Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2013

Information and Communication Technology

Assessment Unit AS 1

assessing

Module 1: Components of ICT

[AP111]

TUESDAY 11 JUNE, AFTERNOON

MARK
SCHEME

General Marking Instructions

Introduction
Mark schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes
Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes, therefore, are regarded as part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

1 **(a)** **(i)** <u>Data</u>
Data is raw facts/figures
Suitable example: 15000 just a sequence of digits
[1] for each of **two** points

<u>Information</u>
Information is data which has been given a context
Example: 15000 is the Target Sales (£) for the Men's Department.
[1] for each of **two** points   [4]

(ii) Knowledge is the application of information/applying rules/
probabilities to information
The Men's Department has not met its sales target
Example: Extra advertising should be provided for the Men's
Department
[1] for each of **three** points   [3]

(b) <u>E8</u> contains a formula or equation
... SUM(E4:E6) **or** = E4 + E5 + E6
[1] for each of **two** points

<u>G4</u> contains the IF statement
... IF(F4>=E4,Y,N)
[1] for each of **two** points   [4]

(c) **(i)** <u>Name</u> A transposition error [1]
<u>Description</u> The position of two digits have been reversed [1]   [2]

(ii) Proof reading
The person inputting the data compares the data in the source
document with the data which has been entered
Double entry
The computer checks that both versions are the same
[1] for each of **three** points   [3]

(d)

Product code	4	5	6	6
Weightings	5	4	3	2
Products	20	20	18	12
Sum	70			
Remainder	70 ÷ 11 = 6 R **4**			
Check digit	11 – 4 = **7**			

[1] for each correct line   [6]   22

2 **(a)** <u>ROM</u>
Used to hold the bootstrap
... so that it is automatically available on switch on
[1] for each of **two** points

<u>RAM</u>
Use to hold current data
… and the current program
[1] for each of **two** points   [4]

(b) ALU [1]

Carries out all mathematical operations (+, −, ×, ÷)
... and logical/comparison operations
[1] for each of **two** points

Control unit [1]

Manages the sequence of operations within a program
... such as sequence/loop/selection
Implements the fetch/execute cycle
[1] for each of **two** points   [6]   10

3 **(a)** **(i)** Allows web pages to be viewed
Converts HTML code to a multimedia display
It provides navigation/home page/page tabs/hyperlinks
Includes a search engine
... URL address box
Records history/favourites/bookmarks
Plugins can be added
Security levels can be set/filters applied
Accessibility can be customised
[1] for each of **four** points   [4]

(ii) The user keys in keywords/phrases
... representing the search criteria
A list of appropriate websites will appear
... in order of relevance/popularity
The user can refine/broaden the search
... using AND/OR/NOT/quotes
The search can be restricted to news/images/regions
[1] for each of **four** points   [4]

(b) A microphone
A sound card
[1] for each of **two** components   [2]

(c) Microphone driver/compression SW
Voice recognition software
[1] for each of **two** components   [2]

(d) <u>Benefits</u>
Minimal level of ICT skills required
Suitable for visually impaired customers
Faster method of input compared to a keyboard
[1] for each of **two** benefits

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Drawbacks
The system may have to be calibrated for specific users
The system may not respond if the user's voice changes, e.g. due to a throat infection/different accents
Errors may be generated by background noise
[1] for each of **two** drawbacks [4]

(e) Software for which the copyright to source code
... is in the public domain/available to developers
No licence is required to use the code
Users can use/change/improve the software
... and redistribute it modified or unmodified
The software is usually developed in a public, collaborative manner
… it does not belong to a specific company/organisation
[1] for each of **four** points [4]

20

4 (a) <u>Name</u> Bus network [1]
<u>Description</u>
Each network node or device is connected directly
… to a common/shared communication line
[1] for each of **two** points

<u>Name</u> Ring [1]
<u>Description</u>
Each node is connected to exactly two other nodes
… forming a single continuous pathway or loop
[1] for each of **two** points

<u>Name</u> Star [1]
<u>Description</u>
Each node is connected directly
... to a central hub/node
… which processes all network communication
[1] for each of **two** points

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

(b) <u>Switch</u>
Connects network segments together
Usually contains more 'intelligence' than a hub
Inspects data packets as they are received
… determines the destination of each packet
… and forwards the packet to the appropriate network node/device
[1] for each of **three** points

