

1997 GCE INFORMATION TECHNOLOGY - ITO1

- 1 Any two different examples with explanation 2x1
2x1

Answer may be any type of system which would produce catastrophic results if failure occurred.

The following headings 'human', 'economic', 'environmental' are here to illustrate, candidates are not expected to produce an answer from each group.

human:

e.g. life support system failure (1) because the patient dies (1) or the hospital is sued (1) this answer would gain 2 marks.

car sensory braking system failure (1) OR motorway/ rail traffic signal control failure (1) because car/train crashes (1)

Allow two marks if the explanation is given in a different context

economic:

e.g. gas billing of customers who have moved to a different supplier (or reminders before initial bill) (1) because this causes a loss of customer confidence subsequently affecting future profitability (1)

e.g. Denver airport baggage handling system consistently failed to handle throughput (1) resulted in delays to the opening of the airport with subsequent huge financial loss (1)

environmental:

e.g. failure in tanker on-board navigation system (1) caused beaching with subsequent environmental damage (1)

The concept of no contingency system gets (1), concept of real time (1)

Max (4)

- if control systems quoted e.g. airline/rail only award marks for 1 example
- Do not allow Internet/Travelling Salesmen (insurance quotations)

2 (a) Four items of data which are captured:-

account number/employee no/credit card no - must be key - do not allow
which employee
amount
date
actual time
location (ref till number)
nature of goods may be inferred
supplier
(Do not allow start/expiry dates) **Any 4x1** **4**

(b) Information derived:

Tracking of sales representative (1) or Analysis of spending patterns (1)
(supplier analysis or goods) (1) Analysis depending on specification in (a)

The miles travelled
distance Any 1x1 (i.e. an analysis of the data)
time between stops

2 6

3

Action	Description
Read the file	can read but not write to file
Write	can write to the file but not read/or read certain fields
Read/write	can both read and write to the file - allow rewrite
Append	can add fields but not over-write data
Delete	can delete data in the file
Execute	can execute the file to run
Amend/update	can read data, update it and then rewrite the data (or a <u>clear</u> description)

Any 4 actions WITH description x1

4

Do not allow change, copy etc.

Action must be within file so far e.g. do not allow delete file

4 (a) The focus of the answers should be on ensuring the personal data is up to date.

EITHER:

Batch system: distribute check sheets/questionnaire/letter/form containing the data (1)
for checking on a termly or annually (1) basis - do not allow regular
These are returned with updates indicated (1) and input into the system (1)

OR

Interactive system: when the student has a change (1)
they refer to a central point which has access to the data (1) which is updated live (1)
Distribute check sheets containing the data to check for input errors by operator. (1)

Max (3)

(b)

Limitations on use e.g. can use for mailing but not 'cold calling'
Format required e.g. CSV
Frequency of updates e.g. yearly
Statement on accuracy
Stop data being passed on to others
Data Protection statement e.g. cannot be sent to destination outside U.K
(max 1 DP example)
Data must be kept secure
Data must not be kept longer than necessary - do not allow 'must not be
kept when student has left'
money, but must have an explanation e.g. based on the number of records/updates
All points raised must focus on the agreement between the college and
the retailer - not individual and the college
Do not allow - must be registered

Any 3x1

3

6

5 (a) groups of people at different sites (1) have interactive sound and/or vision (1) enabled by telecommunications services (1).
telecomms carry forward to (b)

3

(b) Facilities required:

cameras/microphones - input (1)
speaker phones/viewphones allow (2) - with description, otherwise 1 only
headphones/speakers/screens - output (1)
adequate band width to each site (1)
any telecomm facility (1) if not given in (a) (modem must have BT line)
whiteboard s/w (c/f to (c))

4

(c) Advantages

save cost of travel (1)
save problems/time of travel (1) or convenient to stay at home site (1)
enables meetings to be setup more spontaneously (1)

Any 2x1

Disadvantages

quality of images can be poor (1)
requires considerable investment in studio or 'environment' (1)
Do NOT accept 'expensive' - do not allow running costs
requires training for people to use the system (1)
investment in high speed comms (1)
loss of social interaction at meetings (1) OR allow sub-divided points on this:
'inability to tell who is looking at you' (1)
'no feeling of shared space' (1)
{common spoken language}
{time differences}
{breach of confidentiality)
Do not allow other people may not have h/w

Any 2x1

4

11

6 Each attribute 1
Why important 1

Oral communication skills (1) ability to 'tease out' end-user requirements (1)
Written communication skills (1) requirement to write specifications, methods of solution, produce documentation (1) [this could be considered a technical skill]
Interpersonal relationships...team-work (1) systems are large, often work is split, even if small there will be the need to liaise with experts.
General disposition - must relate to the task - max (1)
e.g. logical reasoning skills

Any 3x (1+1)

