

**MARK SCHEME for the October/November 2010 question paper
for the guidance of teachers**

9713 APPLIED ICT

9713/13

Paper 1 (Written A), maximum raw mark 80

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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- 1 Five from:**
Patient's condition is monitored using microprocessor/computer and sensors
Sensors used to monitor blood pressure, pulse rate, body temperature (must mention at least 3)
Sensors feed back body functions to the microprocessor/computer
Values are converted from analogue to digital.
Microprocessor/computer is pre-set with the normal range of values
Microprocessor/computer is (constantly) comparing the data fed back by the sensors...
.....to these pre-set values.
If any data is outside the pre-set range the computer sounds an alarm
The process is continuous. [5]
- 2 (a) Four from:**
Enter sort code
Enter account number/credit card number
They would be given/asked to select a user name
Asked to enter/choose/request a password
Confirm the password
Select a security question/choose favourite name/place/date/provide mother's maiden name
Enter personal details such as name, date of birth, address, phone number (must mention at least two)
Enter email address [4]
- (b) Four from:**
Have access to up-to-date bank statements/can check account balances/transaction history
Can bank at any time of day/anywhere there is an internet connection/use web enabled phones
Can pay bills/can set up/change standing orders/automatic payments
Can transfer funds between the customer's different accounts
Can apply for a loan/can apply for a new account/apply to close an account
Can set up/increase overdrafts
Higher interest rates for savers because of lower costs
Can amend personal details
Offers security features such as username, password, https, encryption
Can stop a cheque
Help in the form of FAQs, tutorials [4]

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(c) **Eight** from:

Benefits:

- Save costs as don't have to rent so many high street premises
- Employ fewer staff therefore less paid in staff wages
- Save costs of printing/sending statements
- Lower running costs, fewer branches so less electricity, heating and lighting
- Because of lower costs can offer higher rates of interest for savers and lower rates of interest for borrowers...
- ... these rates attract more customers
- Less likelihood of the bank being robbed
- Less money is spent on security staff

Drawbacks:

- Initially high redundancy payments
- Initial cost of setting up system will be high
- Running costs will be high due to paying website developers
- May lose customers who prefer face to face banking/who don't have internet connection/who may be worried about hacking
- Harder to sell other services with less personal touch
- Increased interception of data by hackers leading to fraud
- Some staff will need to retrain which is costly/time consuming

One mark is available for a reasoned conclusion.

[8]

3 Six from:

Company:

- Can keep a closer watch on work progress
- Employees will always be on task – not distracted by home entertainment
- Data is more secure as it doesn't leave the office
- Don't have to buy home workers equipment in addition to office based equipment
- Easier to arrange team meetings/make contact with all employees about any changes to task requirements

Employees:

- Have greater personal contact with colleagues/feel part of a team
- Can discuss ideas with colleagues
- Can see the manager daily
- Have better chance to impress manager giving increased promotion prospects
- Home based telework is inappropriate for some people
- Many homes are not well equipped for home working
- Easier to concentrate on work as there are fewer distractions
- Don't have to worry about the security of their data

Maximum 4 from Company or employees

[6]

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- 4 (a) **Four descriptions** from:
Sound could be used in voiceovers/welcome from manager
Soothing background music to create a comfortable feel to the website
Video of demonstrations of the products/recordings of satisfied customers
Animation to demonstrate products
Hyperlinks to navigate between slides/link to company's website
Navigation button to navigate between slides/return to start [4]
- (b) Product advertising is the advertising of a specific product/one item such as a type of brick/paving stone [1]
Business advertising intended to make the company name familiar such as the brand name Plyroc [1]
Service advertising is the advertising of a service such as insurance [1]
- 5 (a) **Six** from:
The transaction file is sorted
First record in the transaction file read
Reads first record in the old master file
If records don't match computer writes old master file record to new master file
If it matches....
.... pay is calculated
.....using data from the transaction file
Processed record is written to new master file
Payslip printed (to file)
Process is repeated until end of old master file
Remaining records of the transaction file are added to the master file [6]
- (b) **Six** from:
Financial reports:
Information about all employees of the company
Information about employees in a given department
Information about the salaries of all employees
National Insurance contributions for all employees
The total amount of National Insurance contributions paid to the tax authorities
The income tax that each employee has paid
The total amount of income tax paid to the tax authorities
The amount of money paid to each bank that employees have an account with
All the earnings and deductions of employees
The earnings and deductions of each employee by department
A summary of all the totals of the earnings and deductions of each department

Exception reports
Reports of certain validation rules being broken:
An employee earning an unusually large amount of money
An employee who has been on an emergency tax code for a long period of time
Two employees having the same National Insurance number
An employee working too many hours [6]

