

GCSE

ICT

Unit **B061**: ICT in Today's World

General Certificate of Secondary Education

Mark Scheme for June 2017

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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

Annotation	Meaning
	Blank Page – this annotation MUST be used on all blank pages within an answer booklet (structured or unstructured) and on each page of an additional object where there is no candidate response.
	Seen: this annotation MUST be used on all responses that are NR (no response) and on Level of Response questions.
	Tick : this annotation MUST be used to indicate where credit has been given in a response. NB the number of ticks shown on a response must equal the mark awarded unless clearly stated to the contrary below in Section. 11.
	Cross : this annotation is used to indicate where a response is clearly wrong/incorrect or not awarded credit.
Other available annotations:	The annotations toolbar has other available annotations which may be used: TV, BOD and NBOD, Caret (to e.g. indicate that the candidate has omitted a required part of the response), Highlight, REP, NAQ, ?, ^, and the line overlay. These should be used sparingly or as directed by Team Leaders/Supervisors. Note: BOD is not a substitute for a tick...BOD is used to indicate that the tick is awarded even though there is some doubt over the validity of the response.

Subject-specific Marking Instructions

Ticks and crosses **MUST** be used on all except LOR responses (see below) as instructed by PE and Team Supervisors. BOD is not an acceptable substitute for a tick.

Where ticks are required, the number of ticks shown on a response **MUST** be the same as the mark given for that part of the question. For this reason, where BOD has been used, a tick **MUST** accompany it.

Crosses should be used on responses that are clearly wrong, TV or caret on responses that are not worthy of credit can be used to indicate that the response has been read.

No ticks, crosses or other annotations whatsoever to be placed on the LOR questions. Where RM Assessor has not made L1, L2 and L3 available to indicate the level awarded, SEEN is to be placed on LOR responses.

All responses on Additional Objects or responses elsewhere in the paper **MUST** be linked back to the originating question using the link annotation/link mechanism.

MARK SCHEME

Question			Answer	Marks	Guidance
1	(a)	(i)	<p><i>Two from:</i> So the person can speak/talk into it (1) to act as an input (device) (1) to capture sound/audio/words/convert sound to (electrical) signals/(1) so that it can be digitised (1) and sent (signals) to recipient (1).</p>	2	DNA record
		(ii)	<p><i>Two from:</i> To act as an output (device) (1) to create/produce sound (1) from (electrical) signals (1) so that recipients can hear audio/words (1) so it can be used be hands-free (1) and multiple persons can listen.</p>	2	
		(iii)	<p><i>Two from:</i></p> <ul style="list-style-type: none"> • to act as <u>input and output</u> (device) (1) so that user can select items/icons/options/enter commands/data (1) • to display the results of commands/processing (1) so the user can check/view the results/be sure that the processing has been done (as required) (1) • to display on-screen keyboard (1) so the user can dial a number/place a call/answer a call (1) • to display video when in video call (1) to allow users to see the other person(s) (1) • to allow (easy) navigation .(1) around the various options/menus (1). 	2	Allow mix'n'match of answers.
	(b)		<p><i>Two from:</i> To provide visual representation of start/command of application/option (1) To show user which apps are which/available (1) to allow user to click on/touch app/to start/open application/event/shortcut to app (1). No need to have IT skills/can be a WIMP (1) and can be recognised across different devices operating systems (1)1.</p>	2	DNA Logo

Question	Answer	Marks	Guidance
(c)	<p><i>Three from:</i></p> <ul style="list-style-type: none"> • (audio signals) are converted to packets of data (in VoIP) (1) • use of IP address (1) • using a VoIP software/codec (1) • (packets) sent over network/internet/public telecommunications systems (1) • packets of data (in VoIP) are converted back to (audio signals) (IP) (1). 	3	
(d) (i)	<p><i>Up to two for each advantage, max two advantages, e.g.:</i></p> <ul style="list-style-type: none"> • saves setup cost/money/cheaper to install (1) because no need to buy/pay for dedicated circuits/ only one network/set of wires (1) • costs less to use (1) than 'ordinary' phone calls/international phone calls (1) • easy to add more users (1) because there is no need to add more telephone sockets (1) just add another unit and plug into the existing network (1) • phone numbers are portable (1) so can be taken/moved with employees/offices (1) • provides additional features (1) such as multiple callers (1) call waiting (1) call redirection/forwarding (1) caller ID (1). 	4	<p>"saves cost/cheaper" unqualified is only 1 mark. Must specify '...to install' and '...to use' for mark to be awarded twice.</p> <p>Must be advantage of a network-based telephone system.</p> <p>DNA video conferencing.</p>
(ii)	<p><i>One disadvantage, with max two from e.g.:</i></p> <ul style="list-style-type: none"> • VoIP can be unreliable/poor quality (1) because it is dependent on internet/network connectivity (1) • VoIP uses local power supply (1) so no service during power cut/outage • call cannot be traced (1) so useless in emergency (1) • data packets take different routes (over network/internet) so may arrive out of sequence/not at all (1) so (resulting) audio may be 'choppy'/broken up/unintelligible (1) • employee might need training to use the system (1) so may be less productive /take longer carry out tasks/be demotivated (1). 	2	