6

- 7 ensure notebook is hardware password protected (1) do not allow locking in cupboards etc
 encryption of the data (1)
 do not leave notebook unattended e.g. on sales floor, in parked car (1)
 do not install unauthorised software e.g. data/games or alter/modify installed software (1)
 always virus check before inserting disc (1)
 do not loan notebook to a third party e.g. son/daughter (1)
 backup procedures (1)
 transfer data as soon as possible and delete for security (1)
 treat with care - with description/example
 e.g. do not set up near strong heat source/edges of tables etc
 monitor notebook computers by IT dept staff/software
 sign to agree with procedures

Any 4x1

4

- 8 Description of each offence 2
 Appropriate example 1

- Unauthorised access to programs or data(1): applies to anyone who gains access but was not authorised, 'exploring the system'(1) **2**

Example: obtaining a listing/copy of data/program (1)
 guessing passwords to gain access (1)
 authorised user exceeding access levels (1)

Any 1x1

1

- Unauthorised access with criminal intent (ulterior intent)(1): intent on a more serious crime (1) **2**

Example: access to different computers in preparation of a fraud (1) accessing information for the purpose of blackmail (1)

Any 1x1

1

- Unauthorised modification of computer material (programs or data being held)(1): deliberately modify the code/data with deliberate intent , or deliberately introduce a virus(1) **2**

Example: any virus (1) - by name or description
 modify a piece of code such that it does not run (1)
 modify a piece of data such that it causes the code to fail (1)

Any 1x1

1

9

If there is a combination of points across two types of offence be sure to award marks for individual points
 e.g. exploring the system with criminal intent (2)

9 Outline answer

NOTE: the solution for this question is intended to provide a framework of key concepts rather than provide a definitive solution. There will be many alternative answers to these type of question depending on the background of the candidates. The framework of the answer should allow candidates to demonstrate their knowledge and background reading.

Mark allocation

Max 20 for this question in total although sum of individual Max exceeds 20

- The types of organisation likely to advertise on such systems. (Max 3)
- The capabilities and limitations of such systems for this activity.(Max 3)
- The potential security risks for the customers in using such systems. (Max 2)
- The organisational impact of such systems (Max 4)
- The social impact of such systems. (Max 4)
- Total Maximum 16 for content

[written in paragraphs (1), spelling (1), correct grammar (1), general coherence of concepts (1)]

Throughout this answer we are looking for real experience of use.

The types of organisation likely to advertise on such systems (Max 3)
{looking for a reason for their use of this medium}

Firms with a wide distribution base such as InterFlora
Suppliers of specialist products e.g. stamps, binoculars etc
High street stores such as Argos (Barclay Square)
Obvious Net friendly products such as computer software. From a range of vendors
Video and CD suppliers as they have easily transportable products
Supermarkets for convenience shopping

The capabilities and limitations of such systems for this activity (Max 3)

Cannot try out products e.g. test drive car/try on clothes - allow this with example (1)
No physical queue but speed of graphic download from slow servers (1) or own modem (1)
Limitations in browsing tools makes it difficult to access (1)
Sales pitch offer an integration of text, sound and video e.g. hotel/holiday booking (1)
Limitation in product offered e.g. Sainsbury only stock wine, flowers & Chocolate, Argos only 150 products (1)
Despite advertising products some firms fail to deliver if ordered via the Net (1)
{How much technical detail should we allow?}
Retailers can collect statistical information on customer habits.

The potential security risks for the customers in using such systems (Max 2)

No central controlling body (1)

Different laws in different countries (1) e.g. 'Red Hot Dutch' was legal in the Netherlands, not UK

Standard for secure transactions has only just been SET (Secure Electronic Transactions announced by Visa and Mastercard on 26 June 1996) (2)

No physical mugging but credit card details can be stolen by hackers (1) if sent to an unsecured server (broken key on left hand corner of browser window remains broken)

The organisational impact of such systems. (4)

reach a wider market, not dependant on geographical site
less susceptible to 'local factors' e.g. strikes, weather etc.
changes in working practices and organisational structures
costs of equipment/ paying service providers
more likely to hacking/false advertising
reduction in prime site office costs
reduction in service costs;
fewer employees

The social impact of such systems (Max 4)

psychological factors...less people to meet, purchase more because it is available, purchase less because it is not an impulse buy

more pleasant to shop away from crowds/queues etc/can stay at home
more flexible shopping hours
threats of increased automated control
reduction in city centre & transport usage
more environmentally friendly
create cities devoid of people
could increase equal opportunities
opportunities for those with physical disabilities.

Do not allow interpersonal skills are waning

Max on encryption (4)

GCE INFORMATION TECHNOLOGY - IT02

1 What is a 'macro' facility:

ability to store/record/define a sequence of instructions (1),
actuated by a single instruction/key sequence/hot key/icon selection (1)

Situation:

description of any sequence of commands that is likely to be required frequently, to automate a task or to provide a customised user environment (2,1,0)

E.g. Transferring monthly sales totals to a master sheet at end of every month.

