



Rewarding Learning

**ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2011**

**Information and Communication
Technology**

Assessment Unit AS 1

assessing

Module 1: Components of ICT

[AW111]

TUESDAY 7 JUNE, MORNING

**MARK
SCHEME**

- 1 (a) To manage communications from network stations/nodes
To store shared application software
To store shared files such as documents, databases
To control central resources such as storage media/printers
[1] for each of three tasks [3]
- (b) A firewall consists of software or a combination of hardware and software
It controls/filters the flow traffic *into* the network
... by implementing security rules/levels of security
Traffic which does not meet the security rules is blocked
... such as viruses/spam/denial of service attacks/backdoors/hacking
[1] for each of two points
- It can control the flow of traffic *out of* the network
It can control how users connect to Web sites
... and which files are permitted to leave the network
... and allows the monitoring of users' Internet access
[1] for each of two points
- [2] for each of two features [4]
- (c) Supports broadband/multiple data transmissions
Flexible medium and can be used in awkward layouts
Impervious to electromagnetic interference
Minimal signal loss over distance
Signal difficult to intercept without destroying it
[1] for each of four benefits [4]
- (d) Each PC will require a *wireless network adapter/card*
... with a radio transmitter/receiver/antenna
... to communicate with the hub/server
A *wireless router/hub/switch* will be required
... with a radio transmitter/receiver/antenna **[Once only]**
... to communicate with each PC
A *wireless modem* may be used
... to connect directly to the ISP/Internet
Appropriate software/drivers will be required
[1] for each of four points [4]
- (e) It consists of a single backbone cable
... to which a number of star networks are each connected directly
Communication within a particular star is controlled by its hub
Communication between different star networks is via the backbone
There is a high level of traffic within each star
There is a lower level of traffic on the bus connection
[1] for each of four points [4]

- 2 (a) Data has no meaning on its own
42137 is just a number/sequence of digits
[1] for each of two points
- Information is data with a context/meaning
42137 is the Patient ID of Terri Green
[1] for each of two points [4]
- (b) Surname
Type check [1]
The value must only consist of text [1]
- Gender
Boolean or YES/NO [1]
The value can only take one of two values, 'M' or 'F' [1]
- Month
Range check [1]
The value must lie in the range 1 to 12 inclusive [1] [6]
- (c)

Digits	4	2	2	3	
Weighting	5	4	3	2	[1]
Products	20	8	6	6	[1]
Sum	40				[1]
Remainder	7				[1]
Check digit	4				[1]

... and the actual check digit is incorrect [1]
[1] for each of six points [6]

(d) The user is required to read the data that has been input
... and confirm that it is as intended
... and click the Save button if it is correct/the Edit button if it is not
[1] for each of three points [3]

(e) The legislation requires that personal information is:
Processed fairly and lawfully
Processed for one or more specified and lawful purposes, and not further processed in any way that is incompatible with the original purpose
Adequate, relevant and not excessive
Accurate and, where necessary, kept up to date
Kept for no longer than is necessary for the purpose for which it is being used
Processed in line with the rights of individuals
Kept secure with appropriate technical and organisational measures taken to protect the information
Not transferred outside the European Economic Area (the European Union member states plus Norway, Iceland and Liechtenstein) unless there is adequate protection for the personal information being transferred
[1] for each of four principles [4]

- 3 (a) Creating**
Standard slide templates are available
User defined templates can be created
Multimedia content can be added to each slide
... such as text/images/graphics/movies/sound/other objects
e.g. buttons
Effects can be applied to slide components
... such as entrance, emphasis, and exit animations
- Presenting**
The slide show can be set to run automatically
... or be controlled by the presenter using mouse/cursor keys
Transition effects can be applied to slides
Audience handouts, outlines, and speaker's notes can be produced
[1] for each of six points [6]
- (b) (i) Interactive white board**
An output device – displays the output from the computer to which it is connected (via a data projector)
An input device – the user can select GUI options using a special pen
Handwritten notes can be written on the screen
... and saved for later use (in image form)
... or printed out for distribution to the class
The handwritten notes can be converted to text using OCR
[1] for use of three points [3]
- (ii) A data projector**
An output device – displays the output from the computer to which it is connected
Projects the output onto a screen
Projects a high quality image
Can be controlled via a remote control
... focus/image size can be changed
[1] for each of three points [3]
- (c) (i) CD-R**
A laser is used
... to heat areas of an organic dye layer
... to permanently
... change the reflectivity of those areas
A lower powered laser reads the data
... be detecting alternating regions of heated and unaltered dye
[1] for each of three points
- CD-RW**
A laser is used
... to temporarily
... modify the phase change properties of a dye
... between crystal phase (erased) and amorphous phase (recorded)
A laser detects the difference between resulting light and dark areas
[1] for each of three points [6]

(ii) The CR-RW can be rewritten to 1,000 times or more ... enabling the lecturer to keep the most up-to-date copy of the slide show
[1] for each of two points [2]

