

**MARK SCHEME for the May/June 2011 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 (a) Four from:

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

[4]

(b) (i) Three from:

- Fax machine is connected to a phone line
- Karl's/other person's fax machine number is dialled
- The drawing would be scanned...
  - ...then transmitted through phone lines
- And printed by Karl's/other person's fax machine

[3]

(ii) Two from:

- Speed of transmission is slow
- The quality of the drawing will not be good
- Karl can only receive one design at a time
- Worker sending design might be unable to as the line might be busy

[2]

(c) Four from:

- Flyers are small single page (often A5) but Posters are much larger (possibly A0)
- Flyers are leaflets given out to individuals/households/Posters are put in strategic locations
- Flyers usually produced using DTP/Word processing software/Posters more likely to be produced using Presentation software
- Flyers produced using standard printer/Posters require specialised printer
- Posters will not necessarily be noticed by everybody/are in a fixed location
- Flyers can be delivered to all households in a locality
- Easier to target your audience with flyers
- Would want to use both as posters can be aimed at a much wider audience than a local area
- Flyers are often just thrown away and ignored/posters are more permanent/difficult to ignore once noticed
- Flyers can take longer time to deliver once printed than it takes to put up a poster

[4]

(d) (i) Three from:

- Touch screen to input required temperature
- Sensor to input temperature
- ADC to convert analogue data to digital
- Actuator switches radiator on
- LED screen to display actual/required temperature

[3]

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(ii) **Three** from:

- User inputs required temperature using touch screen
- Temperature sensor is continually monitored by microprocessor
- ADC converts temperature reading to a digital value
- Microprocessor compares this reading with the preset value
- If the value is lower than preset value microprocessor sends a signal to an actuator
- Actuator switches radiator on
- If the value is higher then no signal is sent

[3]

2 (a) **Two** from:

- Computer to process the calls/look up customer information/to record orders
- Monitor to display customer/call details
- Telephone set/headset to speak with/listen to customers
- Telecom switch to connect individual computers to the server
- Keyboard to type up details of the call/action taken

[2]

(b) **Three** from:

- Used to combine the data and voice input to the system.
- Calling-line information display caller's number, number dialled
- Customer account information can be displayed
- On-screen phone control. Answer, hang up, hold, conference
- Software sends commands from a user's computer to a telephony server
- Software directs phone call to appropriate operator

[3]

(c) **One** from:

- Database to hold records of calls/to provide link to stock/orders database
- Database software to enable customer orders to be input to the main computer database

[1]

(d) **Four** from:

- Staring at a computer screen continuously can cause problems with one's sight
- Typing at a keyboard continuously can cause RSI
- Gripping a mouse and repetitive clicking can cause carpal tunnel syndrome/RSI
- Sitting in the same position/with wrong posture all day can cause lower back pain
- Staring at a computer screen all day can cause eye strain/headaches
- Poor positioning of screen can cause upper back/neck/shoulder pain/eyestrain/headaches
- Glare from screen can cause eye strain/headaches

[4]

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3 (a) Four from:

- They may need to send out monthly statements
- Statements may be batch processed
- Orders may be on a transaction file for a short time
- Transaction file will be sorted in customer number order
- Master file will need to be in sequential order for batch processing
- For ease of updating using transaction file
- Customer may phone to enquire about progress of an order
- Fast access to data will be required
- Indexes will make sequential file faster to search

[4]

(b) Four from:

- Description of use of two of: passwords, user ids and memorable words
- description of encryption
- Description of SSL or TLS
- Use of drop down menus to prevent access by keyloggers
- Description of anti-spyware software
- Description of firewall

[4]

(c) Four from:

- Don't have to rent/build large call centres so save money
- They can employ fewer staff and pay less in staff wages
- Don't have to pay as much in running costs such as electricity, heating/air conditioning and lighting at call centres.
- Because of their lower costs, they can offer cheaper goods thus attracting more customers.
- Shoppers can shop 24/7 so company could gain increased profits
- Internet more likely to attract customers worldwide increasing profits