4

2 Max. 4 from :

What is a printer driver:

Printer driver: software or program (1)

which stores the set-up page configuration (1)

for a particular model of printer (1)

translates information (e.g. highlighting, formatting, fonts special characters) into a form that the printer can understand (1)

Why necessary:

automates set up of margins, fonts, bit map & size control (1)

avoids need for user to enter control codes to the printer directly (1)

enables wider range of printers for the package (1)

Accept a 3-1 split in either direction, but for 4 marks candidates must address both what and why.

NOT device - must be software

NOT 'correct communication' - needs why

NOT 'understand each other'

NOT 'process data' - needs translate concept

4

- 3 (a)** Factors which might influence sampling strategy
seasonal factors/climate/weather
regional/geographical factors
socio-economic /level of income
sample size
Personal profile

Any 2 x 1

2

- (b)** Explanation: Up to 2 marks for a clearly identified situation and a description establishing why the sampling 'rate' might be inappropriate.
E.g. If sales of champagne were measured only in depressed inner-city areas , demand might be underestimated. (2,1,0)

or

If ice cream sales were monitored on a weekly instead of daily basis (1) the company would be unable to predict the effect of climate which changes from day to day, on sales. (2,1,0)

Situations should be non-trivial.
NOT vague example e.g. 'time'

2

4

4

Resources:

Key - wording of question 'behind the scenes' 'managing resources'

NOT 'copying discs'

processor, IAS communications devices, i/o devices, backing store, files.

In each case give 1 for the resources given by the candidate and 1 mark for a clear explanation of the role of the o/s in managing that resource.

Processor (1)

then any 1 from:

switching processor time between background printing task and foreground word processing (1)

management of request for processor time from different users according to a system of priorities (1)

Interrupt Handling (1) = error messages

IAS (1) = main memory

then any 1 from:

o/s allocates storage space to programs or documents whilst being processed (1)

o/s temp storage for data transfer say between w/p package & printer, e.g. print buffer (1)

allocates storage for data being copied from 1 document & pasted into another (1)

Communications devices (1)

then any 1 from:

deals with routing of data via appropriate paths (1)

packet switching (1)

I/O devices (1) (= print buffers)

then any 1 from:

o/s deals with multiple request for a printer, dealing with conflicts. (1)

communicates error messages e.g. paper out from printer (1)

Backing Store (1)

then any 1 from:

o/s supervises transfer between backing store and IAS when work is saved or loaded, (1)

deals with request for storage space on disk, etc. (1)

stores documents in a print queue whilst waiting to print (1)

files (1)

then any 1 from:

o/s deals with multiple request for documents by different users sending error messages as appropriate (1)

deals with read/write properties of files (1)

NOT 'file organisation'

NOT virus checks

NOT auditing function

NOT resource management - in question

Any 3 x (1 + 1)

6

5 (a) LAN c/w WAN

geographical extent (1)

connections - LAN cable - physical - WAN non-physical (1)

LAN restricted to single site/building/campus etc. c/w WAN more than one site (1)

LAN connection via direct line, physical link e.g. co-axial cable, UTP, fibre optic c/w WAN

connection via modem, telephone line, satellite link, etc. (1)

WAN e.g. Internet with LAN contrast (1)

Any 2 x 1

2

(b) Server c/w Peer-Peer

server based- central backing store available to all users c/w peer-peer distributed resource shared by all users (2,1,0)

server based- centrally held and shared software resource c/w peer-peer individual copies of software (2,1,0)

server based- centrally controlled user attributes c/w more flexible working environment (2,1,0)

server based:

high management overheads for a systems manager c/w distributed

responsibilities for management /fewer overheads (2,1,0)

server based: Reliant on a central control system c/w peer-to-peer no reliance.(2,1,0)

server based: requires a different back-up strategy c/w peer-to-peer (2,1,0)

server based: longer and more complex set-up and installation c/w peer-to-peer (2,1,0)

ALLOW: maintenance and complexity of set-up, licencing and management overheads OK

NOT server based needs a server peer to peer does not.

NOT cheaper or cost.

Any 3 points x (2,1,0)

6 8

- 6 (a)** NOT IT01 answers - NOT 'if sample do not know' NOT 'value judgements'
Validation ensures data is reasonable or sensible or complete (1),
data can be sensible but still not correct (1)

E.g.: A person's date of birth may be entered as 13/02/55. This is valid/sensible but the person may have been born on 13/05/55 (2)

4

- (b)** transcription errors from source document (1)
prevented by double keying or self validating fields (1)
deliberate falsification or corruption (1)
prevented by batch totals, or audit procedures (1)
transposition errors (1)
prevented by double keying or self validating fields (1)
hardware failure/malfunction (1)
prevented by validation against acceptable values (1)

Any 2 x (1+ 1)

4

8

Any specific example gets at least (1)

Check Digit picks up transposition errors [or bar code mis-read] (2)

NOT viruses as a corruption method.

