Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
Summer 2012

Information and Communication Technology

Assessment Unit AS 1

assessing

Module 1: Components of ICT

[AW111]

TUESDAY 29 MAY, MORNING

MARK SCHEME

			AVAILABLE MARKS
1	**(a)**	Input Cash card PIN Menu choice/option Amount of cash to be withdrawn [1] for each of **two** inputs Output Cash User instructions on the screen Error message on the screen Printed receipt Sounds e.g. beeps [1] for each of **two** inputs [4]	
	(b)	MICR Ink with magnetic properties is used/the ink can be magnetised A special font is used ... which can be read by magnetic scanners ... which recognise each letter by its magnetic level ... and optical scanners ... and humans [1] for each of **three** points Smart cards Contain an integrated circuit card/chip The chip contains a microprocessor ... with RAM and ROM memory The microprocessor controls access to the data on the card The card gets its power from the reader [1] for each of **three** points [6]	
	(c)	Banking facilities are available 24 hours of the day Banking facilities are available from any suitably equipped computer/mobile phone/Internet connection [1] for each of **two** benefits [2]	
	(d) **(i)**	Data documents are gathered/bundled together "the data is collected together" Bundles are processed together ... at a set/convenient time/at/ a quiet period/overnight/when sufficient quantities are available All data documents undergo the same processing It is an automatic process/human intervention is not required A script/command line language may be used [1] for each of **four** points [4]	
	(ii)	Transactions are processed directly/immediately they occur ... using an on-line computer system Each transaction influences the next transaction Each transaction must be completed in full before the next transaction is processed For example, at an ATM, the amount is withdrawn from the account before any other transaction is permitted on that account [1] for each of **four** points [4]	20

2 **(a)** WAN
Spans a relatively large geographical area
... using telephone lines, fibre optic cables, satellite links
[1] for each of **two** points

LAN
Spans a relatively small geographical area
... using cabling/wireless technology
[1] for each of **two** points [4]

(b) An intranet is a private/closed network
The Internet is a global WAN accessible by anyone
[1] for each of **two** points [2]

(c) To provide a VLE/provide students with course information and materials
"students can access course information"
To provide staff and students with e communication, e.g. email
To provide on-line assessment and feedback
To provide students with controlled access to the Internet
[1] for each of **two** points [2]

(d) Search for information
Students could use a search engine
... by entering key words/phrases/criteria about the project
The results will be displayed in order of relevance
The results of the search can be opening via hyperlinks
The search can be narrowed down/broadened
... using AND/OR/NOT/excluding/including key words
[1] for each of **four** points

Disseminate information
The university could make information about the project available to other universities in the project
... using a dedicated website
... or by posting the information
... on a dedicated forum
... or on an electronic bulletin board/message board
[1] for each of **four** points [8]

(e) Hardware
Microphone
Loudspeaker
High resolution screen/data projector
High bandwidth cable/connection
Web cam
[1] for each of **four** hardware components

Software
Communication software enabling sending and receiving data over telephone line
Image compression/decompression software to reduce file sizes during transmission/streaming software
[1] for each of **two** software components [6]

AVAILABLE MARKS

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			AVAILABLE MARKS
3	**(a)**	Worm A 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 document infected with a malicious macro ... using up more and more memory [1] for each of **three** points [3]	
		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 [3]	
		Macro virus A virus written in the macro language ... which is part of many software applications such as a word processor The virus's code is embedded in the document (or file) ... and is activated each time the document (or file) is opened [1] for each of **three** points [3]	
	(b)	Install anti-virus software ... which will automatically/regularly check all files on the network ... to detect and remove viruses [1] for each of **three** points	
		Install a firewall ... which will automatically monitor all traffic on the network It will compare the data with security settings ... and only permit authorised data movements [1] for each of **three** points	
		Remove or disable external/portable drives ... so that users cannot load software or data directly This ensures that network security cannot be bypassed [1] for each of **three** points	
		Implement levels of access ... which will restrict user's access to data files For example READ ONLY [1] for each of **three** points	
		Use data encryption ... by applying an alogorithm ... when data is transferred across the networks [1] for each of **three** points	
		[3] for each of **three** methods [9]	18

