Rewarding Learning

ADVANCED
General Certificate of Education
January 2013

Information and Communication Technology

Assessment Unit A2 1

assessing

Module 3: Information Systems

[AW211]

MONDAY 21 JANUARY, MORNING

MARK SCHEME

AVAILABLE MARKS

1 (a) (i) GUI
Uses windows to represent applications/tasks
. . . pull-down menus to provide options
. . . buttons to provide functionality
. . . scroll bars to assist navigation through screens/lists
. . . icons to represent objects such as programs, folders
. . . wizards to assist
. . . a mouse to control a pointer
Characterised by WYSIWYG
[1] for each of four points [4]

(ii) CLI
There is a list of specific commands
Each command is a short word/key word, e.g. PRINT
Each command has a correct syntax
Each command is typed at a prompt
Some commands have parameters
. . . or switches
[1] for each of four points [4]

(b) An object may be viewed/rotated in three dimensions/viewed from any angle
Techniques such as surface rendering can be applied
Zooming/cropping/scaling can be used
Benefit: More realistic/adventurous/creative modelling
Automatic calculations can be performed/automatic measurements made/automatic testing
Benefit: Increased accuracy/minimal material loss
Standard object shapes/templates can be used
Designs can be reused/edited electronically/emailed
Benefit: Increased productivity/no material wasted on physical prototypes
Benefit: The CAD design can be used in CAM
[1] for each of six points, at least 2 specifying the benefit [6]

(c) A touch screen is an input **and** output device
Menu options/help is displayed on the screen
A stylus may be provided
The screen may be covered by a membrane
. . . which is sensitive to pressure/heat
Or there may be a line of infrared/light/lasers/sensors
. . . at the corners/sides of the screen
The pressure of the user's finger is detected/the finger cuts the beams
The x position/coordinate calculated
. . . and y position/coordinate calculated
[1] for each of four points [4]

(d) Multimedia elements can be incorporated
. . . such as sound/video clips to illustrate what the user must do/ tutorials
[1] for each of two points

A search engine/context sensitive help could be incorporated
. . . to provide the user with direct access to relevant material
[1] for each of two points

The user guide can be distributed/updated more effectively/efficiently
. . . via a download
[1] for each of two points

The user can navigate the user guide interactively/non sequentially
. . . via hyperlinks/hotspots
[1] for each of two points

[2] for each of two benefits [4]

(e) Direct/on-line access to a tutor can be provided
. . . via e-mail, forum, chat room
[1] for each of two points

The course can be tailored to the trainee's needs
. . . by allowing the trainee to navigate their training path/by setting specific training paths for groups of trainees
[1] for each of two points

Monitoring/assessment of the trainee can be performed automatically
. . . and individual feedback on progress provided for the trainee/ alternative paths suggested
[1] for each of two points

[2] for each of two benefits [4] 26

2 **(a)** <u>The waterfall life cycle</u>
There is a sequence of distinct stages
Example: Analysis
One stage must be completed before next stage commences
Deliverables are produced at end of each stage
Example: system specification at the end of the analysis stage
If an error is found during one stage
. . . a previous stage may have to reworked
[1] for each of four points

<u>RAD</u>
An iterative development process (continuous/cyclical)
A preliminary data model is developed
. . . and a user interface developed
. . . providing the business processing/functionality
The prototype helps the analyst and users to verify the requirements
. . . and to refine the data model
. . . and implement the required processing
There are strict deadlines set for each refinement
User requirements/system functionality are prioritised/categorised
. . . as essential/non essential
[1] for each of four points [8]

AVAILABLE MARKS

AVAILABLE MARKS

(b) The end user is involved in the analysis stage
. . . during fact finding
The end user is next involved during acceptance testing/review
. . . to agree the system meets its specification
[1] for each of three points [3]

(c) The system will be tailored to meet the exact user requirements
. . . instead of being a general solution to suit many different types of user
The development team will be available
. . . for training/maintenance
[1] for each of two points [2]

(d) Graphics CASE tool
Assists/automates the modelling of the system
. . . by creating and maintaining DFDs, ERDs
Automatically validates of DFD levels/ERD relationships
Automatically populates the data dictionary
[1] for each of three points

Code generating tool
Assists/automates the production of program code
. . . from form program specifications
. . . or input/output/form designs
Code will be optimised
[1] for each of three points [6] 19

3 **(a)** CDPA
Applies the concept of intellectual property/ownership
. . . to software
A licence is required for copyrighted software
It is illegal for employees to copy/download unlicensed software
It is illegal to for employees to distribute unlicensed software
[1] for each of four points

CMA
It is illegal for employees to access computer material without permission
. . . or to access materials with intent to commit a crime or facilitate a crime
. . . or to modify materials without permission
[1] for each of four points [8]

AVAILABLE MARKS

(b) A rationale for the policy
It defines the employer's rights/the employee's responsibilities regarding the use of ICT
. . . including proper use of e-mail and the Internet/how e-mail and the Internet should be used for business and personal use
. . . and how use of ICT such as e-mail and the Internet will be monitored and policed
It will describe security procedures such as secure logging on and off
It will prohibit actions which will compromise data security, e.g. the use of storage devices not checked for viruses
It will identify management and employees responsibilities relating to legislation
It will define disciplinary procedures
[1] for each of four points [4]

(c) Provides contact with other IT professionals
. . . over 70,000 members (practitioners, businesses, academics, students) in the UK and worldwide
[1] for each of two points