NOT keyboard entry

7 (a) Table names (3 x 1)
 1 mark for each table name
 then mark the column names as below:
 Books: { BookNo, Book Title, book category} (Key=1 or 2 relevant others=1)
 members {MemberNo, Member Name, Phone number, ...} (Key=1 or 2 relevant others=1
 but not age)
 loans {Book No, MemberNo, LoanDate or return date...} Book & Member No's and
 loan date (1),
 Book number = ISBN (OK)

(3 x 1) 6

(b) Any valid Link between members and loans and any valid link between books and loans (1)
 Identifying the role of key fields in the links (1)
 Correct use of 1:many, many:many and 1:1 concept (1)
 ALLOW carry back of keys and tables to part (a)
 ALLOW carry forward from (a) if (a) is incorrect - LINKS MUST WORK

(3 x 1) 3

(c) To gain full marks a candidate must refer to QBE or SQL & REPORTING:

METHOD OF QUERY max (3)

QBE: Named (1) and described (1) and example (1). Typically:
 Use of query by example to select subset of records from database by giving values to
 certain fields to specify selection criteria.

For an example illustrating this (1). A typical example might be ..

OR

Field	Member No	Surname	Forename
Criteria	99*	WE*	

All members with numbers starting 99 and Surnames starting 'WE' will be selected.

SQL: Named (1) and described (1). Typically:

A subset of records could be selected from database by using a programming language (1)
 known as a SQL.

For an example illustrating this (1). A typical example might be ..

select surname, member no from members where surname is like 'WE*'

NB we are not looking for correct syntax here, simply the idea explained.

AND

Report Facility: max (3)

particular fields selected for output (1) ,order of records can be specified (1)
 uses the output from a query(1) idea of linked/multiple tables/queries
 extensive formatting capability (1),grouping and subtotals can be defined (1)
 example of a report given (1)

2 x (3, 2, 1, 0) 6 15

- 8 (a)** Advantages:
 easier to learn new applications (1)
 reduced overheads in training (1)
 reduced overheads in storage resources if code is shared by applications (1)
 increased productivity (1) = easier to learn all the packages (not interface)
 transfer of data, import/export (1)
 shared help/experience (user base) (1)
 OLE & DDE (1)
 NOT cost
- Any 4 x 1** **4**
- (b)** Features:
 commands to load/open/save documents (1)
 copy/cut/paste commands (1)
 print/print preview (1)
 format/font size/font type/style commands (1)
 use of mouse/keyboard to operate menu options (1)
 launching/existing applications (1)
 command names (1)
 menu contents/grouping/order (1)
 icon shapes/colours (1)
 dialogue box contents/layout (1)
 multi-task (1)
 screen layout (1)
- Any 4 x 1** **4**
- (c)** Issues:
 Number of current users & cost of upgrading all of them, (2,1,0)
 types of licenses available (2,1,0)
 hardware resource issues (2,1,0)
 upwards compatibility of existing documents (2,1,0)
 functionality of new applications & suitability for the organisation (2,1,0)
 network issues- was it before- will it work over the network ?(2,1,0)
 future upgrade paths (2,1,0)
 training overhead, (2,1,0)
 market share, (2,1,0)
 reputation,... (2,1,0)
 software issues (2,1,0)
 Easier to retain facility in a package when only used infrequently (2,1,0)
 Up to 2 marks for good description of each issue.
 NOT user interface
 NOT cost
- Any 4 x 2** **8** **16**

Students who have interpreted this as compare changes vs upgrade should be credited if well explained.

9 NOTE:

The solution for this question is intended to provide a framework of key concepts rather than a definitive solution. The aim is to establish an agreed standard that can be applied consistently, by all examiners, taking account of the many alternative answers to this type of question.

Mark allocations :Approximately 4 marks each for the issues relating to storage, input, output and communications. Marks are available for the justification or well argued rejection of hardware in the context of the application. Up to 4 marks are available for the quality and coherence of the candidate's argument. TOTAL 20.

Communications Devices: Approx. 4

- list range of devices: modems, satellite, telephone lines, bridge, routers, optical cable, etc. (1)
- network issues- topologies etc. (2,1,0)
- links to enable remote van sales to be logged (2,1,0) [real-time vs batch]
- connection issues (2,1,0)

Input Devices Approx. 4.