Question		Answer	Marks	Guidance																					
2	(a)	<p>Answers as shown:</p> <table border="1"> <thead> <tr> <th><i>Field name</i></th> <th><i>Example data</i></th> <th><i>Data Type</i></th> </tr> </thead> <tbody> <tr> <td><i>Job_number</i></td> <td><i>1000012</i></td> <td>Integer</td> </tr> <tr> <td><i>Engineer_family_name</i></td> <td><i>Broonell</i></td> <td>Text</td> </tr> <tr> <td><i>Engineer_first_name</i></td> <td><i>Robert</i></td> <td>Text</td> </tr> <tr> <td><i>Part_ID</i></td> <td><i>PNX299R</i></td> <td>Text</td> </tr> <tr> <td><i>Hours_worked</i></td> <td><i>5.5</i></td> <td>Real number</td> </tr> <tr> <td><i>Date_job_completed</i></td> <td><i>22/10/2016</i></td> <td>Date</td> </tr> </tbody> </table>	<i>Field name</i>	<i>Example data</i>	<i>Data Type</i>	<i>Job_number</i>	<i>1000012</i>	Integer	<i>Engineer_family_name</i>	<i>Broonell</i>	Text	<i>Engineer_first_name</i>	<i>Robert</i>	Text	<i>Part_ID</i>	<i>PNX299R</i>	Text	<i>Hours_worked</i>	<i>5.5</i>	Real number	<i>Date_job_completed</i>	<i>22/10/2016</i>	Date	6	<p>Allow alphanumeric, string or character for text.</p> <p>DNA 'time' for date.</p> <p>The available types are given in the question.</p> <p>Allow real number for the date field.</p>
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	(b) (i)	<p>Six from:</p> <p>Award marks for, in any order:</p> <ul style="list-style-type: none"> • Manual totalling (1) • enter manual total into system (1) • Enter/scan live data (1) • Computer does same calculation of total (1) • Compares totals/comparisons of the totals (1) • If not same total (1) then generates error/highlights error (1) • Batch total example e.g. job sheets (1) • Hash total example e.g. no of hours/meaningless field (1) • Form of verification (1). 	6																						
3		<p>This question to be marked as levels of response:</p> <p>Answers may refer to e.g.:</p>	8	<p>Content</p> <p>Levels of Response</p> <p>Level 3 (7 – 8 marks)</p>																					