(d) Enables the user to perform more than one task/program at a time
Each task may have its own window
Each task can be totally independent of each other
The tasks may be dependent e.g. they may share data
The OS allocates storage and other resources accordingly
In pre-emptive multitasking, the OS allocates CPU time slices to each program/task
In cooperative multitasking, each program has use of the CPU for as long as it needs
[1] for each of four features [4]

24

4 (a) (i) Is the technology commercially available?
Is the hardware and software available to meet the requirements?
Will the technology cope effectively with proposed workloads?
Will the required technology be compatible with existing technology?
[1] for each of three points [3]

(ii) Legal feasibility [1]
Will the proposed system comply with all relevant legislation such as the Data Protection Act? [1]

Social feasibility [1]
What will the effect be on employees and customers/ redundancies, retraining, relocation/effect on customer service [1]

Economic feasibility [1]
Will the benefits outweigh the cost? [1]

Operational feasibility [1]
Will the system be practical to use/what changes to procedures will be required? [1]

Schedule feasibility [1]
Can the system be developed within the required timeframe? [1]

[2] for each of two types of feasibility [4]

- (b) (i)** Produces program code
 ... using a programming language such as VB, SQL
 ... from module specifications
 Debugs the code
 Documents the code
 Maintains the code
 Carries out testing
 [1] for each of three points [3]
- (ii)** Uses the system in their working environment
 ... with real data/realistic volumes of data
 ... to establish if the system meets its requirements/the specification
 Provides feedback to the developers
 Signs off the contract
 [1] for each of three points [3]
- (c)** Technical documentation [1]
 Contains system objectives/specification/user requirements
 DFDs/ERDs/normalisation results/database structure/data dictionary
 Module architecture/specifications
 Interface design
 Queries & reports definitions/validation formulae
 Code listings
 Test plan & results
 [1] for each of three points
- User documentation [1]
 Contains installation instructions
 ... HW & SW configuration/requirements
 User guide
 Help/FAQ
 Security/backup procedures
 [1] for each of three points [8]
- (d) (i)** The original system is still fully operational
 ... if the new system fails/is unsatisfactory
 [1] for each of two points
- The results from the original system can be compared
 ... with the results of the new system
 [1] for each of two points
- [2] for one benefit [2]
- (ii)** Parallel running is very resource intensive
 ... as both the old and new systems have to be kept operational together
 [1] for each of two points
 [2] for one drawback

Parallel running involves duplication of effort
... as both the old and new systems have to be kept up-to-date
[1] for each of two points

[2] for one drawback [2]

AVAILABLE
MARKS

25

- 5 (a) (i)** Https is a protocol
When a user connects to a website via https a secure session is created
The website uses encryption
... for sensitive data such as bank details
... using a digital certificate
... which has a private key restricted to the owner
... and a public key given to the user
The website must have a Secure Socket Layer (SLL) Certificate
... which must be verified/trusted
[1] for each of three points [3]
- (ii)** Paypal [1]
PayPal safeguards the buyer's and seller's bank details
The buyer and seller must each have a PayPal account
PayPal transfers money from the buyer's account to the seller's account
... so that the buyer's confidential details are withheld from the seller and vice versa
[1] for each of three points [4]
- (b)** Users choose common or obvious passwords which can be guessed
Users do not keep passwords secure e.g. they write them down
Users use the same password for multiple applications
Users do not change default passwords
Users share passwords
Users forget to log off
Unencrypted passwords can be hacked
[1] for each of three points [3]
- (c)** HTML is a programming language
... which controls the appearance of a web page/tells the browser how to display a web page
It uses special tags
... to specify the *structure* of the web page/header/body
... to specify the *content*/multimedia elements/text/images/tables
... to *set attributes* such as fonts/background colour
... and hyperlinks/navigation buttons
Style sheets can be created to control sections/pages
[1] for each of four points [4]

- (d) (i)** The removal of physical risk
 Pilots can be trained or tested without risking lives/expensive equipment
 [1] for each of two points
- It is cost-effective (ignoring the high costs of simulators)
 ... compared to the cost of an air-craft/fuel/experienced trainer pilot
 [1] for each of two points
- The simulator can be programmed
 ... to recreate routine flight conditions/emergencies/exceptional conditions/to repeat scenarios
 [1] for each of two points
- The data from training sessions can be recorded electronically
 ... for future analysis/comparisons
 [1] for each of two points
- A training session can be repeated
 ... so the pilot can improve/learn from mistakes
 [1] from each of two points
- Extreme/rare conditions can be created
 ... which the pilot may never actually experience/which would be impossible to guarantee in real-life
 [1] for each of two points
- [2] for each of three benefits [6]
- (ii)** Computer software generates 3D images of what pilots see (weather, landscape/runway)
 ... and projects them onto a special screen/dome
 Actuators move hydraulic/electromechanical legs
 ... to recreate pitch/yaw/roll/acceleration/deceleration
 Sensors are used to detect pilot response
 ... such as joystick movements/response times/metabolic readings
 Virtual reality helmets/gloves with sensors may be used
 [1] for each of four points [4]

+ QWC

Total

**AVAILABLE
MARKS**

24

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