- Mention of a range of options: Keyboard, light pen, swipe cards, laser-scanner, bar code reader etc. (1)
- Issues relating to skills of operators (2,1,0)
- Direct data entry vs. manual entry (2,1,0)
- robustness of hardware for van sales (2,1,0)

Output Devices: Approx. 4

- List of range of options available :VDU, LCD screens (laptops), laser printer , dot matrix, ink jet, etc. (1)
- matching device to purpose (2,1,0)
- portability issues (2,1,0)
- hard copy vs. temporary output (2,1,0)

Storage Devices: (Approx. 4)

- Mention range of options available: Tape, IAS, floppy, local hard drive, network drives, CD-ROM (1)
- discussions of capacities of these (2,1,0)
- discussion of read/write capabilities (2,1,0)
- discussion of volatility (2,1,0)
- discussions regarding back-up issues (2,1,0)
- implications of need for on-line access (2,1,0)

maximum of (6, 6, 2, 2)

Quality and coherence

- Grammar, punctuation and spelling (1)
- Clarity of expression (1) - use of Technical language
- Structure of essay (1)
- Presentation/development of ideas (1)

1997 GCE INFORMATION TECHNOLOGY - ITO4

- 1 (a) Purpose: to convert data from internal and external sources into information. **1**
- (b) Why required: to enable managers to make effective decisions (1)
OR information can be produced from a large quantify of data in a selective manner quickly (1). **1**

Carry Back/Forward between (a) and (b)

- (c) Example (1) for accurate example, (1) for management use

Example: any acceptable example however this must be related to management decision making. E.g. In a nation-wide distribution company the use of a MIS to monitor the movement of vehicles and revise strategic planning of the location of warehouses. **2 4**

{Syll ref 1.2.1}

- 2 Possible areas from:-

Inadequate analysis e.g. failure to establish existing meeting patterns, (=poor reports), volumes of changes

Lack of management involvement in the design e.g. failure to consult on types of meeting
Emphasis on hardware or software rather than the 'solution': e.g. software does not reflect management usage {data entry, reports produced etc. }

Data processing orientated e.g. does not cross-schedule or allow attachment of documents

Management not IT literate e.g. failure of some to use it destroys objective

Lack of teamwork e.g. as above

Lack of professional standards e.g. in the software or the approach to use by the management

Lack of proper evaluation of the potential products {covers technical inadequacies}

Frequency of changes

Readiness of managers to keep electronic system up to date

NOT software features except user interface (1)

fully trained=totally literate (1) + (1) if fully explained in context

NOT hardware answers e.g. sufficient memory, runs slowly etc

Any 3 factors x 2 if described

6

3 (a) One word answers not acceptable

Each method & existence of class data 1
for information flow concept 1

OMR: attendance marks recorded on pre-printed (1) class lists, batch return to central point for input(1)

Manual entry: attendance marks recorded on pre-printed (1) class lists, batch return to central point for input (1)

Radio transmission: attendance marks recorded on 'folder' which holds existing class lists (1), real-time return to central point (1)

Bar code/Swipe card: bar code captured at reader, central system reconciles attendance at reader with known class list (1), real-time return to central point (1)

Workstation (1)

Any acceptable alternative

NOT fingerprint recognition, OCR, touch screen

ACCEPT 'key in a code at a learning resource centre (1)

Can give (1) second mark for data accuracy e.g. 'Bromcom' reduces one stage of transcription

Any 3 x 2 for distinct examples

6

(b) Each type of information 1
for relation to end-user MUST BE DIFFERENT 1

class teacher:

e.g. class list showing attendance at each session over a period of time (1)

operational information to resolve individual reasons for absence (1)

(i.e. a log of excuses) e.g. class pattern of absences

pastoral manager:

e.g. individual student attendance profile reconciled against all classes for student (1)

tactical information to address patterns of absence (1)

senior management:

e.g. monthly percentage attendance for 'faculty' or school (1)

strategic information to inform management decisions (1)

Any acceptable alternative to examples but need the levels.

Any 3 x 2

6

12

4 What is FM:

NOT 'MANAGES FACILTIES'

Complete contracting out (1) of IT support to a third party. Initially may involve the transfer of hardware/software assets (1) to the FM supplier. This can be any or all aspects of IT support within the company: software development, hardware support & maintenance, helpdesk, software evaluation & maintenance. (Max 2 for any of these last points)
Existing personel may transfer to FM supplier **max 3**

Advantages:

Reduced cost due to economy of scale
Flexibility for future development
Access to latest hardware & software
Greater expertise in support available **Any 2 x 1**

Disadvantages:

Lack of responsiveness
Business is unpredictable (e.g. Hoskyns) **Any 1 x 1** **3** **6**

5 (a) Functionality:

an audit trail **OR** to produce a selective record (1) of what has happened on the system; **1**
who has been using it, when, for how long and what this person did with the data
theft or damaged stock - enter the adjustment and a reason for adjustment (e.g. code)
(2 or 0) **1**
2

