1 (a) What is the purpose of a Management Information System? (1)

(b) Give one example of the use of a Management Information System within an organisation, clearly stating its purpose. (2)

(a) Purpose: to convert data from internal and external sources into information. (1)

(b) Example (1) for accurate example, (1) for management use

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).

Allow c/b from (b) to (a)

2 The management of a company wishes to introduce a computer-based personnel package which is known to be compatible with the existing software base.

Give five factors which could influence the success or failure of this exercise. (5)

Possible areas from:-

- Inadequate analysis e.g. failure to establish exact need
- Lack of management involvement in the *analysis/*design e.g. failure to consult
- Emphasis on hardware or software rather than the 'solution': e.g. software does not reflect management usage
- Data processing orientated
- Management not IT literate
- 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}=*bugs*
- Frequency of changes
- **Excessive management demands**

any 5 @ 1 per point to max 5

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
NOT lack of user involvement
NOT changeover methods

3 A college is planning the introduction of a computer-based, end of term performance review system for sixth form students. The purpose of the system is to produce information for the following end-users:

- Personal tutors
- Heads of Subjects
- Senior Management

For each pupil, the following data will be collected for each course studied:

- Percentage attendance
- A predicted target grade and grade achieved
- An effort grade

(a) Describe two alternative methods of collecting the data for this system. (4)

(b) The data is collected from a number of sources. For each of the data items, suggest one guideline or criterion which is required to enable consistent information to be produced. (3)

(c) For each of the different end-users describe, with the aid of examples, information that the system might produce in relation to their requirements. (6)

One word answers not acceptable

(a) any two from :-

mark as (1) for method & consistency of system, (1) for information flow concept

NOTE: the method chosen must allow collection of all three types of data together: e.g. cannot state one method for attendance (Bar Code) and a separate method for Achievement (OCR): for this reason Swipe Card=0

OCR: data recorded on pre-printed (1) course lists, batch return to central point for input(1)
OMR: marks made in pre-defined positions (1)

NOTE: it is unlikely that a candidate will obtain (4) for OMR/OCR, there must be a significantly distinct difference.

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

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

Web based template (1) emailed to central point (1)

any acceptable alternative

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

any 2 @ (2) per point max 4

(b) mark as (1) per point: ***Validation =0***

Percentage attendance at each class for each of the courses studied

What to do about 'explained' absence or
The assumed 'number of sessions/days' for the term=***'know holiday & inset dates'***

An attainment grade against a predicted target grade for each of the courses studied
Criteria for attainment grade criteria e.g. based on internal test results or continual assessment

An effort grade for each of the courses studied
Grading criteria e.g. Grade A is excellent etc
Must agree the point in time of collection
Must agree what portfolio of evidence will be submitted

Do not allow duplicates unless well defined

(c) three from :-

marks as (1) for type of information, (1) for relation to end-user *MUST BE DIFFERENT*

Personal tutor: e.g. course list showing progress for each individual in their group(1)
operational information to resolve individual issues (1) *e.g. 'not turning up'*

Heads of Subject: e.g. group profile reconciled against all classes for the course(1)
tactical information to address patterns at course level e.g. one class under performing (1)

Senior management: e.g.'top' and 'tail' analysis for 'faculty' or school (1)
strategic information to inform management decisions (1)

any acceptable alternative to examples but need the levels.

NOTE: if simply state 'operational, tactical, strategic' then no marks

any 3 @ 2 per point max 6

4 With the aid of appropriate examples, explain the difference between formal and informal information flow. (6)

Mark as (defn.2,1 example, 1)

Formal: defined by system with fully documented and agreed procedures stating stages of flow, control, exception handling, distribution network... (2/1/0)

Informal: 'naturally arises' within the organisation via phone calls, personal conversation, meetings, observation. (2/1/0)

Example: exam/test results updated via two different routes (2/1)

5 A college uses a computer-based student record system. A report has been produced that lists the course and examination fees due, against the payments made by each student. The manager responsible discovers that the information in the report does not reconcile with the receipts taken, and wishes to investigate the accuracy of the information.

