

**MARK SCHEME for the October/November 2009 question paper
for the guidance of teachers**

9713/01	9713 APPLIED ICT Paper 1 (Written A), maximum raw mark 80
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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) (i) Two** from:
 Batch process control
 Raw materials are mixed for a certain length of time
 Amount of each ingredient is controlled by computer
 Length of time for each stage controlled by computer
 Temperature controlled by computer [2]
- (ii) Two** from:
 Discrete process control
 Like an on/off or stop/start process
 The computer control involved in putting mixture into cartons is discrete
 In between cartons the robot pauses/stops [2]
- (b) Six** from:
 Temperature sensor monitors temperature inside the refrigerator
 Contact switch/pressure sensor fitted to the door
 (Number pad) to input the required temperature
 Data from the sensors converted to digital using an ADC
 (Microprocessor) compares temperature data from the sensor with the pre-set value
 If the temperature is higher/lower than preset value a signal is sent...
 to the actuator
 (If higher) actuator switches the compressor on
 (If lower) actuator switches the compressor off
 Digital to analogue conversion required
 Microprocessor sends data to LEDs indicating the current refrigerator temperature
 Microprocessor compares data from pressure sensor to zero
 If it is zero microprocessor sends a signal....
 to the actuator....
to switch the buzzer on
 Description of PID
 Description of PLC [6]

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2 Eight from (only mark candidate's first **two** methods):

Website - use of the internet

Produced using web authoring software

A cheap form of advertising nationally and internationally

More expensive initially to have own website - web designer has to be employed

Can produce a website to own specification

Website has more features than most other forms

Has range of multimedia - sound, video/ animation,(text, images)

Can have hyperlinks to other sites/pages

Can advertise on other people's websites

Cheaper than using own site

Banners and pop ups can be used

Pop-up grabs user's attention

Can upset users who then do not shop there in future

Users have pop-up blocking software which doesn't allow blockups to appear

Can use pop-unders which are not removed by pop-up blocking

Can advertise their name by getting it included in an online directory

(Multimedia) presentations/slide show - used on purpose-built display monitors...

...placed in strategic locations

The presentation/slide show is produced using presentation software

Has range of multimedia - sound, video/ animation,(text, images)

Other features e.g. slide transition effects, special text effects, image transition

Always on while mall or store is open

The user cannot switch it off

Quicker to update than an Internet site or television commercial

Flyers usually a single-page leaflet

Used by individuals or small businesses

Used to advertise in the local community therefore have limited impact

Can be produced using own PCs and printers and DTP software

For larger print runs have to take to the printers - increased costs

Quick to produce

DTP allows character shapes, variety of patterns, colours

Posters - large printed pieces of paper used to advertise products

Due to size have to be printed by professional printers - expensive

Posters can be produced using word-processing, desktop-publishing or presentation software

More usually, Presentation because of ability to use very large paper sizes

E-mail to customers

Use of attachments may dissuade customers from reading the advertisement

Customers may treat it as junk mail and so not read it

Specific customers can be targeted

Attachment can be created easily using DTP

DTP allows character shapes, variety of patterns, colours

Can be sent to world wide audience

Easy to create an email and mailmerge

A mark is available for a reasoned conclusion

Must have both advantages and disadvantages to gain full marks

[8]

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- 3 (a) Six from:**
- Computer/software organises meeting times
 - The calendar function enables users to keep a record of their appointments and meeting times
 - Designers have access to public calendar over a network
 - Public calendar allows designers to see when there would be a suitable time for a meeting
 - Software provides alerts regarding imminent start of meetings
 - Calendar advises them of any clashes - meetings scheduled for the same time and date.
 - (By allocating times for tasks realistically) it is possible to ensure members of a team have equitable workloads
 - (Software used to) produce Gantt charts for graphically representing progress on website
 - Gantt charts help to plan out the tasks that are involved in developing the website
 - Gantt charts are used to plan the whole process including parallel and sequential activities
 - (Software) provides a critical path method of scheduling
 - (Software) contributes to the management of such projects by identifying website progress
 - Providing daily and weekly planning
 - Some software packages act as a stopwatch device
 - When a specific task is clicked on, the computer reminds the user how long they have been working on that task
 - Enables manager to see what emphasis is being placed on each task
 - Tasks can be arranged so that parallel tasks finish at the same time
 - Manager can use software to change timings to ensure pages are ready when needed [6]
- (b) Four from:**
- Mention at least two of: use of passwords, user ids and memorable words (+1 for expansion)
 - Description of encryption
 - Using public keys and private keys
 - Decryption keys to decrypt data
 - Use SSL or TLS
 - Use of drop down menus (to prevent access by keyloggers) [4]
- 4 (a) Four from:**
- Type in or select shop website from favourites
 - Browse product categories
 - Browse individual products
 - Place selected products in shopping basket
 - Go to the checkout
 - Enter username and password
 - Enter billing address
 - Enter shipping address
 - Customers who are not previously registered must type in personal details
 - Choose method of payment
 - Choose method/speed of delivery
 - Confirm order
 - Log off [4]