(b) Required:

to meet internal procedures
to meet legal audit requirements
to protect the staff from accusations of fraud

to prevent fraud *Carry Back/Forward between (a) and (b)*
No follow through is (a) IS CORRECT ... USUALLY VALIDATION
Any 2 x 1 **2** **4**

- 6 (a) The company has not purchased a license.
 The company has purchased a fixed number of licenses however the particular user has not been allocated access rights (or had loaded onto local disc).
 The software is share-ware but not authorised by the network manager.
 Authorised source code has been modified without authorisation.
 Personally owned software has been installed
 Software may introduce non-standardisation
 Software may facilitate unauthorised data changes e.g. by-pass audit log
 Software may compromise network security=*causes a virus=prevent data corruption*

Distracts from work (1)

The question is about SOFTWARE not DATA ... No DP Act

NOT 'Disrupts the network'

Any 2 x 1 2

- (b) A written IT policy or *Security Policy (1)*

stating the responsibilities of staff as defined in the Computer Misuse Act (1).

explicitly forbidding the installation of any software except by authorised staff (1)

OR reverse equivalent e.g. it must be authorised by Network Manager

specifying how to request new software (1)

specifying how to request changes in access rights (1)

ACCEPT

code of conduct (1)=signed booklet(1)=in written contract (1)

NOT audit log software, training, log-on screens etc

WE ARE LOOKING FOR GUIDELINES

Any 2 x 1 2

- (c) oral warning
 formal written warning
 suspension or termination of contract
 legal action under the terms of Computer Misuse Act

restrict file creation rights (perhaps to withhold executable status)

automatic logging of **executables** and reporting of **changes** *must have the bolded*

disciplinary procedure (0) instant dismissal (1)

NOT contact FAST

Any 2 x 1 2 6

- 7 (a) Use a computerised call logging system (1)
 Each user given a call reference number (1)
 Datafile of Registered Users (1)
 Datafile (or knowledge base) of Known Errors(=*Known Solutions*) (1)
 = *alternative focus search mechanism*

ACCEPT

Expect system (1)
e-mail=bulletin board=internet page (1)
allocate priority to call (1)
split staff into teams to enable specialism (1)

Any 3 x 1 3

- (b) hardware base (or configuration)
 network base=*operating system*
 software versions (or configuration)
 problem description
 error message shown
 number of users on system

Any 3 x 1 3

ACCEPT

registration number of software (1)
call reference number (if NOT in a (1))
how urgently a solution is required (1)
software also installed which may conflict (1)
number of files open (1)

NOT

name, telephone number, data and time

- (c) Calls logged per hour (over day or week gets 2 marks if these distinguished between these) or equivalent
 response time to initial call
 resolution time from initial call
 how well the problem was resolved
 number of 'repeat' calls on the same problem
 any of the above may be attached to a query e.g. on a particular problem version

ACCEPT

report to show performance of each person (1) and (1) if explained
compare to Performance Indicators (1)

NOT send out a questionnaire, 'Maths answers ... the %'

Any 3 reports x 2 if described

6 12

8 (a) Factors influencing information flow:

Organisation structure: the number of levels through which information must flow
Geographical structure of the organisation: distributed
How data originates within an organisation
Where data originates within an organisation
The validity of data (re-collection affects quality of information)
The preparation and input of data (including timing)
The volume of data to be collected and input
The processing cycle
The specification of reports
The report distribution cycle
The report timing cycle
Formal vs informal requests and responses
Quality of data
The techniques/structure for monitoring and organising the information flow

ACCEPT

Use of formal procedures (1)
Inter-departmental communication (1)
Accuracy of information required (1)
Compatibility of software used across departments (1)

NOT teamwork

Candidates should distinguish between data and information

Any 6 x 1 6

(b) Techniques:

Inspection of current I/O sub-systems
Observation of current I/O sub-systems
Tracking of documents for input
Tracking of documents for output
Inspection of development requests
Inspection of report/information requests
Interviews with end-users
Questionnaires (at any level as above)

WE ARE LOOKING FOR HOW ... do NOT ACCEPT 'review'

ACCEPT

Internal audit (1)
track live data (1)
track historical data (1) which has a known outcome (1)
track dummy (or test) data (1) to test special cases (1)

*THIS TYPE OF ANSWER IS CONCENTRATING ON DATA NOT INFORMATION
HENCE MAX 4*

Any 3 x 2 if described 6 12

9 (a) Different users require different training

Difference between skill based and task based training (2)

Operator + example e.g. inputting figures into accounts package (2)

Supervisor level+ example e.g. producing standard reports, restricted routine operations e.g. adding cost centres (2)

Management level + example e.g. fundamental revision of structures, closing down financial year (2)

Previous (relevant) experience of IT e.g. of a similar package so that 'concepts' are known (*be specific*)

ACCEPT

distinction between technical operation e.g. 'backup' only if different levels are explicitly stated.