		<p><i>Benefits:</i></p> <ul style="list-style-type: none"> • sharing (by family members) of a single internet connection • parents can monitor/restrict children's use of internet • sharing (by family members) of peripherals e.g. printer, scanner • sharing (by family members) of files • sharing (by family members) of video/audio media from home media server • ability (by family members) to easily/quickly connect (wireless) mobile devices • ability to connect smart TVs/set top boxes/devices to internet to access remote content <p><i>Drawbacks:</i></p> <ul style="list-style-type: none"> • cost of purchasing/maintaining/upgrading components • challenging to set up/maintain/configure unless computer literate • difficult to ensure adequate coverage by over whole home • large numbers of users/devices can slow access to e.g. internet via the home LAN • use of cabling/network devices e.g. switches may not suit home decor • security issues e.g. spread of viruses, confidential data • wireless devices may interfere with other systems e.g. home security/control devices and home devices may interfere with wireless network systems 		<p>Candidates will discuss least two benefits <i>and</i> two drawbacks of having a network/LAN in a home. These will be relevant and appropriate. The information will be relevant, clear and presented in a structured and coherent format.</p> <p>Specialist terms will be used correctly and appropriately.</p> <p>There will be few, if any, errors in grammar, punctuation and spelling.</p> <p>Level 2 (4 – 6 marks)</p> <p>For the top of the band, candidates will explain at least one benefit and one drawback of having a network/LAN in a home.</p> <p>At the bottom of the band, candidates will describe at least one benefit and one drawback of having a network/LAN in a home.</p> <p>For the most part, the information will be relevant and presented in a structured and coherent format.</p> <p>Specialist terms will be used appropriately and for the most part correctly.</p> <p>There may be occasional errors in grammar, punctuation and spelling.</p> <p>Level 1 (1 – 3 marks)</p> <p>Candidates will list benefit(s) and/or drawback(s) of having a network/LAN in a home.</p> <p>Answers may be in the form of a list.</p> <p>There will be little or no use of specialist terms.</p> <p>Errors of grammar, punctuation and spelling may be intrusive.</p> <p>Zero marks – no valid content.</p>
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Question	Answer	Mark	Guidance
4	<p><i>Six from e.g.:</i></p> <ul style="list-style-type: none"> • (consider) the type of information/documents/files to be kept in each folder (1) so similar documents/files are grouped together (1) • think about the different subjects she does (1) so she can easily find work for each subject / separate work from different subjects (1) • (ensure) folder names are sensible/meaningful (1) so files/documents can be easily found/located (1) but not too long (1) • folder structure should cover all topics/subjects (1) so new folders do not have to added too frequently (1) to apply a logical naming structure (1) • use sub-folders to group similar files/folders (1) to make searches easier/ (1) or group associated/inter-related files (1) • (ensure) folder structure is (ideally) no more than e.g. four levels deep (in a hierarchy) (1) so long chains of folder names do not exceed OS requirements/ limitations (1) so files can be easily located/searches are quicker (1) • (apply) different access rights/permissions used/passwords (1) to restrict access to sensitive files (1) to separate sensitive files from others (1) • include an 'archive' folder (1) to store (older/unused/versioned) documents/files that may be required later/for reference (1) • restrict the use of /carefully use underscore/spaces at front of folder/file names (1) as these cause folders/folders to 'float' to top of search lists (1) • delete unnecessary/unused/empty folders (1) regularly (1) • compressed folders/files (1) to free up storage space (1). 	6	
5 (a)	<p><i>Four from:</i></p> <ul style="list-style-type: none"> • (unwanted) key-logging software is (covertly) installed/started on computer (by fraudster) (1) and monitors/records key-presses (1) • recorded data sent to fraudster (1) via network/internet/copied onto USB memory stick (1) • (fraudster) uses the (extracted) userIDs/passwords/financial details (1) to access bank/credit card accounts (1) and remove/transfer/steal money/buy goods/services (for themselves)(1) 	4	
(b)	<p><i>One way from, max 2 per way e.g.:</i></p> <ul style="list-style-type: none"> • (use of) (anti-key-logging) software/function in existing anti-malware software 	2	N.B. the last point may not work very well (most key

			<p>(1) to detect presence of key-logging software/malware (1) and to alert user/remove the malware(1)</p> <ul style="list-style-type: none"> • use of (reverse) firewall/network monitor (1) to alert user whenever an (unapproved/allowed) application attempts to create a connection (1) • use of key-stroke interference software (1) that sends out random key-strokes so that fraudster records much more information than is needed/is overwhelmed by data (1) • alternating between typing credentials/userID/password and typing elsewhere on screen/in a document (1) • use of copy/paste to enter credentials/userID/password (1) so no keys are actually pressed during e.g. login (1) • use of on screen keyboards/biometrics/speech recognition (1) so no keys are pressed (1). 		logging software can monitor clipboards too) but is an attempt.
6	(a)	<p><i>One from e.g.</i></p> <ul style="list-style-type: none"> • avoid repetitive actions e.g. mouse clicks (1) • use an ergonomic keyboard/mouse (1) • perform regular general exercise/movement in limbs/areas likely to be affected (1) • avoid poor posture (1) • use speech recognition software (1). 		1	DNA take regular breaks – it's in the question.
	(b)	<p><i>Two from e.g.</i></p> <ul style="list-style-type: none"> • use appropriate lighting (1) • use appropriate position of monitor/screen (1) • minimise glare from screen/windows/ use a screen filter (1) • use a suitable screen/monitor resolution/contrast/brightness (1) • change colour temperature setting (1) • use a suitable text font size/type/family (1) • get regular eye tests/examinations (1) • wear spectacles prescribed for computer use/contact lenses prescribed for computer use (1) • blink more often than usual (1) • perform eye exercises/look away from screen and focus on distant/other objects (1) 		2	DNA take regular breaks – it's in the question.

