

MARK SCHEME for the October/November 2012 series

**9713 APPLIED INFORMATION AND
COMMUNICATION TECHNOLOGY**

9713/12

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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

Page 2	Mark Scheme	Syllabus	Paper
	GCE AS/A LEVEL – October/November 2012	9713	12

1 (a) Four from:

cameras to inspect/check work
welding guns to weld parts of the car body together
Grippers to pick up/ hold parts (and place them somewhere else)
Vacuum/suction cups to pick up parts
spanners to place and tighten nuts
riveters to place and tighten rivets
spray guns/sprayer to paint the car body
polishers/finishers to produce a shiny finish (after painting)
Sanders to prepare body for painting
Drills to make holes in the car body

[4]

(b) Four from:

the programmer controls the robot by physically guiding the arm through each step using the screwdriver
the programmer has sensors attached to his/her arm
the sensors transmit data back to the computer
The computer stores the whole process of tightening a screw...
...as a program in its memory.
The robot arm is therefore able to repeat the actions every time a new unit comes down the assembly line

[4]

(c) Three from:

a robot arm has greater accuracy/fewer errors than a human
there are lower running costs/no need to pay wages/lower utility costs
work/work rate is of a consistent standard
the whole process can be continuous/24 hours a day 7 days a week...
...without having to stop at shift changeovers
It is a safer/less dangerous environment for humans/Robots can work in harsh/hazardous conditions
greater productivity

[3]

(d) Three from:

Setup/maintenance costs
Is unable to cope with unusual circumstances/can't think for themselves
Staff need to be retrained leading to higher costs/which would be costly...
...and loss of workers for a period of time
If there is a fault in the program all products will have the fault

[3]

Page 3	Mark Scheme	Syllabus	Paper
	GCE AS/A LEVEL – October/November 2012	9713	12

- 2 (a) Business – advertising of a single company and example [1]
Product – advertising of a specific product/advertising one item and example [1]
Service – advertising of services such as insurance/government/tourism/banking [1]
Most appropriate – business [1]

(b) Four from:

Can be produced by the business using their own PCs and printers
A flyer doesn't take very long to produce
Company can distribute them so that they only go to the people they want to see them/target audience
It is a cheaper method than creating a web page/paying a company to use their website/paying programmers to create a website
Prospective customers may not have computers/internet/regular electricity supply
Can target specific groups/Can't guarantee all the intended audience would see a website [4]

3 (a) Five from:

The data flow diagram shows the inputs, outputs and processes of the system
The specific hardware will not be recommended at this stage.
Recommendations/suggestions for the hardware will be made.
DFDs consist of terminators, flow arrows, processes and stores
the terminators and flow arrows in the DFD show the volume of input data...
...which leads to decisions on appropriate input devices
Terminators and flow arrows out of the system indicate the quantity/format of the output/required output...
...which leads to decisions on appropriate output devices
looking at the processes involved (in storing and analysing results)...
...the processing requirements will be known...
...will give an idea about the size and speed of the processor required
Stores in the DFD will show how much data needs to be stored...
...the storage requirements will be known
How much data needs to be stored is needed to identify the size and number of storage devices [5]

(b) Four from:

Forward and backward buttons to go to the next/previous record/candidate
First and last buttons to go to the first/last record in the database
Drop down menus to select a file/record
Go to button so that the desired record/candidate/centre number can be typed in
Search button so that the desired candidate/centre name/number can be found [4]

Page 4	Mark Scheme	Syllabus	Paper
	GCE AS/A LEVEL – October/November 2012	9713	12

3 (c) Three from:

Use normal and live data for candidate numbers to test the goto/search buttons
 Use abnormal and extreme data for candidate numbers to test the goto/search buttons
 Click the buttons to make sure they go to the correct record
 Check all the options on the drop down menus
 Get users to check the ease of use of the navigation aids...
 ...and ask for feedback about the navigation aids

[3]

(d) Three matched pairs from:

Parallel running involves running the old system alongside the new system.
 If there is a problem with the new system still have the old system as a backup/ changes can be made if problems occur/training can be gradual

Phased implementation involves implementing one part of the system while rest of system remains unchanged/implementing system part by part
 If there is a problem with the new system still have bulk of old system to fall back on/changes can be made if problems occur (if not already awarded for parallel running)/ training can be gradual (if not already awarded for parallel running)

Pilot running involves running new system in one regional office whilst old system still operates in other branches

If there is a problem with the new system only one regional office is affected the other two will be able to carry on as normal/workers using the successfully implemented system could train workers in other branches

[6]

4 (a) Three from:

Microphone - to input voices/so that workers can speak with the trainer
 Speakers - to output voices/in order to hear other examiners/trainer
 Webcam - to input video/so that images of each examiner can be transmitted/sent

