidance
2	(a)	(i)	<pre> graph LR A[] --> B[] B --> C[optical fibre] C --> D[exchange] D --> E[handset] style A fill:#ccc style B fill:#fff style C fill:#fff style D fill:#fff style E fill:#fff </pre>	[2]	all three correct = 2 marks one or two correct = 1 mark
		(ii)	optical fibre; handset;	[1]	both correct = 1 mark accept correct alternative output e.g. loudspeaker
	(b)	(i)	e.g. (broadcast) TV or radio, mobile phones, internet, letters. semaphore, smoke signals, Morse code, telegraph ...	[1]	accept computers (qualified) e.g. Facebook, Twitter, MSN
		(ii)	anything plausible which applies to their example and describes something which would not happen if the technology did not exist; e.g. <ul style="list-style-type: none"> • email much cheaper/quicker than letters; • TV keeps you up to date with the news; • email keeps you in touch with relatives; • Facebook allows you to find out what friends are doing; • texting is cheaper than speaking; 	[1]	must be everyday life
Total				[5]	

Question		Expected Answers	Marks	Additional Guidance
3	(a)		[3]	one correct = 1 mark two or three correct = 2 marks all four correct for = 3 marks
	(b)	(i)	allows portability;	[1] accept no danger (of electric shock) / works in a power cut / no wires to trip over ... reject doesn't need much power
		(ii)	any two of the following: <ul style="list-style-type: none"> clearer signal / better quality / less noise; (1) allows compression (for faster transfer); (1) can transmit pictures or text or sound; (1) easily stored; (1) allows for easy editing / manipulating; (1) 	[2] not encryption accept faster / quicker
Total			[6]	

Question		Expected Answers	Marks	Additional Guidance
4	(a)	pixels; rows; frames;	[3]	each correct word = 1 mark
	(b)	2 000;	[1]	
Total			[4]	

Question		Expected Answers	Marks	Additional Guidance
5	(a)		[1]	ring must only be around LED accept any unambiguous correct response
	(b)	use a voltmeter / multimeter / oscilloscope; (1) connect (probes) to either side of resistor; (1)	[2]	accept meter accept across / in parallel with resistor accept a drawing on the figure correct symbol for voltmeter (1) correct connection to either side of 340 Ω resistor (1)
	(c)	0.02 A;	[1]	
	(d)	any of the following: <ul style="list-style-type: none"> • so that it doesn't get damaged / break; • so that it doesn't get hot; • so that it doesn't burn anyone; • to check this is less than power rating; 	[1]	
	(e)	same chip can be used in many different circuits;	[1]	accept chip behaviour can be changed accept cheap chip because so many made accept one chip replaces many components accept same circuit board for many different circuits
Total			[6]	

Question		Expected Answers	Marks	Additional Guidance
6	(a)		[2]	camera and microphone correct (1) transmitter and receiver correct (1) accept camera swapped for microphone
	(b)	any of the following: <ul style="list-style-type: none"> • select/direct cameras or microphones; • cut out unwanted parts; • select parts to transmit; • add subtitles / titles; • insert adverts; • adjust sound levels / colour balance; • add music / voice to video signal; 	[1]	not anything done by sound recorders, camera operators not edit unqualified nor repairers, IT specialists accept directors
	(c)	dish aerial;	[1]	accept drawing of a dish reject dipole, wire, (ferrite) rod
	(d)	10 GHz;	[1]	
Total			[5]	
Paper Total			[36]	

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