

**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.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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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 two)  
 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]