

Computing

Advanced Subsidiary GCE

Unit **F451**: Computer Fundamentals

Mark Scheme for June 2011

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Question	Expected Answer	Mark	Rationale
1 (a) (i)	(A peripheral device) used to pass data to a computer/allows user to communicate with computer	[1]	Not just "interact"
(ii)	(A peripheral device) used to report information from a computer/allows computer to communicate with user	[1]	
(b) (i)	- Temperature sensor/thermistor/thermostat - To give (the computer/processor information) about the temperature of the room	[2]	No reference to thermometer for 1 st mark
(ii)	- Actuator/heater - Used to turn heater on/used to heat up room/used to turn pump on	[2]	
2 (a) (i)	- Individual data bits sent... - one after another along the communication medium/one wire/as a single stream	[2]	
(ii)	- Groups of bits sent... - simultaneously along a broader communication medium/many wires/as many streams	[2]	
(b)	- Suitable application eg sending data from hard drive to processor/send data from games console to processor/video streaming/use of graphics card - Speed of devices/volume of data is great - Time sensitivity of data (1 for application , 1 for a justification, max 2)	[2]	Not dependent marks Not woolly applications Accept connection to a network Accept printing out data

Question	Expected Answer	Mark	Rationale
3 (a)	<ul style="list-style-type: none"> - Touch sensitive screen (allow screen/monitor/VDU) - Simple to use/less susceptible to vandalism/can cope with weather - Printer - To output hard copy of results of search (to be taken away) - Disk drive - To allow storage of data (1 per -, max 4, allow other if well argued)	[4]	Not mouse. Keyboard Accept speaker
(b)	Either: <ul style="list-style-type: none"> - Hard wired/example of cable type - Communications are not affected by interference - Terminals are close together (and on a promenade so no obstructions for cable) - Cables often already exist which can be tapped into Or: <ul style="list-style-type: none"> - Wireless communication - Terminals are close together and hence are within range - No infrastructure to be laid down/cheaper infrastructure/vandal proof/not unsightly - Terminals can be moved at will or others can be inserted as required. - Large volumes of data not required (1 per -, max 1 type, max 2 for justification, max 3)	[3]	Not LAN but assume candidate meant hard-wired for other marks
(c) (i)	<ul style="list-style-type: none"> - Simple to use/intuitive/requires no computing skill - Leads user through a number of options/one menu leads to others - Presents possibilities to user/acts as information system as well as search engine - Does not allow user to enter other parts of system - Navigation simple/allows return to previous screens easily if mistake is made/reduces number of errors - Ideal for use with touchscreen (1 per -, max 3)	[3]	

Question	Expected Answer	Mark	Rationale
(ii)	<ul style="list-style-type: none">- User needs to input information (so requires an interface which allows this)- Input boxes force input to be made/guard against forgetting to give information- Use of radio buttons/drop down lists- Makes validation of information submitted easier- Instructions for input are presented to user- Processing simplified because information is standard (1 per -, max 3)	[3]	

Question	Expected Answer	Mark	Rationale
4 (a) (i)	<ul style="list-style-type: none"> - The symbols that may be represented/interpreted/understood by a computer - Normally equates to the symbols on a keyboard/digits, letters... - May include control characters (1 per -, max 2)	[2]	
	(ii) <ul style="list-style-type: none"> - Each character has a binary code/number... - ...which is unique - Number of bits used for one character = 1 byte - Example code/ASCII/Unicode... - ...use 8 bits per character/16 bits per character - Use of more bits for extended character set (1 per -, max 2)	[2]	
(b) (i)	<ul style="list-style-type: none"> - Double entry/details input twice/checked for any differences/which will be reported for correction - Visual check/input data on screen checked against data on form/any differences must be corrected. (2 per -, max 1-, max 2)	[2]	
(ii)	Existence check <ul style="list-style-type: none"> - Checks that the car make exists by checking against a list of possible car makes Presence check <ul style="list-style-type: none"> - Checks to ensure that a value has been entered (1 per -, max 2)	[2]	

Question	Expected Answer	Mark	Rationale
(c)	<p>Mark band 6 – 8. High level response Candidate has given a relevant and detailed explanation of both concepts and has understood the importance of and the distinctions between the procedures involved. Candidate has used appropriate technical terminology throughout. There are few if any spelling errors or errors of grammar.</p> <p>Mark band 3 – 5. Medium level response Candidate has given a relevant explanation of at least one concept and has fully described a procedure for carrying it out. Or: Candidate has given explanations of both concepts, making clear the difference between them. Candidate has used some technical terminology in the response. There may be spelling errors or errors of grammar but they are not obtrusive.</p> <p>Mark band 0 – 2. Low level response Candidate has explained one concept and may have alluded to some aspects of the procedure for carrying it out. Candidate will have failed to use the correct terminology. There will be spelling errors and errors of grammar which will be obtrusive.</p> <p>Points may include: Need for back up and archive:</p> <ul style="list-style-type: none"> • Back up necessary in case of corruption of data... • ...either maliciously or accidentally • If data destroyed then firm will have to shut • Archive necessary to keep copy of data for future use • Frees up space for new material... • ...by removing little used or redundant data • Used by firm for mail shots, the following year <p>Procedure for back up:</p> <ul style="list-style-type: none"> • Length of time between back ups/daily • Mention of medium used/DVDRW 	[8]	