[3]

(b) Three from:

Won't have to pay for travelling/hotel expenses (and then wait to be reimbursed)
 Won't waste time travelling
 Can organise family commitments around the meeting
 Won't have to worry about forgetting vital documents
 Won't have to worry about misplacing examination papers/confidential papers

[3]

(c) Three from:

Cannot be sure that all examiners are paying attention
 Initial cost of video conferencing software
 Initial cost of hardware at the exam board's offices
 May be problems with the connection/time lag
 Difficult to allow participants to answer in turn

[3]

Page 5	Mark Scheme	Syllabus	Paper
	GCE AS/A LEVEL – October/November 2012	9713	12

5 (a) Five from:

Click on register button to take you to the registration page
 Enter choice of username to identify the customer to the system
 Enter choice of password to make the account more secure
 Enter an e-mail address so customer can be sent notification that they have received the order/so shops can tell the customer when the order has been dispatched.
 Confirm email address/password by entering it again to verify the original one is correct
 Enter name to ensure that the goods/bill are addressed to the correct person
 Enter answer to chosen security question as an extra layer of security in addition to a password/so that you can request a new password if the original is forgotten
 Enter billing address where the bill will be sent
 Enter a shipping address where the goods will be sent to
 Enter phone number so customer can be contacted if there is a delay in delivering/amendment to customer's order
 Give credit card details/debit card details/online transaction service provider details as a method of payment
 Choose method of delivery to choose how quickly the goods should be delivered
 Open confirmation email and click on link to confirm registration
 Click on log off to make sure no person using the machine after you can access/misuse your personal details/credit card details
 Click on confirm button to authorise the delivery/purchase of goods

[5]

(b) Four from:

Can compare products and prices at their leisure
 Can shop at a convenient time for them
 Customers can shop at their favourite store even when they live far away
 Customers can shop around without having to spend time travelling to different stores
 Customers can shop around without having to spend money travelling to different stores
 Disabled customers will find it easier to shop
 There will be a greater choice of hardware

[4]

(c) Four from:

Less personal touch so it is harder to sell other products
 Potential for fraud so store loses money
 Initial/running costs 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
 May lose customers who fear online fraud

[4]

6 (a) Interactive voice response software/software that does not require a human response/automatic services such as account information can be accessed using the IVR software.

Three from:

Caller is presented with an options menu
 Option is selected by pressing the keys on the phonepad/speaking into the phone
 Customer responds to questions about their account to identify the customer
 Data and call is automatically routed to the relevant department or person required.

[4]

Page 6	Mark Scheme	Syllabus	Paper
	GCE AS/A LEVEL – October/November 2012	9713	12

(b) Four from:

Typing at a keyboard continuously can cause RSI/wrist problems/finger problems
 Gripping a mouse and repetitive clicking can cause RSI/wrist problems/finger problems/carpal tunnel syndrome
 Sitting in the same position all day can cause lower back pain
 Sitting in the same position all day can cause deep vein thrombosis
 Staring at a computer screen all day can cause eye strain/headaches
 Poor positioning of screen can cause upper back/neck/shoulder pain
 Glare from screen can cause eye strain/headaches

[4]

(c) Three from:

Too many plugs connected to a socket/overheating of computers can be a fire hazard, have a CO₂ fire extinguisher in the room/don't overload sockets/make sure there are enough sockets in the room/ use LCD monitors/have adequate ventilation/don't place computers too close together/make sure ventilation holes are not blocked
 Bare wires can cause electrocution, ensure wires are properly insulated/spilt drinks can cause electrocution don't take food and water near to computers
 Trailing wires could cause an operator to trip over/ensure adequate trunking is in place/place cables under carpet/use WiFi devices

[3]

7 (a) Two from:

Gives workers some choice about what times of day they work.
 Hours can vary from day to day.
 Workers work the same number of hours each week.
 Can choose when to do these hours, providing it fits in with what other workers want and employer agrees.

[2]

(b) Three from:

Can enable business to be open for longer during the day
 Business might want the repairs to go on from early in the morning to late at night
 Can match working hours with busy and not-so-busy times
 Easier to allow for technicians' personal needs which leads to a reduction in absenteeism/improved punctuality.
 Working flexitime hours would appeal to many technicians so it helps recruitment/ reduces the number of staff leaving for another job
 reduces the need for training new staff
 Working flexitime hours is popular leading to greater productivity

[3]

(c) Two from:

Allows technicians to organise their working lives to suit their personal needs.
 Can choose to work off peak hours as travelling to work outside peak times is easier and cheaper
 If technicians stay late to finish a job, they can take time off at a later date
 If the job requires great concentration, it can be done at quiet times of day.

[2]