<u>Proxy server</u>
Intercepts all requests to the Internet
... to see if it can meet the request
If not, it forwards the request to the Internet
It stores recently used pages in (cache) memory
The proxy server may be used to filter requests
... to prevent employees from accessing specific Web sites
It hides the IP address from external access
[1] for each of **three** points [6]

(c) (i) A set of rules/procedures
... that enable devices on computer networks using different technologies
... or from different manufacturers to communicate
[1] for each of **three** points   [3]

(ii) Is responsible for transferring packets of data from node to node.
Forwards each packet using the IP address.
Is responsible for verifying the correct delivery of data
Detects errors or lost data
[1] for each of **three** points   [3]

(d) They will be able to access to a world-wide customer base
... as anyone with Internet access can use the company's website
[1] for each of **two** points

They will be able to operate '24/7'
... since the website is automated, it is not restricted to "opening hours"
[1] for each of **two** points

They should be able to reduce operating costs
… by using fewer warehouses/retail outlets
[1] for each of **two** points

[1] for each of **two** benefits   [4]   22

5 (a) What will the effect be on employees
... and customers?
Will there be redundancies? Will staff require retraining/relocation?
What will be the effect on customer service?
[1] for each of **three** points   [3]

(b) The user requirements are defined in detail
The detailed operational requirements of the system are determined
These are translated into data/file structures
... and input formats
… and output formats
The user interface is developed
Query structures
... and report structures are developed
Detailed HW and SW requirements are determined
[1] for each of **six** points   [6]

(c) Application testing
Performed by the developer
The software is tested against the system requirements
It includes module testing/integration testing/system testing
Test plans are followed/test data is used/valid/invalid/extreme data
Black box and white box testing are used
[1] for each of **three** points

Acceptance testing
Performed when the software is ready to be released/handed over to
the client/users/after application testing
Intended to give the end users the confidence that the software meets
their requirements
A group representing the end users tests the application
... using real world scenarios/data leads to "sign off"
[1] for each of **three** points [6]

(d) It should meet the user requirements exactly
... as the development team will liaise with the client/end users
[1] for each of **two** points

The development team should be available
... to help users resolve problems
[1] for each of **two** points

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

(e) The hardware is installed
The software is installed
Data conversion takes place
… perhaps from manual files to computerised files
An appropriate changeover method is used direct/parallel/pilot/phased
Training implemented
[1] for each of **four** points [4]   23

6 **(a)** EFTPOS technology allows retailers to accept card payments
The customer's card is swiped through the terminal
The customer enters the PIN
The terminal encrypts the PIN
The terminal sends the encrypted data to the appropriate bank.
Then, if the bank accepts the transaction, money is instantly debited from
the customer's account
[1] for each of **four** points [4]

(b) The supermarket   Benefit

Increased sales
… as customers are not limited to the amount of cash they have with them
[1] for each of **two** points

Funds are instantly debited from the customer's account
... eliminating issues with offline processing bad cheques, declined cards
[1] for each of **two** points
Simplified banking
...less cash to count each day, saving time/reducing bank fees
[1] for each of **two** points

Increased security
... less cash being held, minimising losses from theft
[1] for each of **two** points

Reduction in operation costs
Fewer staff needed to process stock/sales
[1] for each of **two** points

[2] for **one** benefit

The supermarket   Drawback

Overreliance on technology
If the system fails there may be no alternative way to process stock/sales
[1] for each of **two** points

[2] for **one** drawback

Customers   Benefit

Increased security
... card and PIN details are encrypted
[1] for each of **two** points

Safer/more convenient
… as customers do not have to carry around as much cash
[2] for **one** benefit

Customers   Drawback

Risk of identity fraud
… customer's card/bank details can be stolen
[1] for each of **two** points

[2] for **one** drawback   [8]

(c) Data relating to a product is stored on an RFID tag attached to the product
The RFID tag contains data programmed into a small computer chip
The tag is activated by radio waves emitted from an RFID reader/wirelessly
The tag sends the data stored in its memory back to the reader
Active or passive technologies
[1] for each of **four** points   [4]

(d) There is no line of sight requirement
A bar code must be clean and the reader and label must be properly
oriented with respect to each other
RFID tags can be read from a greater distance, even in harsh environments
[1] for each of **two** points

The information stored in a barcode is fixed and cannot be changed
RFID tags can be dynamically updated
[1] for each of **two** points

Human intervention is usually required to scan a barcode
Data from an RFID tag can be read without the need for someone to
properly align the tag with the equipment that reads the data
[1] for each of **two** points

[2] for one advantage   [2]   18

Quality of written communication   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