Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
January 2011

Information and Communication Technology

Assessment Unit AS 1

assessing

Module 1: Components of ICT

[AW111]

THURSDAY 13 JANUARY, AFTERNOON

MARK SCHEME

				AVAILABLE MARKS
1	(a)	(i)	Data is a meaningless value 321 is just a sequence of digits [1] for each of **two** points Information is data with a meaning 321 is the Patient ID for Patient Green with an appointment at 09:30 [1] for each of **two** points [4]	
		(ii)	Knowledge is applied information The cancelled appointment could be offered to another patient/ The doctor could see White earlier [1] for each of **two** points [2]	
	(b)		A direct data source has been created for a specific purpose and used for that purpose The purpose of the questionnaire is to gather data about eating habits [1] for each of **two** points An indirect is a data source which is used for a purpose for which it was not originally intended Patients' records could be analysed and data about treatments related to diets extracted e.g. weights of patients/digestion problems [1] for each of **two** points [4]	
	(c)		Being up to date [1] Relevance [1] Effective presentation [1] Complete [1] [4]	
	(d)		Hardware costs [1] The cost of purchasing/leasing computers/peripheral The cost of consumables [1] for **one** point Software costs [1] The cost of purchasing application software licences/the operating system [1] for **one** point Personnel [1] Employing/training someone to develop the application/input data/run reports [1] for **one** point [6]	20
2	(a)		A touch screen is an input *and* output device The screen is covered by a membrane …which is sensitive to pressure Alternatively, a line of infrared sensors/lights …along the edges of the screen The pressure of the user's finger is detected/the finger cuts the beams	

AVAILABLE MARKS

The *x* position/coordinate calculated
…and *y* position/coordinate calculated
[1] for each of **four** features [4]

(b) (i) A microphone
…attached to a soundcard is used to capture speech
The signal is converted from analogue to digital
…using sampling
The digital signal is compared to a database of sounds
…for a matching pattern
…of frequencies/wavelengths
[1] for each of **four** points [4]

(ii) Advantages
No special ICT skills required, just spoken commands
The user can control the system from a distance
Can be designed only to respond to certain people's voices
Can be adapted for remote activation e.g. by phone
More suitable for people with disabilities
[1] for each of **two** advantages

Disadvantages
Can be complicated/time consuming to calibrate/set up
Could be activated by extraneous sounds e.g. background noise
May fail to respond to user if they have a cold for example
May respond to a word not intended as a command
[1] for each of **two** disadvantages [4]

(b) (iii) Sensor
Heat sensor continuously monitors temperature
Sensor readings monitored at intervals
[1] for each of **two** points

A microphone records the sound
…at intervals
[1] for each of **two** points
[2] for one sensor

Actuator
Actuator attached to boiler/pump
The computer sends a signal to switch it on or off/computer controlled motor
[1] for each of **two** points [4]

(c) The processing of data about the heating system as it is received/generated
…and producing results without delay/immediate feedback
…so the result is reflected/effective for the next processing activity
Example – the system always has up-to-date data about temperatures in the home
[1] for each of **three** points [3]

		AVAILABLE MARKS
(d)	ROM [1] To permanently store the boot up sequence/bootstrap/OS core/BIOS [1] for an acceptable use RAM [1] To store data currently in use To store the current application [1] for an acceptable use Cache memory [1] To store the most recently/frequently accessed data [1] for an acceptable use [6]	25
3 **(a)**	<u>LAN</u> A network in a single location/building The connection of computers within the house comprise a LAN [1] for each of **two** points <u>WAN</u> A network spread over a wide geographical area The Internet is a global WAN The pupils could access the school network from home [1] for each of **two** points [4]	
(b)	<u>Switch</u> A switch checks the destination of all communications/data it receives …and forwards it to the computer it is intended for [1] for each of **two** points <u>Hub</u> A hub passes all communications/data it receives …to all the computers in the network [1] for each of **two** points [4]	
(c) **(i)**	Fibre optic cable uses light The cable consists of glass or plastic wires/cores/filaments …bundled together …and encased in a jacket Each core has a mirror-lined wall or cladding …which reflects light back along the core (total internal reflection) …to minimises signal degradation Light is transmitted in pulses …which represents of a range of frequencies/that is modulated The cable can vary in length from a few metres to hundreds of kilometres Fibre optic cable is not susceptible to interference [1] for each of **four** points [4]	

(ii) The student could use a search engine
. . . by typing in key words about what is being searched for
. . . and following the links in the results
which will be listed in order of relevance
The search could be widened/narrowed down
. . . by including/excluding words/AND/OR
Example "fibre optic cable" "data capacity"
[1] for each of **four** points [4]

(iii) Prepare an electronic copy of the report
Create a subject for the email
Create a message for the email
Attach the report
Select the recipients
from the address/contacts list/send a CC
[1] for each of **four** points [4]