[4]

(d) Four from:

- Less personal touch so it is harder to sell other services
- Potential for fraud so company loses money
- Interception of account information by hackers so company loses money
- Running costs/initial cost such as having to pay website developers.
- Initial costs such as buying the hardware when starting up.
- May need to retrain staff which is costly/time consuming

[4]

(e) Four from:

- Lower wages due to fewer hours worked
- Lower wages as part time workers tend to be on lower rates of pay
- May have to find another job to supplement income
- Less likely to receive in job training
- Very difficult to become part of company's pension scheme
- May have to work unsociable hours/shifts
- More free time/more leisure time/more time to spend with family due to fewer hours worked

[4]

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**4 Four from:**

- Identifying short- and long-term targets
  - Set deadlines for the completion of each task
  - Short-term targets are very motivational when achieved
  - Decide on the relative importance of each target
  - Devoting appropriate resources/workers (to achieving that target)
  - Planning the steps needed (to produce an item)...
  - ...using Gantt charts...
  - ...to represent parallel and sequential tasks...
  - ...to help ensure sequential tasks are completed in time for the next one
  - ...to help ensure parallel tasks finish at the same time
  - Making correct decisions will affect the time taken at each stage
  - Use of ICT – faxes, telephones, computers
  - Use of time management software...
  - ...to organise meeting times/appointments
  - ...to arrange workload
  - ...monitoring progress by seeing how long a task has taken so far/see how long tasks should take
- [4]

**5 Six from:**

- ICT make lessons more interesting/entertaining
  - ICT make lessons more varied
  - Internet allows students to investigate ideas
  - Internet allows students to carry out research
  - Neatness of students work makes it easier for teacher to mark
  - ICT provides more interactive learning environment
  - ICT resources can help students with special needs
  - Teachers have more varied teaching aids/can make use of multimedia in lessons
  - Teachers can use/produce computer based tests/can use ICT to assess students' performance
  - Teachers can use spreadsheets/databases to record test scores/produce graphs of progress
  - Easier to compare class/students performance
  - Tests can be computer-marked
  - Computers can provide feedback on tests
- [6]

**6 (a) Four from:**

- Can see which documents relate to input information and output information
  - This enables the analyst to produce documentation of the system
  - This can be done whilst producing a data flow diagram
  - The volume of data could be determined...
  - The format of the input and output can be determined...
  - Each part of the system needs to be examined to see what specific inputs, outputs and processing are required
  - For example:
  - the input would be the details of the students
  - the processing would be the calculation of the test scores/percentages
  - the output would be lists of students and their test scores.
- [4]

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**(b) Five from:**

- Must meet user requirements
  - Will need to be set out so that it is easy to use
  - Will need to be attractive to look at
  - Will need to limit the possibility of inaccurate data being entered
  - Teachers should not be distracted by an over-elaborate screen design
  - Must contain guidelines to the worker on how to fill in any data entry forms
  - Must allowing them to navigate from one screen to another without any difficulty
  - Elements of file structure such as field length will affect the field spacing
  - Elements of file structure such as number of fields will affect the font size/number of screens
- [5]

**(c) Three matched pairs from:**

- Testing (each module) with normal data including appropriate example
  - If error produced – description of improvement required
  
  - Testing (each module) with live data including description and examples
  - If difference between live and actual results – description of improvement required
  
  - Testing (each module) with abnormal data including appropriate example
  - If error not produced – description of improvement required
  
  - Testing (each module) with extreme data including appropriate example
  - If error produced – description of improvement required
  
  - Testing whole system including examples of data
  - Description of improvements required
- [6]

**(d) Six from:**

- A description and purpose of the software
    - what the software does and its features
    - the reasons for choosing those pieces of existing software modules that were used instead of the programmer having to write code.
  - Input and output data formats that have been used
  - Program flowcharts that were produced at the design stage
  - Program listing
    - a complete copy of the code used
    - annotation explaining what each module of code does
  - Notes that will help any future programmer to make modifications to the system.
- [6]