



Rewarding Learning

**ADVANCED SUBSIDIARY (AS)
General Certificate of Education
January 2012**

**Information and Communication
Technology**

Assessment Unit AS 1

assessing

Module 1: Components of ICT

[AW111]

MONDAY 16 JANUARY, AFTERNOON

**MARK
SCHEME**

- 1 (a) A wizard/macro could be used
 The manager would first create a query
 ... by selecting the appropriate table e.g. Books
 ... and entering the appropriate search criteria
 ... e.g. specifying the 'type of book' field as 'non-fiction'
 The manager would then create a report
 ... based on the query
 ... specifying the fields to be displayed
 ... e.g. the book title
 The report can be formatted/a template can be used
 ... e.g. header/footer can be specified
 [1] for each of six points [6]

- (b) **RAM**
 Used as temporary storage/RAM is volatile
 Holds the current application program, e.g. database application
 Holds data currently being processed
 ... before it is saved
 Holds non-core operating system functions
 [1] for each of three points

Hard disk

- Used as semi-permanent storage
 Holds the system's application software, e.g. database software
 Holds the complete operating system
 Holds the database
 ... which has been saved
 [1] for each of three points [6]

(c) **CD-RW**

- The CD-RW is **portable**
 ... and can be removed to a **safe location**
 [1] for each of two points

- The data can be copied onto the CD-RW as it is "**writable**"
 ... so **backup data can be copied** to it
 [1] for each of two points

- A CD-RW can be **reused** for multiple backups
 ... as the backup can be erased and new data written (**rewritable**)
 [1] for each of two points

- A CD-RW has enough **capacity**
 ... for **small/medium databases**

- [1] for each of two points
 A CD-RW may not have enough **capacity**
 ... for a **large database**
 [1] for each of two points

The Internal hard disk

- The hard disk is **connected** to the computer system
 ... and cannot easily be **removed**/stored in a safe or remote location
 [1] for each of two points
 [2] for one comment about suitability [4]

- (d) (i) The source code is available
 ... and any user has the right to modify it
 ... no licence is required/it is free of copyright
 [1] for each of two points

There are no restrictions on use of the software/any user can make modifications or improvements to the code
 ... and then distribute the modifications or improvements
 [1] for each of two points

Open source software **may** be more secure than proprietary software
 ... as there may be many independent programmers scrutinising the code/there is an incentive for programmers to ensure code is high-quality
 [2] for each of two points

Open source software is not dependent on any one developer/proprietor
 ... if the proprietor stops supporting the software, anyone can access the source code and continue development
 [1] for each of two points

[2] for one benefit [2]

- (ii) Because open source software is normally collaborative
 ... it may not be properly/fully/continuously scrutinised/documentated
 ... and bugs may not be fixed/dealt with consistently
 [1] for each of two points [2]

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2 (a) **A star network**

Each node is directly connected to the hub/server by a cable
 Failure of a cable will only affect the node connected by the cable
 All other nodes will be able to communicate via the hub
 [1] for each of two points

A bus network

All nodes are connected to a backbone
 Failure of the backbone will affect the rest of the network
 Failure of a cable connecting a node to the backbone will only affect that node
 [1] for each of two points [4]

- (b) (i) The TCP layer enables two hosts to establish a connection and exchange data
 It is responsible for reliability and correct delivery
 It converts a message into data packets
 ... containing header/sequence number/destination address
 ... that are transmitted over the network to the destination computer
 ... and then reassembled so that the message can be read by the recipient
 [1] for each of three points [3]

- (ii) The IP layer is responsible for routing data packets from node to node
 It forwards each packet using its destination address (the IP number)
 Packets of the same message may be sent by different routes
 ... by routers/switches
 [1] for each of three points [3]

- (c) Using a web site
 ... with graphical/multi-media/interactive representations of the information
 Visitors will be directed to the web site via search engines
 ... or they can go directly to the web site using its URL
 Using an on-line bulletin board/message board/forum/social networking/
 blogging/VLE/podcasts
 ... where information can be posted/threads created
 ... and readers can post responses or to post new messages
 [1] for each of four points MAX [2] if no mention of information [4]