The BCS delivers a range of professional development tools for practitioners
Offers a range of widely recognised professional and end-user qualifications for beginners, home users, professionals
[1] for each of two points

Members can keep up to date with developments in IT
. . . and avail of up to date training in IT tools/techniques
[1] for each of two points

[2] for each of two reasons [4] 16

4 **(a)** **(i)** The ICT course recommended reading lists
. . . so that relevant books are available for students
[1] for each of two points

The ICT books which the libraries already stock
. . . so that books are not ordered unnecessarily
[1] for each of two points

[2] for one internal source [2]

(ii) Current booklists of publishers/distributors of ICT books
. . . so they know who to order the books from/obtain the best prices
[1] for each of two points

Booklists of similar ICT courses at other universities
. . . so that the university can compete effectively
[1] for each of two points

[2] for one external source [2]

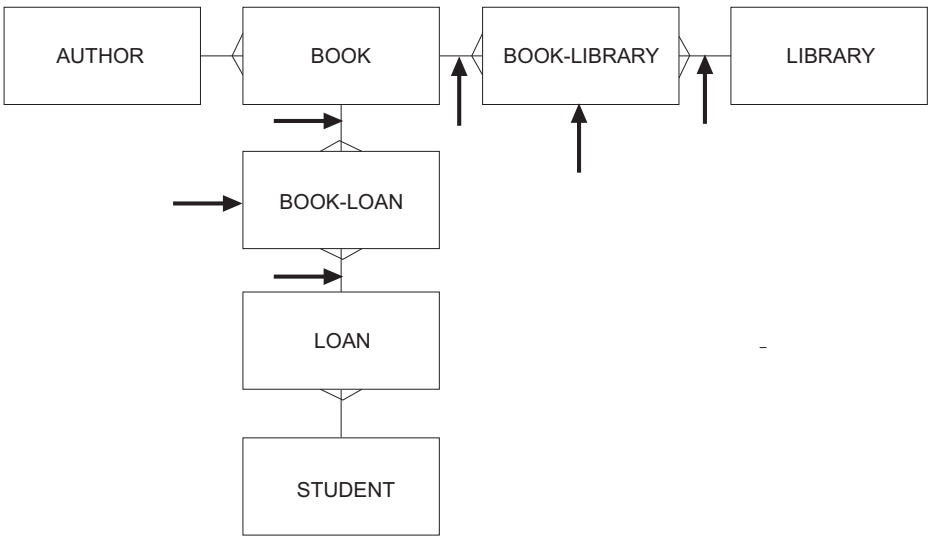
(b) Defining/maintaining/modifying the database structure
. . . tables/attributes/keys/relationships/schema/data dictionary
Managing/monitoring back ups
Controlling access to the database
E.g. assigning access rights/allocating user names and passwords/ creating 'user views'
Ensures compliance with legislation, e.g. the DPA
Designing standard queries/reports/macros
Identifying new user query and report requirements/liaising with users
Keeping users informed of changes relevant to the user, e.g. additional reports
Managing on-going user training
[1] for each of four responsibilities [4]

(c) <u>A flat file</u>
A database system in which each database contains a single file
. . . which is not linked to any other file.
[1] for each of two points

Data inconsistency
A particular attribute is stored more than once in a database
. . . and has different values
[1] for each of two points

Data independence
Data is kept separate
. . . from the programs/software which uses/processes it
[1] for each of two points [6]

(d) (i)



[1] for each of six modifications as arrowed [6] 20

5 (a) (i) It uses image compression
. . . to reduce the file size/memory size
. . . at the possible expense of image quality/lossy compression
The degree of 'lossiness' can be varied
[1] for each of three points [3]

AVAILABLE MARKS

(ii) Consists of an abstract/basic model of networking
. . . and a set of specific protocols
Consists of seven layers
Each layer deals with specific functionality
Each layer interacts directly only with layer immediately beneath it
. . . and provides facilities for use by the layer above
Example: Name of layer
. . . and description of a layer
[1] for each of six points [6]

(b) **(i)** There is a controlling computer/network server
. . . which handles processing requests from the other computers on the network
. . . for resources
. . . and which controls security across the network
[1] for each of three points [3]

(ii) Benefit
Low installation costs
. . . as there is no need to resource a dedicated server.
No need for a sophisticated operating system
[1] for each of two points

Drawback
Low level of security
. . . as security cannot be controlled centrally
[1] for each of two points [4]

(c) **(i)** Even parity is being used
The received byte's parity is odd
[1] for each of two points [2]

(ii) The double error will not be detected
. . . as the byte's parity is still even
[1] for each of two points [2]

(d) The manager should install auditing software
This will log each user's identity/log on and off times/the workstation used
. . . and the files accessed by each user
The manager can use the log to identify those responsible
[1] for each of four points [4] 24

6 Quality
Robots can be programmed
. . . to perform tasks very accurately/consistently
Robots can perform very intricate operations
. . . and work in hazardous conditions
Humans may be inconsistent due to distractions/personal issues
[1] for each of four substantive points

		AVAILABLE MARKS
Financial Implications There is a very high initial investment . . . due to hardware and software costs Using robots instead of humans will be to a reduced wages bill as fewer employees are needed to assemble cars . . . as robots can perform most of the tasks performed by humans However, the financial benefit will occur over the longer term [1] for each of four substantive points		
[0], [1] or [2] for the structure of the report – evaluation/two sections	[10]	10
	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