LOOKING FOR EXAMPLES

NOT ACCEPT

different users have different levels of ability

Any 3 x 2 if described 6

(b) Reasons

Routine but infrequent procedure e.g. end of year type procedure require refreshing

Upgrades/new functionality *plus example*

Users progress in their understanding of software

Power users develop new needs, continual need for refresh

New staff =*promotion*

NOT 'they forget'. Unless they state 'on initial training the user grasped the rudiments (1) but failed to realise the significance (1) of some aspects of training. Hence they require a refresher course.

ACCEPT

New legislation (1) +(1) if explained

Any 2 x 2 4 10

10 Factors

Attitude of management & workforce = *resentment*
Skill levels and re-skilling
Structure of organisation and key roles = *re-structure = job loss*
Conditions of service = legislation
Internal procedures for operations
External image
any acceptable alternative
Culture of organisation = *style of management open/closed*

ACCEPT

size of organisation (1)

training (1) + (1) if explained and related to change of organisation

In general the second mark requires an IS focus e.g. conditions of service (1) plus new system may require backup/maintenance to be done whilst users are not on system (1)

NOT

parallel running/direct changeover ... question is management of change within organisation NOT changeover methods.

Any 3 x 2 (if described)

6

GCE INFORMATION TECHNOLOGY - IT05

- 1 **Serial:** all data transmitted along a single line/cable/path/one bit after another (1)
parallel: spreading data across several wires and transmitted simultaneously several bits side by side (1)
If both answers are very weak allow 1/2

2

- 2 **Features:**
storage/retrieval of compositions (1)
playback facility (1)
playback in different modes/keys etc. (1)
output to a range of devices e.g. speakers, synthesisers, cd, tape, etc (1)
edit/update of compositions (1)
complex or multi-featured user interface (1)
designed to take account of expert musician/engineer skills (1)
support for range of input devices inc. keyboard, mouse, musical instruments etc. (1)
ability to accept data in a variety of formats e.g. live recordings, CD, tape, other packages (1)
auto repetition of sounds (1)
graphical representation of sounds (1)
mix sounds from several sources (1)
simulation of different instruments (1)
library of sound effects (1)
print musical scores (1)

Ignore generic functionality

Any 6 x 1

6

- 3 compatibility with existing hardware
compatibility with existing software
college will have IT training policy
user support issues- can organisation cope with increased support required
site licences
purchase/leasing contracts may exist on existing hardware
maintenance contract issues for new hardware

Any 3 points x (2,1,0)

6

Allow upto 4 single points if 3 good versions are not described
They need to go beyond 'not compatible'

4 (a) What the log might contain:

Allow a 5-3 split in either direction

a record of facilities used by each person including processor time (1)

no of pages printed (1)

or disk space used (1)

details of systems failures/ crashes (1)

details files stored/ updated/deleted (1)

details of e-mail usage/storage (1)

time and duration of log-in (1)

ID of logged in users (1)

network address/station ID (1)

failed log on attempts (1)

Any 4 x 1

Why it is Useful:

provide systems administration with information about network load (1)

enable administrators to deal with network performance problems (1)

facilitate sensible distribution of resources to users (1)

to limit use of scarce resources (1), possibly through a charging system (1)

inform decisions about any upgrade or systems enhancement (1)

dealing with network misuse (1)

Any 4 x 1

8

(b) allocation of hierarchical password to all (1)

different access rights for different users e.g. read only, read write (1)

restricted physical access to hardware (1)

restrict sensitive applications to certain terminals (1)

organisational codes of practice (1)

staff training to raise awareness of security procedures/issues (1)

existence of appropriate security procedures (1)

audit of security procedures (1)

auto-log off (1)

restrict access to hard copies/printouts (1)

Any 4 x 1

4

12

5 Each type must include justification to warrant 3 marks.

alpha testing (1) - testing in-house (1) with data provided by software house (1) needed to test implementation against design spec.(1)

beta testing (1), off-site/real user testing (1), using live data (1), needed to detect errors not detected at alpha stage (1) Beta testing involves a wider audience (1) & different environments. (1)

2 x 3

6

Candidates may take an alpha/beta/reasons for both approach - use a 2+2+2 model

6 (a) Protocols: Accept either a 2-2 or 3-1 split (either way). Candidates must address both 'what' and 'why' for 4 marks.

What are protocols: set of rules (1)

Any 1 from : covering standards for physical connection, cabling, mode of transmission, speed, data format, error detection, error correction

Why protocols:

to allow equipment from different suppliers to be connected (1) ,

to encourage development of more open systems (1)

4 x 1

4

(b) Presentation (1)

session (1)

network (1)

data-link (1)

physical (1)

transport (1)

Any 3 x 1

3

(c) **Application layer:**

highest/closest to user (1),

deals with transfer of information between end-users, applications programs and devices (1)

hides physical network from the user (1)

giving a user oriented view instead (1)

deals with entry control, accounting, user id (1)

e.g.: user need not know a database is stored on several computers (1)

Any 3 points x 1

3

10

7 (a) We would like to see a 3-3 split here but accept up to 4-2 in either direction.