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3 (a) Data

Data consists of raw facts or figures/has no context or meaning
 '15.00' by itself is just a number
 [1] for each of two points

Information

Information is processed data/data with a context or meaning
 '15.00' is the unit price in £s of Product 24163, a mouse
 [1] for each of two points [4]

- (b) (i) In a transposition error, the places of two digits are interchanged [1]
 The check digit is recalculated after transmission
 As each digit in the Product Code is multiplied by its place weighting
 ... and the positions of some digits have changed
 ... the check digit will be incorrect
 [1] for each of three points [4]

(ii) Product Code	1	3	2	1	7	
Weightings	5	4	3	2	1	[1]
Products	5	12	6	2	7	
Sum	32					[1] for sum
Remainder	10					[1]

Error ! **Remainder** should be **zero** for a valid Product Code
 [1]

Alternatively

Product Code	1	3	2	1	7	
Weightings	5	4	3	2		[1]
Products	5	12	6	2		
Sum	25					[1] for sum
Remainder	3					[1]

Error ! **Check digit** should be $11 - 3$ i.e. **8**
 [1] [4]

- (c) How accurate the information is
 The invoice should not contain any errors such as an incorrect invoice
 number/date/unit price...
 [1] for each of two points

How complete the information is
 No information required for the invoice should be missing such as the date/
 invoice number...
 [1] for each of two points

How effectively presented the information is
The invoice should be legible/understandable with labels/appropriate font sizes/white space
[1] for each of two points

How relevant the information is.
Example – the invoice may contain superfluous details such as the store’s opening hours
[1] for each of two points
[2] for each of two factors [4]

(d) The SUM() or Total () function [1]

This calculates the sum of a range of cells
Cell F5 contains the function SUM(B5:E5)
[1] for one point

The AVR() or AVERAGE() function [1]

This calculates the average of a range of cells
Cell G5 contains the function AVR(B5:E5)
[1] for one point

The MAX() or maximum function [1]

This calculates the maximum value of a range of cells
Cell H5 contains the function MAX(B5:E5)
[1] for one point

The COUNT() function [1]

This counts the number of (non-blank) cells in a range of cells
Cell G2 contains the function COUNT(A5:A8)
[1] for one point

[2] for each of three functions [6]

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4 (a) RFID uses radio waves/wireless technology
... to transmit the identity of an object/its unique serial number
An antenna/reader emits radio signals to activate the RFID tag/chip
... and decode it
... and to read and write data to the tag
A tag can hold kilobytes of data
The range can be anything from centimetres to metres
In active systems
... the chip has its own power supply
In passive systems
... the chip is activated by the reader’s power
[1] for each of four points [4]

(b) The RFID chips used are very small/approximately 1 cm by 2 mm
... and are suitable for insertion beneath the dog’s skin
[1] for each of two points

RFID technology does not require direct contact
... and data can be read through animal tissue, clothing and other materials
[1] for each of two points

RFID can track moving objects
... so a dog can be identified safely without being constrained
[1] for each of two points

[2] for each of two benefits [4]

(c) The club should register with the DP Registrar
... and state what data it will store and for what purpose
[1] for each of two points

The club should appoint a data protection 'champion'/controller
... who will be responsible for ensuring the club complies with the legislation
[1] for each of two points

The club must only store the data it identified at registration
... and use the data for the stated purpose
[1] for each of two points

The club should ensure that relevant staff are trained
... to comply with the legislation
[1] for each of two points

The club must keep data accurate/up to date
... by ensuring that if number details change, the member data base is updated
[1] for each of two points

The club must establish procedures to keep data secure
... such as user names and passwords
[1] for each of two points

The club should delete data
... that is no longer needed
[1] for each of two points

The club must respond to requests from data subjects
... and inform them of the data held about them/correct any erroneous data
[1]

The club must not pass on data to third parties
... without appropriate safeguards/authorisation
[1] for each of two points