			<ul style="list-style-type: none">• arrange work station features to lesson eye re-focussing/distance from e.g. documents to be copied and screen (1).		
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7				Content	Levels of Response
		<p><i>This question to be marked as levels of response: Answers may refer to e.g.:</i></p> <ul style="list-style-type: none"> • the manufacture of digital devices <ul style="list-style-type: none"> ○ use of non-renewable resources such as oil for plastics, sand for glass, metals (e.g. lead, gold, iron, aluminium, zinc, nickel, tin, magnesium, silver, mercury, arsenic, cadmium, chromium etc) for circuitry/wiring ○ extraction/mining of ores e.g. coltan (tantalite) for metals, niobium (Nb) and tantalum (Ta) for use in e.g. capacitors in computers, smartphones and e-readers ○ impact of production methods on the environment e.g. the manufacture of a single computer requires 10x its mass in fossil fuels, 15x its mass in water c.f. the manufacture of a car or refrigerator will require about the same mass as the item in fossil fuels and water ○ some devices can now be upgraded on-line rather than thrown away/remanufactured so reducing the increase of impact • use/deployment of digital devices <ul style="list-style-type: none"> ○ (global) increase in power consumption to create, transmit, store data 24/7 is equivalent to 2-3% of global greenhouse emissions (about same as entire airline industry) e.g. 65 trillion spam emails (no. per year) equates to use of 8 billion litres of petrol – enough to drive a car round the world 1.6 million times ○ electromagnetic pollution ○ some devices help reduce environmental impact of our activities/technology, e.g. more controllable heating systems, digital controllers in car engines, reduced paper use (debatable, but this might lead to a higher-level answer)... ○ claims of resource etc savings by use of e.g. e-readers c.f. paper books are ‘debateable’ and dependent on usage – making one e-reader is equivalent to printing 40-50 books so reading 100 books on e-reader gives a saving 50% of the resources, maybe or maybe not? 	8		<p>Level 3 (7 – 8 marks) Candidates will discuss the environmental impact of digital devices with reference to at least one positive and at least one negative impact of the manufacture, use/ deployment, recycling/disposal of devices. There will reference to. The information will be relevant, clear and presented in a structured and coherent format. Specialist terms will be used correctly and appropriately. There will be few, if any, errors in grammar, punctuation and spelling.</p> <p>Level 2 (4 – 6 marks) At the top of the band, candidates will explain the environmental impact of digital devices with reference to at least two of manufacture, use/deployment, recycling/disposal of devices. At the bottom of the band, candidates may only reference one of manufacture, use/deployment, recycling/disposal of devices. There may be reference only to positives or to negatives. For the most part, the information will be relevant and presented in a structured and coherent format.</p>

		<ul style="list-style-type: none"> ○ impacts of transport and delivery to end-user/carbon footprint implications ○ shipment requires additional resources for packaging etc ○ information sent digitally doesn't involve any physical transport ● the recycling/disposal/end-of-life of digital devices <ul style="list-style-type: none"> ○ recycling 1 million laptops can save equivalent of electricity use by 4000 homes annually ○ recycle rare resources e.g. rare metals ○ dangers to workers involved in recycling – not all countries are health and safety conscious ○ recycling still has impact – transport to recycling plants, energy and water to recycle. ○ digital devices generally have a much shorter life than other products ○ disposal of non-biodegradable compounds/components e.g. wiring ○ disposal of rare elements e.g. mercury/nickel/cadmium that are dangerous – not to be placed in landfill ○ problems of fly-tipping/dumping. 		<p>and/or describe Specialist terms will be used appropriately and for the most part correctly. There may be occasional errors in grammar, punctuation and spelling.</p> <p>Level 1 (1 – 3 marks) Candidates will list some environmental impacts of digital devices. Answers may be in the form of a list. There will be little or no use of specialist terms. Errors of grammar, punctuation and spelling may be intrusive.</p> <p>Zero marks – no valid content.</p>
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