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- 6 Five from:**
- Acts as a stopwatch device to time tasks...
 - ...enables tasks to be allocated equitably
 - Manager just clicks on a specific task...
 - ...computer reminds them how long they have been working on that task
 - Can look at many tasks quickly...
 - ...computer informs them how long they have spent on each task
 - It is easy to see what emphasis is being placed on each task
 - If too much time is being spent on a task by one person
 - Allows the manager to allocate extra workers to a task/redistribute workload...
 - Allows the manager to allocate extra resources to a task
 - Software can also be used as a predictor
 - Critical Path Analysis can be used
 - Using Gantt charts....
 - can see the effect of changing order of tasks more easily
 - Helps with daily and weekly planning
 - Ensures an equitable workload for all workers

[5]

- 7 Four from:**
- Answers can be marked using OMR...
 - ...OMR sheets are sent to scanning unit
 - ...OMR sheets are scanned
 - ...Pencil marks converted to numbers
 - ...Each response is matched to question number on file
 - ...Position of mark compared to that stored on answer file
 - ...Response awarded 1 or 0
- Answers can be on screen marked by examiners...
- ... Exam papers are sent to scanning unit
 - ... Papers are scanned
 - ... Image saved to file
 - ... Examiner logs on to system
 - ... Examiner loads script
 - ... Examiner enters mark next to each response

Mark for each question is saved to candidate's record
Marks are totalled...
...and saved to candidate's record

[4]

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8 (a) **Five** from:
The data flow diagram shows the inputs, outputs and processes of the system
The actual hardware and software will not be recommended at this stage.
(using the data flow diagram) the required outputs will be known
(using the data flow diagram) the storage requirements will be known
(using the data flow diagram) the processing requirements will be known
Recommendations/suggestions for the software and hardware will be made
DFDs consist of terminators, flow arrows, processes and stores (at least two must be mentioned for a mark)
the terminators and flow arrows in the DFD show the volume of input data....
.....an appropriate method of input to the system can be decided upon
Terminators and flow arrows out of the system indicate the quantity/ format of the output....
..... which leads to decisions on appropriate output devices
looking at the processes involved in the marking process...
... will give an idea about the size and speed of the processor required.
....will give an idea of the type of software needed.
Stores in the DFD will show how much data needs to be stored...
.....this is needed to identify the size and number of storage devices

[5]

(b) **Six** descriptions from:
Type of database is chosen (flat file/relational)
If it is going to be a relational database number of tables is decided upon...
selection of key field is made..
...relationships are designed

Type of access is decided on
If indexed sequential, index is chosen...
....table of indices designed

Appropriate field names are chosen...
... relating to data content of field and unique name
Field type is selected....
.....such as text, number, Boolean...
... appropriate to field contents
Field lengths are chosen so that space/memory is not wasted but leaves room for expansion
Validation rules....
.....such as range checks, invalid character checks, check digits
....are chosen appropriate to field contents...
....error message(s) designed
Field descriptions are included...
... which adequately inform about field contents

[6]

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(c) Eight from:

Parallel running – involves running the old system alongside the new system
Is more expensive than direct changeover because two sets of examiners might need to be paid
If there is a problem with the new system still have the old system as a backup unlike direct changeover
It is a slower method of implementation than direct changeover

Phased implementation – involves implementing one part of the system at a time
Cheaper than parallel running as you don't employ two complete sets of examiners
If there is a problem with the new system still have bulk of old system to fall back on unlike direct changeover
It is a slower method of implementation than direct changeover
Unlikely to be used because single aspect to the system

Pilot running – involves running new system in one branch of the organisation whilst old system still operates in other branches
Could be used in this situation – first Geography and History then Science etc.

Direct changeover – involves replacing the old system with the new system all in one go
Cheaper than parallel running as you don't have to employ two sets of examiners
Quicker as there is no delay waiting for bugs to be fixed unlike other methods/benefits of the new system become apparent immediately unlike other methods.
If there is a problem you don't have the old system to fall back on unlike other methods

Training can be gradual in parallel running and phased implementation unlike direct changeover
Changes can be made if problems occur with phased and parallel unlike direct changeover

1 mark available for reasoned conclusion [8]

(d) Six from:

Could hand out questionnaires to all markers/users
Interview all users of the system
Could observe users performing set tasks/ get a user to perform a task and measure the time it takes them
Might be difficult to arrange to watch/interview all markers whereas questionnaires could target everybody
Interviews/questionnaires gather personal responses whereas observation is impersonal
Interviews/observation might produce responses/behaviour that user thinks is expected of them whereas questionnaires likely to produce more honest responses
Interviews/observation can be time consuming whereas questionnaire results can be collected quickly
Interview questions can be changed in the light of response whereas questionnaires have fixed questions
Observation more likely to produce overall view of the system compared to other two methods [6]