



Rewarding Learning

ADVANCED
General Certificate of Education
January 2011

Information and Communication Technology

Assessment Unit A2 1

assessing

Module 3: Information Systems

[AW211]

WEDNESDAY 26 JANUARY, AFTERNOON

**MARK
SCHEME**

- 1 (a)** The content can include multimedia components
 ... such as video clips to show the user how to perform a task
 ... and sound for verbal instructions
 [1] for each of three points
- The content can be accessed in a non sequential order
 ... so that the user can select different options/choose a personal path
 through the material
 [1] for each of three points
- [3] for each of two features [6]
- (b) (i)** Installation instructions
 The HW & SW configuration
 User instructions/guide
 Help /FAQ section/tutorials
 [1] for each of four sections [4]
- (ii)** The technical description of the system
 ... such as user requirements/system specification/DFDs/ERDs/
 module specifications/code listings/data dictionary
 ... will be used to identify errors/enhancements
 ... and modified as necessary
 [1] for each of three points
- The test plan/test data
 ... will be used to retest the system
 ... to check that errors have been corrected/changes work as
 expected
 [1] for each of three points
- [3] for each of two uses [6] 16
- 2 (a)** The identity of logged on users
 The time during which each user is logged on
 The terminal where each user has logged on
 The resources accessed by each user
 The number of unsuccessful attempts at logging on to an account
 [1] for each of four activities [4]
- (b) Backup**
 A complete backup would be suitable
 All data files are backed up
 An incremental backup is suitable
 Only data that has changed is backed up
 Master data should be copied
 ... just before batch processing takes place
 ... onto a portable medium
 ... and stored away from the computer system
 Transactions in the batch should also be copied
 [1] for each of four points

Recovery

The master data should be restored from the backup copy

The batch of transactions should be processed again

[1] for each of two points

[6]

(c) To ensure the organisation can continue operating

... after a disaster/disruption

such as flooding/earthquakes

To ensure critical data has been identified

To ensure that key functions/processes are identified

To ensure that key personnel have been identified

... and will continue to have access to the organisations' computer systems

An alternative location may be established

... where the computer system can operate until the threat/damage is over

[1] for each of four points

[4]

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3 (a) A first cut/non-functional model is created

... and evaluated by the user

... who provides feedback

... to the analyst/developer

... so that an improved/refined model can be created

The prototype may evolve into the final system/evolutionary prototyping

The prototype may be discarded when the system objectives have been established/throwaway prototyping

[1] for each of six points

[6]

(b) Observation

The users of the system are observed as they carry out their daily tasks

[1] for each of two points

Questionnaire

Users complete a set of pre-determined questions

... which may be open or closed

[1] for each of two points

Interview

The users respond to spoken questions on a one-to-one basis

The interview may be structured or unstructured

[1] for each of two points

Document inspection

Samples of orders/invoices/reports are examined

... to identify inputs and outputs

[1] for each of two points

[2] for each of three methods

[6]

- (c) The users will be involved in acceptance testing
 ... where they use the system in a realistic environment
 ... using real data/volumes of data
 ... to ensure the system meets its objectives
 ... by providing feedback to the developers* *Once only
- The user will be involved in the system review/maintenance
 ... when the system has been in use for a short time
 ... by providing feedback to the developers* *Once only
 ... about errors discovered
 ... and enhancements required
 [1] for each of six points MAX [6]

18

- 4 (a) (i) Reduced wage costs
 ... as the standard of living in India is much lower than that in the USA
 [1] for each of two points
- Effective use of international time zones
 The help desk can be manned at night in the USA by employees
 in India working during their day
 [1] for each of two points
- The business can focus on its core business
 ... and use the services of a specialized provider of help desk
 facilities
 [1] for each of two points
- [2] for each of two benefits [4]
- (ii) Less/No time spent travelling to work
 This time can be used more productively
 This leads to reduced petrol costs/bus fares/train fares
- [1] for each of two points
- A better work-life balance/More flexible working hours
 Parents can combine working with childcare
 People with health problems (e.g. physical immobility) do not
 need to leave their homes
- [1] for each of two points
- Location is irrelevant
 Employees can access the company's ICT systems using the
 Internet/an intranet
 [1] for each of two points
- [2] for each of two benefits [4]

(b) (i) CAD

Computer technology is used in the design of objects/shapes

Objects can be viewed in 3D

Techniques such as surface rendering can be applied

An object may be rotated in three dimensions

... and viewed from any angle

... and from different distances

Calculations can be performed automatically

Standard object shapes/templates can be used

Designs can be reused/edited

[1] for each of four points

[4]

(ii) CAM

Specialised computers are used to control and monitor tools/
machinery in manufacturing

The steps in the manufacturing process are built into a program

The program may be the output from a CAD stage

A computer can control a series of robots

... moving the product from machine to machine

... as each stage in the manufacturing process is completed

CNC technology can be used

... e.g. to control lathes

Some CAM systems can automate tasks such as parts ordering/
scheduling/tool replacement.