Physical factors: Max. 4 @ 1 each from : position of screen, lighting conditions, seating conditions, choice of colour schemes, etc., ergonomics/design of mouse/keyboard ventilation/room temperature

Psychological factors: Max. 4 @ 1 each from : user friendly interface(qualified), help available for novice users, short cuts for expert users, make use of human long term memory to maximise efficiency, functionality, technophobia

(Max 4 x 1) + (Max 4 x 1) to Max 6 6

(b) Three points. In each case:
for the factor (1)
for a clear explanation of its impact on systems resources (1)

NB: More than one of the resource implications: a greater demand for memory/IAS/backing store and processor functionality and time/speed, might apply to the same factor of the H.C.I.

However, candidates can only gain **1 mark for the resource implications of each factor.**

on-line help availability- increased need for backing store (2,1,0)

complexity of interface/ multiplicity of menu routes adds to size of resultant code thus increased IAS demands (2,1,0)

use of GUI- increased IAS demands (2,1,0)

need for multi-tasking/ability to switch between applications/tasks - processor functionality overhead (2,1,0)

faster searching of help file -processor speed overhead. (2,1,0)

Any 3 x (2,1,0) 6 12

2nd mark is dependent on list in each case

8 Max. 8: candidates must address both types of file. Max. 5 for any area.

database files:

Strategy:

- recognising need for rapid recovery (1)
- mention of incremental dumping (1)
- use of bypass systems so that processing can continue if main computer fails- (1)
- through use of intelligent terminals with local hard drives (1)
- possibility of transaction tracking where all transactions are logged (1) due to possible loss of alterations between incremental dumps (1)
- generation systems (1)

When:

- need to shut down to back up (1)
- during a terminal session all updated files are marked (1) and when user logs out these are dumped to disk (1).
- May be dumped more frequently while user is working (1).

Media & Hardware:

- mirrored disks on servers (1)
- DAT/tape/exchangeable disk packing

program files:

Strategy:

- periodic dump to tape (1)
- generations system (1)
- may need to shut down systems to backup/use bypass facility (1)
- backup process may be time consuming. (1)

When:

- backup prior to systems maintenance (1)
- backup prior to upgrade (1)

Media Hardware:

- tape , changeable disk packs (1)

8 x 1

8

- NOT - re-install from distribution disks
- NOT answers based on floppy

9

NOTE:

The solution for this question is intended to provide a framework of key concepts rather than a definitive solution. The aim is to establish an agreed standard that can be applied consistently, by all examiners, taking account of the many alternative answers to this type of question.

Mark allocations :

Maximum of 8 marks for discussion of alternative strategies for providing a software solution.

Maximum of 10 marks for a consideration of the issues which would influence the decision about which strategy is the most appropriate.

Maximum of 16 marks for the two sections combined.

Up to 4 marks are available for the quality and coherence of the candidate's argument.

TOTAL 20.

Ways of providing a solution: Max. 8

User written / internal development team/department (2,1,0)

External software house to examination board specification (2,1,0)

Use of Generic package(s) customised to meet specific needs of the examination board (2,1,0)

specific i.e. purchased from a company that specialises in software for examination boards (2,10).

Issues that should be considered before solution is selected: 2 marks available for each issue

(1 for the issue & 1 for an appropriate discussion) up to a max. of 10.

Cost of alternative solutions (1)

for generic large numbers sold so prices are low, less so with alternatives (1)

Development & testing time for alternative solutions (1)

generic is thoroughly tested- reducing time not so elsewhere (1)

Ease of use of alternative approaches (1)

extensive user base of generic suggests better user interface (1)

Quality/ reliability existence of Documentation provided (1)

generic provided with extensive documentation others may not be so (1)

Appropriateness of Solution (1)

generic may need considerable work in customising to suit specific requirements (1)

Configurability (1)

generic may require in depth knowledge of the package to configure the application/ bespoke should already match requirements (1)

- Upgrade Paths provided by alternative approaches (1)
 - new versions of product/ dependence on small company (1)

- User Support overheads incurred by alternative solutions (1)
 - wide user base/ size of supplier organisation & ability to cope with support overheads(1).

- Compatibility of alternatives with existing hardware base(1)
 - need for upgrades, additional memory, faster processors, etc. (1)

- Compatibility with existing software (1)
 - transferability of existing data files, interface with other generic packages, etc (1)

- How do alternatives relate to Corporate strategies (1)
 - for hardware/software licensing/purchase (1)

20