Question	Expected Answer	Mark	Rationale
	<ul style="list-style-type: none">• mention of number of copies/one kept off site• Need to keep transaction log between back ups• Incremental backup <p>Procedure for archive:</p> <ul style="list-style-type: none">• At longer intervals/annually• Little used data/customers who have not received their policies• Written to long term storage/DVDR• These customers removed from current files		

Question	Expected Answer	Mark	Rationale
5 (a)	<ul style="list-style-type: none"> - Information can be looked at by others - Information may be hacked/worries about privacy - Data can be used to commit fraud/steal from accounts - Worries created by reports in the press - Information may be sold on/passed on - Information used to send junk mail - Customer does not know what use may be made of the data (1 per -, max 2)	[2]	
(b)	<ul style="list-style-type: none"> - Passwords on system - Passwords allow access to only a few staff - Staff who are allowed access need to be stated (and reported to the DP registrar) - Computer systems protected by firewalls/anti-hacking measures - Physical access restricted - Data encrypted - Out of date data is deleted - Customer can inspect details on request - Reassure customers by advertising measures that have been taken - Opt-out of marketing tick box (1 per -, max 5)	[5]	Not safety of data from loss or corruption
6 (a)	<ul style="list-style-type: none"> - Definition of problem/If problem not defined accurately then the wrong problem will be solved/client will not be happy despite the analyst solving the problem - Feasibility study/Decision made as to whether the problem can be solved/Parameters like budget and work force considered - Information collection/example of information collection method - Analysis of information collected/formulation of requirements specification/creates an understanding of problem and present solutions - Design of solution/Design specification created/Data structures planned/Interface planned/diagrams used to explain new solution (2 per -, max 3-, max 6)	[6]	No mention of coding. Accept idea of prototype interface but no further

Question	Expected Answer	Mark	Rationale
(b)	<ul style="list-style-type: none"> - Idea of passing from one stage to the next in order - Each stage in the life cycle feeds information to the next stage - At each stage it may be necessary to return to one or more previous stages... - either to collect more information/data or to check on data that has been collected - After returning, all the intervening steps must be revisited (1 per -, max 3)	[3]	Accept points shown on diagram
(c)	<ul style="list-style-type: none"> - (Client must evaluate system to) ensure that the requirements have been met - Analyst must evaluate system to provide evidence that they should be paid - The criteria should be the agreed set of objectives of the system - This will be done by the rigorous testing of the system... - including normal and abnormal data.../functional testing - and using the end user as a tester/acceptance testing (1 per -, max 4)	[4]	
(d)	<ul style="list-style-type: none"> - Corrective /errors will be found in original software/only come to light in normal use/missed by testing/must be corrected to make software usable - Adaptive/one of the parameters used to set up system has changed/eg the VAT rate changes/the software must be altered to reflect the change - Perfective/during use it is found that one element of the system is not performing as well as it could/software is altered to improve performance. (2 per -, max -, max 4)	[4]	

Question	Expected Answer	Mark	Rationale
8 (a)	<ul style="list-style-type: none"> - A set of rules - to govern transmission of data 	[2]	
(b)	<ul style="list-style-type: none"> - Bit rate/to ensure sender and receiver are sending and receiving data at the same rate/measured in bits per second - Error checking/devices must agree on method eg even or odd parity/otherwise messages will never be accepted - Character set used/otherwise binary codes would relate to other characters than those intended - What type of data transmission is used/serial or parallel/simplex or duplex/packet size <p>(Note: Accept others with explanation) (2 per -, max 3-, max 6)</p>	[6]	Physical Logical
(c)	<ul style="list-style-type: none"> - Data divided into packets of equal sizes - Each packet has a label attached stating... <ul style="list-style-type: none"> ...destination ...what the data file is ...which packet number it is ...transmitting addresses - Individual packets sent on to network to follow most convenient path - Packets follow different routes/no preset path - Packets arrive in wrong order - Packets must be reordered - Idea of security <p>(1 per -, max 5)</p>	[5]	

Question	Expected Answer	Mark	Rationale
9 (a) (i)	<ul style="list-style-type: none"> - Allows more than one task/program to be open at a time... - ...each apparently runs at the same time - Processor is <u>so fast</u> that it seems as though the tasks are done simultaneously - Round robin system with each task allowed a small amount of time - User can switch between programs - Different programs available in different windows <p>Use; eg Single user/student able to listen to music while using a spreadsheet/single machine operating system (1 per -, max 3 + Use, max 4)</p>	[4]	
(ii)	<ul style="list-style-type: none"> - One computer with many terminals/more than one user at a time - Each terminal given time slice... - ...in turn - Each time slice very small (c.1/100 of a second) - Use of flags - Use of priorities/privileges - Data is separated/ security provision essential/user rights <p>Use: eg Supermarket checkout system/online gaming/mainframe serving many terminals (1 per -, max 3+ Use, max 4)</p>	[4]	No mention of server Network systems are incorrect. Any mention of multiple computers is wrong.
(b) (i)	<ul style="list-style-type: none"> - Housekeeping programs/System program to perform a common task/programs to help the running of the software/hardware/protect system 	[1]	
(ii)	<ul style="list-style-type: none"> - Storage of files on secondary storage... - use of folders/directories/different file extensions - Opening files/folders to retrieve data when required/use of shortcuts created on desktop - Copying of files from one medium/place to another/to take into school/make backups - Deletion of files from storage when coursework handed in/more recent version stored - Security measures/access management <p>(1 per -, max 3)</p>	[3]	A simple list is worth 1 mark Must be file <u>handling</u>

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