[2] for each of four steps [8]

(d) Paypal is a secure method/uses data encryption
... of sending and receiving money online/over the Internet
It acts as an intermediary between buyer and seller
... so that most of the buyer's details are withheld from the seller
The buyer logs on using an email address and password/PayPal account
A user is notified by email if a payment is made into their account
Fees are charged depending to whom you are sending funds
[1] for each of four points [4]

		AVAILABLE MARKS
<p>(e) HTML is a language/has a syntax A HTML file is created for each individual web page HTML commands take the forms of tags The head tag describes/identifies the website/page The body of a HTML file specifies the content of the web page/what will be displayed in the browser Text can be formatted – fonts, sizes, colours Multimedia content can be inserted – graphics/images/sounds/movies Links can be inserted – to other pages/multimedia objects The structure of a page can be controlled by templates/tables/CSS [1] for each of four points</p>	[4]	24
<p>5 (a) The student will use a scanner ... to convert the draft into digital form ... such as a jpg file/bmp file ... and save it The student will create an email for the tutor and add the file as an attachment [1] for each of four points</p>	[4]	
<p>(b) The tutor will access a contacts list of students/address book ... and select the appropriate students .. or appropriate category/group The tutor will create an email containing the message The email can be marked as urgent The same email will be sent to all the selected students at the same time ... using CC/BCC The tutor can be notified when each student opens the email [1] for each of four points</p>	[4]	
<p>(c) (i) Worm virus A malicious program which replicates itself from system to system ... without the use of a host file Worms generally exist inside of other files A worm will pass on a file infected with a malicious macro ... using up more and more of the computer's memory [1] for each of three points</p> <p>Logic bomb A logic bomb lies dormant ... until a specific piece of program code is activated A typical activator for a logic bomb is a date The logic bomb checks the system date and does nothing until a pre-programmed date and time is reached A logic bomb may wait for a certain message from its programmer ... before executing its code [1] for each of three points</p>	[6]	
<p>(ii) Install antivirus software Install a firewall Use of proxy server Remove/disable scan portable devices such as memory pens Introduce an acceptable use policy new point Train users to avoid opening suspicious emails etc. [1] for each of four points</p>	[4]	18

- 6 (a) Data Flow Diagram (DFD) [1]
- A External entity [1]
 - B Process [1]
 - C Data store [1]
 - D Data flow [1]
- [5]
- (b) An ER diagram is a graphical model/representation
 ... of a system's data requirements
 It identifies the entities about which data is stored
 ... and the links between them/relationships
 ... and the type of links
 ... and the entities' attributes/properties
 ... including the key attributes/fields
 [1] for each of four points [4]
- (c) (i) The new system and the old system are run side by side
 ... until the new system has proved itself
 [1] for each of two points [2]
- (ii) **Benefit**
 Both the new system and old system have to be resourced during
 changeover
 [1]
- Drawback**
 If the new system fails, the old system is not there as a backup
 [1] [2]
- (d) Has the system achieved its objectives/the user requirements
 Has it delivered the promised improvements
 ... such as reduced processing time/improved productivity?
 ... increased processing accuracy?
 ... better quality information?
 ... reduced business costs/operating costs/manpower costs?
 [1] for each of four points [4]

QWC

Total

**AVAILABLE
MARKS**

17

5

120

Quality of Written Communication (QWC) in GCE Mark Schemes.

The assessment of quality of written communication.

Marks are to be allocated to QWC in accordance with the following criteria.

Performance Level	Criteria	Marks
Threshold	Candidates spell, punctuate and use the rules of grammar with reasonable accuracy; they use a limited range of specialist terms appropriately.	0, 1
Intermediate	Candidates spell, punctuate and use the rules of grammar with considerable accuracy; they use a good range of specialist terms with facility.	2, 3
High	Candidates spell, punctuate and use the rules of grammar with almost faultless accuracy; deploying a range of grammatical constructions; they use a wide range of specialist terms adeptly and with precision.	4, 5