(a) Describe the functionality which should have been built into the software to facilitate this investigation. (2)

(b) State two possible overheads of this functionality. (2)

(a) Functionality *max 2: from a possible 6*

an audit trail (1) **OR** to produce a selective record (1)
what has happened on the system=track transactions(1)
who has been using it (1) when (1) for how long (1) and what this person did with the data (1).

(b) System Overhead: any 2 @ (1) from

Increases disc space requirements
Requires more memory
Degeneration in performance of system
Increased levels of control setup

Allow c/b from (b) to (a)

6 An organisation uses a computer network for managing its finance and personnel systems. The network manager is concerned that some members of staff may install unauthorised software onto the network.

State six reasons why a piece of software should be designated as unauthorised. (6)

any 6 @ (1) from:

- The company has not purchased a license=must have a license=copyright law
- 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).
- Not authorised by the network manager= unapproved share-ware
- 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/access to data e.g. by-pass audit log
- Software may compromise network security*=causes a virus=prevent data corruption=takes disc space*

Distracts from work (1)=playing games=unofficial e-mails
The question is about SOFTWARE not DATA...No DP Act
NOT 'Disrupts the network' or 'not network compatible'
NOT 'May be of no use to the company'

7 A large supermarket chain uses IT systems to deliver training. Staff receive training throughout their period of employment.

(a) Describe three considerations that the authors must consider when designing the content of the IT-based training materials. (6)

(b) Describe two distinct examples of the way that IT systems can be used for the delivery of training. (4)

(a) Mark as 3 @(2) each

- The minimum levels of competency of the trainee (1) e.g. are they familiar with a GUI environment. (1)= *user friendly=good GUI*
- The need to assess and reinforce training (1) at various stages in the package use. (1*)= track progess (1)*
- The need to retain the attention (1) of the trainee using various stimulus material. (1)
- The need to allow some measure of control by the trainee (1) e.g. different routes. (1)
- *Relevant to role (not level) (1) Can work at own pace (1)*

(b) mark as 2 @ 2 marks

- DVD/video tape:allow limited control over routes/exercises= *CBT*
- on-line tutorials/step-through guides= *helpguides=helpmenus*: separate or built into the package, force user through a series of planned exercises
- Intranet/internet based allowing user more control over routes/exercises.
- examples/demos:built into software
- *Interactive video (1)*

Can allow task/skill based if clear differentiation (2)

8 A software house has decided to log user support requests, using a web-based facility. In order to ensure that they collect the correct information from the user, the software house has designed an on-line form which must be completed by any user who submits a request.

(a) State four items of information which must be included within the on-line form, in addition to date, time and contact information. (4)

(b) State two possible disadvantages of using a web-based facility for this activity. (2)

(a) Content of on-line form: Any 4 @ 1 from:

- hardware base (or configuration)= '*hardware in use*'
- netware base=*operating system*
- software versions (or configuration)=*'software name'*
- problem description=*'what user is doing'*
- error message shown
- number of users on system
- registration number of software
- call reference number
- software also installed which may conflict
- number of files open
- *reoccurring problem=frequency=detailed technical history*

NOT

name, phone number, date & time, e-mail address, customer id
'how long has it been a problem', 'how urgent is a solution needed', 'user's business'
max 4 for this part

(b) Possible disadvantages: Any 2 @ 1

- System down at either end (1)
- System may be down at user or software house (2)
- Software house loss of all e-mails
- **Communication interaction more difficult**
- Call logging software links to e-mail not yet well developed.

The specific software fault prevents internet access
Open to hackers=data could be corrupted

NOT VIRUS

9 The manager of a company complains that the Management Information System (MIS) continually fails to produce the appropriate information at the right time. The person responsible for the MIS responds by stating that there are inadequate data and information flows with in the company, and that others fail to realise the significance of information handling.

(a) State six factors which influence the flow of information within an organisation. (6)

(b) With the aid of examples, describe two techniques which could be used to review current information flows within an organisation. (4)

9 (a) Factors influencing information flow: Any 6 @ (1) each from

- 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=*reliability of source*
- 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=*quantity of data*
- 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 formalinternal procedures (1)*
- *Communication Levels(1)*
- *Accuracy of information required (1)*

***NOT** teamwork NOT 'Size Matters'*
Candidates should distinguish between data and information

max 6 for this part

(b) Techniques: Any 2 @ (2) per point if described

- 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

- *track live data (1)*
- *track historical data (1) which has a known outcome (1)*
- *track dummy data (1) to test special cases (1)*

MAX4

10 An information system was introduced into an organisation and was considered a failure. This was due to the inability of the organisation to manage the change.