[1] for each of four points

[4]

16

5 (a) Repetitive strain injury

Pain/numbness in muscles/nerves/tendons/ligaments

Caused by constant/repetitive/forceful activities when using ICT
equipment

... such as a secretary using a keyboard for prolonged periods

[1] for each of two points

Minimised by using ergonomically designed devices e.g. split
keyboard

... or taking regular breaks from using ICT equipment

[1] for one point

[3] for a relevant health issue

Posture/skeletal problems

Back pain/disc problems/postural stress/sciatica

Caused by sitting for long periods in an uncomfortable/unnatural
sitting position

[1] for each of two points

Minimised by using adjustable chairs/5 wheeled chairs

[1] for one point

[3] for a relevant health issue

Exposure to radiation

Over exposure to the EMF frequencies emitted by CRTs
 ... can lead to reduced productivity/fatigue/sleeplessness/skin
 problems/headaches
 [1] for each of two points

Minimised by using a screen shield
 [1] for one point

[3] for a relevant health issue

Eye strain problems
 ... caused by unnatural view position
 e.g. small fonts, glaring colours
 [1] for each of two points
 Minimised by using an anti-glare screen [1]

[3] for each of three issues [9]

- (b)** How user accounts should be used
 Selecting secure passwords
 Regular changing of passwords
 Keeping passwords secure
 Not using another user's password
 Logging off at the end of a session
 [1] for each of three points

How users should access data
 What access is permitted and how that data can be used
 What access is restricted
 What a user should do if he/she accidentally accesses data which he/
 she is not permitted to access
 [1] for each of three points
 How users can access the Internet/email
 What access is permitted/what types of websites may be visited/what
 email use is permitted
 What access is prohibited/what types of websites are prohibited/what
 email use is prohibited
 Time restrictions on the use of the Internet
 [1] for each of three points

How the policy will be enforced
 The disciplinary process
 Penalties/sanctions
 Appeal procedures
 [1] for each of these points

[3] for each of three sections [9]

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6 (a) Increased potential market
The Internet is a global network
Search engines can direct Internet users to their website
[1] for each of two points

Increased hours of business
The Internet is active 24/7
[1] for each of two points

Better communication with customers
e.g. mail-shots, email, reviews
[1] for each of two points

The company can sell e-books
... downloaded on to a reader
[1] for each of two points

[2] for each of two benefits [4]

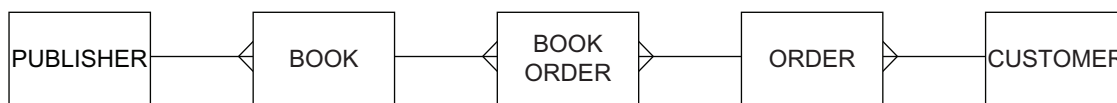
(b) Some customers prefer to browse through actual books
... and sample them before purchasing
[1] for each of two points

The customer can speak directly to an employee
... and get advice/suggestions
[1] for each of two points

There is a perceived increased risk
... of identity fraud on the Internet
[1] for each of two points

[2] for each of two reasons [4]

(c)



[1] for each of the five entities
[1] for each of four relationships [9]

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7 (a) Ergonomic factors [1]
 Concerns the design of
 ... the general working environment
 ... and input devices
 Examples: adjustable chairs/split keyboards
 [1] for each of two points

Psychological factors [1]

Concerns how humans learn
 ... and perceive things
 Examples: short and long term memory/intuition
 [1] for each of two points

The use of common interfaces
 ... reduces the time taken to adapt to new systems
 ... reduces the need for training
 [1] for each of two points

Facilities can be provided for inexperienced users
 ... such as the use of icons
 ... or on-line/context sensitive help
 [1] for each of six points

[6]

(b)	Centralised database	Distributed database
Data consistency MAX [3]	Data consistency is ensured as there is only a single copy of the database [1]	There may be multiple values of the same data in different locations [1] Example: A field may be updated at one location only/ A field may be updated to different values at two different locations [1] The data has to be reconciled at regular intervals [1]
User access to data MAX[3]	All users access the single copy of the data so access times are greater due to the distances involved [1] The volumes of access at the central location will be high and there may be a deterioration in performance [1] If the central location fails, the entire database fails [1]	Users have faster access to their local data as the data is stored locally [1] Volumes of access at each location will be reduced [1] If one location fails, only that part of the database is affected [1]
Data security MAX[3]	It is simpler to enforce centralised security measures on the single copy of the database [1] The increased volume of data traffic may be more vulnerable to interception [1]	It is more complicated to enforce uniform security measures across a number of locations [1] It is simpler to enforce security measures at a single location [1] The decreased volume of data traffic will be less vulnerable to interception [1]

A clear structure comparing the two types of database against the three factors. [1/2/3]

MAX [10]

QWC

Total

AVAILABLE MARKS
16
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