				AVAILABLE MARKS
4	**(a)**	Character/type Range Format Check digit [1] for each of **four** fields	Name/Delivery address Quantity Email address Product code [4]	
	(b)	A direct data source A data source designed and used for a specific purpose The on-screen form is designed to collect data about the customer and the order [1] for each of **two** points An indirect data source A data source used for a purpose other than its original purpose The data from the on-screen form is used by a third party to sell insurance [1] for each of **two** points	[4]	
	(c)	Data must be processed for specified purposes ... and not further processed in any way that is incompatible with the original purpose The on-line retailer cannot pass this information to another business or organisation unless the customer has been asked for their consent ... and they have given their consent Data must not be transferred outside the European Economic Area ... unless there is adequate protection This could restrict the insurance company if they were registered outside the EEA [1] for each of **four** points	[4]	12
5	**(a)**	Questionnaires [1] A set of questions is developed asking key points about the current system This is completed by a wide selection of users [1] for each of **two** points Observation [1] The systems analyst shadows key users ... and records their everyday activities [1] for each of **two** points Interviews [1] A set of questions is developed asking key points about the current system These are asked of a selection of key users by the analyst [1] for each of **two** points Documentation sampling [1] The analyst examines a selection of key input forms ... and output forms ... that are currently in use [1] for each of **two** points [3] for each of **two** methods	[6]	

			AVAILABLE MARKS
(b)	**(i)**	Is the hardware required available? Is the software required available? Will the technology operate effectively ... under the workload ... in the proposed environment Will the hardware and software be compatible [1] for each of **two** points [2]	
	(ii)	This considers the effect on employees ... and customer service Will there be redundancies? Will training/relocation/de-skilling be required? [1] for each of **two** points [2]	
(c)		Processes Entities Data flows Data stores [1] for each of **three** components [3]	
(d)		Direct changeover [1] The new system replaces the old system ... in one step/'overnight [1] for each of **two** points Parallel running [1] Both systems run side by side ... until the new system is proven [1] for each of **two** points Pilot running [1] The new system is used in one section/department ... until it is proven ... at which point it is introduced throughout the organisation [1] for each of **two** points Phased changeover [1] The change over takes place in stages, one at a time A part of the new system are implemented When this is satisfactory, another part of the system is implemented The old system continues to perform functions which have not yet been changed [1] for each of **two** points [3] for each of **two** methods [6]	
(e)		Writes code/the program code ... from the module specifications Tests the code/develops test plans Debugs the code Documents the code Maintains the code [1] for each of **four** points [4]	23

			AVAILABLE MARKS
6	**(a)**	The manager would create a query ... by specifying the Doctor table ... and the criteria e.g. 'Specialism = 'surgery' ... and the fields to be extracted e.g. name, address, telephone number The manager would then specify parameters for the report positions, headings e.g. title, field [1] for each of **six** points	[6]	
	(b) **(i)**	The operating theatre environment will be recreated in virtual reality/ doctors can practice the new techniques as if they were operating on real patients Immersive technologies will be used ... such as head-mounted displays/virtual reality helmets/movement sensing gloves ... and electronic versions of scalpels etc. The computer creates a three-dimensional graphical environment ... simulating the patient's response Numerical data/sensors ... will sense the doctor's reactions and movements [1] for each of **four** points	[4]	
	(ii)	There is no need for a human patient [1] This is safer as no human is put at risk There is no need to wait on a suitable patient [1] for **one** point The surgical procedure can be repeated [1] At any time Many times Variations/emergencies can be programmed in New techniques can be practised Feedback provided on the doctor's performance [1] for **one** point [2] for each of **two** benefits	[4]	
	(c)	The Health and Safety at Work Act ... defines legal standards for computer equipment ... and identifies the steps employers must take to minimise risks The Act places most responsibilities firmly with the employer ... but there are practical measures which employees should take to avoid harming themselves Employees can receive damages for injuries caused through use of computers ... if the employer could have foreseen the risk but did nothing about it Typical health and safety concerns relate to vision problems ... and muscular problems [1] for each of **six** points	[6]	20
		QWC		5
			Total	**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]