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(b) Six from:

Items are usually cheaper as staff costs are lower
 Customers can spend time comparing products and prices without being rushed
 Can shop at time of their own choice
 Can use favourite shop even at a distance
 Shops can remember customer's shopping list - don't have to reorder
 Don't have to spend time going around different shops/travelling to shop
 Disabled people don't have to leave house
 Can look at wide range of shops all around the world
 Greater choice of manufacturers
 No travelling expenses

Security concerns about data transmitted over internet
 Description of phishing
 Description of pharming
 Can order goods and they don't get delivered/are not to the same standard as those ordered
 May be hidden costs such as delivery charges
 Description of viruses

+1 for reasoned conclusion [6]

5 (a) Four from:

Computer telephony integration (CTI) software
 Is used to integrate all aspects of the system together
 Queues calls
 Displays caller's number
 Directs phone call to operator
 Sends commands from the operator's computer to the telephony server
 Any computer in the network has the potential to control any phone in the telephone system
 Phone calls are processed using interactive voice response (IVR) software
 IVR provides automated services
 As well being able to queue calls, the system needs to be able to transfer calls to a person with the appropriate expertise [4]

(b) Six from:

Increased unemployment for some existing checkout operators
 Increased employment for technical staff
 Increased employment for programmers
 Some checkout operators will have a more menial role
 Increased employment for van drivers
 Some workers may have to/will have the opportunity to go part time
 There will be the opportunity to job share
 There will be flexible working hours
 Technical staff may be able to work from home
 Increased employment for delivery people/despatch staff
 Some staff would need retraining [6]

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- 6 (a) Four from:**
 Data flow diagrams
 Using (two from:) terminators, processes, flow arrows and stores
 Represents inputs, outputs and processing
 System flowcharts
 Using particular input, output, storage and processing symbols [4]
- (b) Five from:**
 Helps identify problems with the current system
 Detail of the diagrams will reveal any weaknesses in the current system
 Easier to see where there is job duplication
 Helps identify suitable hardware and software for a new system
 Required outputs, storage and processing requirements identified using DFDs
 Helps identify volume of input data
 Helps identify the user and information requirements
 Can see exactly what job each worker is doing
 Can use DFDS to help with user requirements [5]
- (c) Two from:**
 Interview users to find out the requirements
 Will produce a requirements specification containing information requirements
 Information requirements of the system will be identified from the data collected when observing existing system
 Will collate interview transcripts, questionnaires and existing documents [2]
- 7 (a) Six from:**
 Depend on the user requirements
 Needs to be easy to use
 Needs to be attractive to look at
 Needs to limit the potential for inaccurate input
 Must have user instructions
 Need to consider who will see outputs
 Must match customer requirements as well as company
 Screen output must be kept simple
 Output screens must be consistent so that users are not confused [6]

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(b) Six from:

(Parallel running)

involves running the old system alongside the new system

Is more expensive because two sets of workers have to be paid

If there is a problem with the new system still have the old system as a backup

(Phased running)

Involves running part of new system whilst old system still operates with other parts

Cheaper as you don't employ two sets of workers

If there is a problem with the new system still have bulk of old system to fall back on

(Pilot running)

Involves running new system in one office whilst old system still operates in other offices

If there is a problem with the new system still have old system in other offices

Problems are limited to one office

(Direct changeover)

Involves replacing the old system with the new system all in one go

Cheaper as you don't have to employ two sets of workers

Quicker as there is no delay waiting for bugs to be fixed

If there is a problem you don't have the old system to fall back on

1 mark for reasoned conclusion

[6]

(c) Four from:

Indexed sequential method

Each record will have an index

Index will relate to letter of the alphabet

Letter is found

Further index will relate to rough position of record

Records are searched sequentially from that point

[4]

(d) Five from:

Using test results

Comparisons will have been made of the actual results with the expected results

If the results are not as expected refinements are made

Obtaining feedback from the user

Could observe users performing set tasks

Interview the users to gather their responses about what they thought of the system and how easy it was to use

Questionnaires to all the workers to ask them how easy they found it to use. The results could be analysed statistically

Identifying limitations of the system

Any extensions to the system users have said they would like

Making improvements to the system

Evaluate results of testing against the requirement specification

Evaluate the results of user testing

[5]