With the aid of examples describe three factors, other than technical ones, which could have caused this failure. (6)

Any 3 @ (2) per point if described/example

NOTE:marking to syllabus, avoid repeat of question 1..this is not 'design'
Any 3 from:

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

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 an organisation NOT changeover methods. NOT end user not involved in design

11 "Information systems are critical to the running of any organisation, the consequences of failure could prove disastrous."

Discuss this statement, including in your discussion:

- The potential threats to the system,
- The concept of risk analysis
- The corporate consequences of failure
- The factors which should be considered when designing a contingency plan to enable recovery from disaster.

Quality of language will be assessed in this answer. (20)

Mark allocation: up to 5 for points made on threats, up to 5 for the concept of risk analysis, up to 5 for the corporate consequences of system failure, up to 5 for the factors which should be considered when designing the 'contingency plan' to enable recovery from disaster **TO A MAXIMUM OF 16** plus 5 for the presentation and coherence of argument UP TO A MAXIMUM OF 2o.

the potential threats to the system

mark as (1) to a max of 5

(a) physical..fire, flood, power failure, cables, coffee=hardware theft
(b) hardware failure...processor failure, disc crash
(c) telecommunications failure...cable faults, data corruption, gateway down
(d) data control failure...data inaccurate e.g. rounding, incorrect codes=data loss
(e) software failure...bugs, unsuitable to task
(f) invalid data...user errors, undiscovered corruption e.g. upgrade, processing cycle fault=human error (NOT virus introduced)
(g) computer crime/abuse...hacking OR viruses
(h) system design failure...failure to build into the design the appropriate measures
(i) documentation loss

the concept of risk analysis

mark as (1) for each aspect if explained to a MAX of 5

(a) determine risks and design countermeasures to appropriate level e.g. estimate impact, limited (1 day), severe (1 week), major (1 month), critical (!)
(b) risks change from system to system
(c) risks change from data to data
(d) risks change from time to time
(e) location to location e.g. 'I left my PC in San Francisco'

e.g. pc system in 'open office' storing local stock records at greater risk than multi-national mainframe system storing latest car design but the latter is more likely to be a target
{this answer would obtain approx 2}

(f) in order to determine risk a review of threat must be undertaken

review may be:

(g) on a quantitative basis e.g. Expected annual lost=probability of fire over 10 years (=0.02) * cost of fire (=£1000,000) i.e £20K per annum. Repeat this for each potential risk area.

(h) on a subjective basis e.g. consult all staff, consider nature of business, operation, competition, likelihood of problems and 'work-arounds'

(i) using a checklist e.g. a software package to compare to all recognised dangers for this type of installation/activity. The package attaches weights to risks and provides an index rating of risk.

the corporate consequences of system failure

mark as 3@ 2: (1) for main aspect then a further (1) for expansion to a max 5

(a) financial loss: system & data & staff downtime *ALLOW data loss*
system & data & staff catch-up time

(b) legal responsibility:to customers, internal & external
audit requirements for special procedures
to staff, provide employment at specified pay rates/times
to information (DP Act)

(c) image & market share: disruption to customer service=loss of *customer data*
loss of goodwill
loss of existing & new business
media exposure

the factors which should be considered when designing the 'contingency plan' to enable recovery from disaster : NOTE this is not the content of the plan

mark as 3 @ 2 :(1) for main aspect then a further (1) for description to a max of 5

(a) scope of the contingency plan e.g. equipment, data, staff, business function
(b) dynamic nature of any organisation e.g. plan will require constant update
(c) achievable e.g. within the resources and timescales available
(d) staff trained to react
(e) tested on a regular basis (relate to b) e.g.may be good on paper but impossible to implement
(f) documented with clearly defined roles, policies and procedures
(g) integrated with other policies e.g. wider computer security policy [d.p., software misuse], health & safety
(h) backup max 2 if described