(iv) <u>Plagiarism</u>
The vast amount of material on the Internet has greatly increased the incidence of plagiarism
Information about almost any topic can be obtained with a few clicks of the mouse via search engines
Most of the information is free
Many people are tempted to "cut and paste" material and pass it off as their own
This is difficult to detect as this involves tracking down the source of the plagiarised material
It is such a problem that universities use special software to detect plagiarism
The Copyright, Designs and Patents Act
. . . makes plagiarism illegal
[1] for each of **three** points

<u>Censorship</u>
Censorship is the suppression of speech or writing considered to have an undesired influence on society
It has become more difficult for governments to control/suppress information
. . . as national borders are difficult or impossible to enforce
Some websites publish information some governments would like to censor
Residents in a country banning certain information may be able to access it on websites hosted outside the country
Some countries have resorted to a complete ban on citizens using the Internet
Some countries (e.g. China) use sophisticated techniques to block specific websites/portals/forums/blogs
. . . by blocking or re-directing their IP addresses
. . . or by monitoring data packets for words such as "democracy"
[1] for each of **three** points [6]

AVAILABLE MARKS

26

AVAILABLE MARKS

4 **(a)** **(i)** It should meet the exact needs of the users
…as it is designed specifically for the users/the users have a part to play in the analysis stage
[1] for each of **two** points

The developers will be on-hand
…to correct with any errors which arise during initial use of the system/during system review
[1] for each of **two** points

[1] for each of **two** advantages [4]

(ii) The development cost is spread over many users
…so the cost is relatively lower
[1] for each of **two** points

The software is readily available
…so there is no need to wait for the system to be developed
[1] for each of **two** points

The software may already be widely used
…so it should be well-tested/there could be existing user groups/ support materials
[1] for each of **two** points

[2] for each of **two** advantages [4]

(b) Parallel running [1]
Both systems are used at the same time
The old system is discarded when the new system is satisfactory
[1] for each of **two** points

Pilot running [1]
The system is first introduced into one part of the organisation
The new system is then introduced across the organisation
[1] for each of **two** points

Direct changeover [1]
The old system is discarded
The new system replaces it immediately
[1] for each of **two** points

Phased changeover [1]
The new system is gradually implemented
…in stages or module by module
[1] for each of **two** points

[3] for each of **two** methods [6]

(c) The usability of the software
How fast can a user learn to use the user interface?
Is the interface intuitive?
Does the interface match the user's level of ICT competence?
Is the interface familiar to the user?
How well can a user transfer previous skills?
[1] for each of **two** points

The effectiveness of the software
Is the system cost effective?
Does the system perform its tasks efficiently/meet benchmarks?
[1] for each of **two** points

The suitability of the software
Does the system meet all its objectives?
Does the system provide the required functionality?
Is it compatible with existing technology/hardware/software/data?
Is it robust?
[1] for each of **two** points [6]

AVAILABLE MARKS

20

5 **(a)** PayPal [1]
It acts as an intermediary between buyer and seller
…so that the buyer's details are withheld from the seller
It is set up using an email address and a password
Money is transferred through PayPal accounts, not ordinary bank accounts
A transaction fee may be charged
[1] for each of **three** points

https [1]
This is a protocol used when the information being communicated is sensitive/confidential such as credit/debit card details
It uses encryption
…so that intercepted data is meaningless
[1] for each of **three** points [8]

(b) Improved picture quality/sound quality
Programs can be broadcast in much higher resolution than analogue television
[1] for each of **two** points

Increase in the number of TV channels
Compression techniques enable the broadcast of high definition signals/multiple streams with stereo sound
Improved accessibility for the visually and hearing impaired
Sign language/audio description/subtitling can be made available
[1] for each of **two** points

Access to interactive services
More information about programmes/programme guides/shopping/gaming/voting
[1] for each of **two** points

Increased user control
Different broadcasts can be viewed on a single channel
The viewer can set favourites/reminders
[1] for each of **two** points

[3] for each of **three** benefits [6]

(c) Designed for digital streaming over the internet
Stores and plays multimedia – digital audio and video including subtitles
Stores data
Encompasses MP3 technology – audio and images
Uses compression to reduce large video files
Software is available for editing files
Uses Mpeg format
[1] for each of **four** points [4]

(d) Worm
Replicates itself from system to system
…without the need for a host file
Worms generally exist inside other files
Example – a worm will pass on a document infected with a malicious macro
Effect – the replication will progressively slow down the computer
[1] for each of **two** points

Macro virus
Is usually attached to a document or spreadsheet
…and uses the macro functions/language of the application
It is typically designed to run automatically when the document/ spreadsheet is opened
It copies itself and spreads from one file/document/spreadsheet to another
…by infecting the application's start up file
[1] for each of **two** points

Logic bomb
A logic bomb lies dormant
…until a specific piece of program code is activated/or an event occurs
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 **two** points [6]

AVAILABLE MARKS
24
5
120

+ QWC

Total

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