CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the October/November 2012 series

9713 APPLIED ICT

9713/32 Paper 3 (Written B), 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.

CAMBRIDGE
International Examinations

1 (a) (i) **Two** from:

Benefits:
High(er) bandwidth/faster rate of data transmission compared to copper cable and wireless
Easier to increase bandwidth
Expensive to purchase and install
Very difficult to intercept data being transmitted/very secure as cable has to be tapped into/cut to gain access to data

Drawbacks:
Difficult to repair breaks/damage compared to copper cable
Can be easily broken/snapped compared to copper cable

(ii) **Two** from:

Benefits:
New protocols can increase data transmission rates
Easy to install no cabling required
Easy to add a new system
Not as expensive to purchase/install as fibre optic cables/lower costs than copper cable

Drawbacks:
Easier to intercept
Limited range
Limited users to each access point
Requires repeaters/hubs over long lengths

(iii) **Two** from:

Benefits:
New protocols can increase data transmission rates
Easy to install
No cabling required
Easy to add a new system/node/device to network

Drawbacks:
Easier to intercept data
Limited range
Limited number of users to each access point [6]

(b) **Four** from:

(i) *A Firewall:*
Scans packet for forbidden key words
Reads packet sender's IP address
Permits if on allowed list
Reads domain of sender
Permits if not forbidden

(ii) *A switch:*
reads the IP address of
….recipient's system
Then looks up the port for this system
Then sends the packet directly to this
Blocks/does not send transmission/data to other ports [4]

(c) **Two** from:

Provides secure data transfer
Sends encrypted data
Provides confidentiality
Uses TCP/IP protocol
Through the internet/not a physical network
Uses tunnelling from one LAN to another/VPN client makes tunnel to server
Uses public communication links
Packets are encapsulated within packets of native transmission network [2]

2 (a) **Four** from:

Departure pint to show where the train is to be boarded
Destination point to show which trains are available
Date of travel to show when the journey is to be made
Time of travel to show which train to catch
Class of travel to choose the standard of seat to be used
Single or return journey depending on whether the journey was one way or a return to departure point
Number of adults to show how many seats are needed at full price
Number of children to show how many seats are needed at reduced price
Seat reservations to ensure that there is a place to sit/room on the train
Special requirements e.g. accessibility
Contact details/email address to which the confirmation is to be sent [4]

(b) Eight from:

Customer:
Benefits:
No need to travel/queue/go to booking kiosk, office or agent for tickets to make advance bookings
Can cost less as there is no need to travel to ticket office, kiosk or agent
Can be used to make a booking at any time of day
Tickets can be obtained quicker than using ticket office
On-line might have special offers as agent/office/company costs are lower
Can compare prices at leisure

Drawbacks:
Must be computer literate/have a system e.g. smartphone/have an internet connection
Cannot ask detailed questions unlike a human
System might be down- unlike a timetable book – so cannot make a booking at that time/have to wait which can be inconvenient
Need a credit card to make bookings/collect tickets at departure point

Company:
Benefits
Requires less office staff so overheads are reduced e.g. smaller booking offices
Can be quickly updated with latest offers/news
Better customer satisfaction due to e.g. faster service
Can hold more information than a human

Drawbacks:
Expensive to employ programmers/purchase hardware/set up and maintain
Vulnerable to hacking so is vulnerable to fraud
Must be kept up to date to provide the correct information
Less personal touch
No opportunity to sell extras to customers e.g. seat reservations/travel insurance [8]

(c) Three methods from the following:

Use of HTTPS mode in URL
.....to ensure that data transmitted is encrypted
The use of access rights for users of the servers holding customer data
...which prevents unauthorised users gaining access to the data
...allows use of user IDs/passwords to restrict access
....and use of security questions to authenticate users
Physical restrictions on entry to server system such as guards
Data held on server is encrypted
....to keep it secure
Use anti-malware software regularly
....to reduce e.g. spyware
use a firewall
.....to monitor incoming traffic
Use a digital certificate
....so others know it can be trusted/is the correct site
have warnings on the website
...e.g. “we will never give out your details to others”/“ask for passwords in emails”

3 One mark for identifying method, one for expansion :

CAPI (computer assisted personal interviewing)
- sit in front of computer and answer on screen questions
- interviewer asks questions prompted by computer

CATI (computer assisted telephone interviewing)
- basically call centres used in this technique
- computer dials phone numbers of target audience and then interview takes place using script

CAWI (computer aided web interviewing)
- database of people willing to take part in research
- customer logs on to web site and answers questions
- use pop ups /adverts on selected web sites

Use of person-person interviews and techniques
Research websites of other railway companies
Gathering data from sales terminals
use of computers to prepare documents/interviews [6]

4 (a) **Two** from:

The gap between those who have access to ICT and those who do not
The gap between those who have ICT skills and those who do not [2]

(b) **Three** ways from:

Low incomes - unable to afford computers/internet
Age - too old to tackle new technology

Inability to participate in e-world
....Such as accessing local information
....Using online resources to vote
....Access to health information
....Unable to obtain job requiring ICT skills
....Unable to shop/bank online
Inability to access online services such as:
....information services
....news services
....independent information suppliers/information from sources other than the government [3]

5 (a) Eight from:
Max six for all benefits or all drawbacks

Benefits from e.g.:

Better for students with disabilities
Students can structure own learning
Can repeat tasks as many times as necessary
Can work at own pace
Can be used on a laptop anywhere/no need to be in classroom
Can be assessed at stages
And receive results in a short time
Certificates can be printed by the system rather than waiting
Questions can progressively become harder
depending on test results
cheaper than regular updates of text books

Drawbacks from e.g.:

No social interaction with a trainer
System is unable to answer all questions from students
Trainees could go off task
Expensive to create and maintain [8]

(b) Six from:

Program generates individual test /using question bank
Students complete multiple choice test
Using marks on paper/on computer screen
Sheets fed into scanner/marks read off screen
Marks totalled
Report generated and printed /displayed
Reports emailed to parents
Software used for processing results/analysing progress [6]

(c) Three from:

Students could hack into school system and obtain tests/answers to tests
Students could change test marks on system to get better grades
Students could alter teachers' reports/gradings to get better references
Students could pass on student's details to others
Students could access private information such as medical records
Students could cyber-bully others
Students could deface school websites
Students could send viruses etc to others
Email addresses harvested used to sell to third parties [3]

6 (a) (i) **Three** from e.g.

Driving licence
Passport
Identity card
Voting card
Social security card
Income Tax form
Rent book
Bus pass
Roadworthiness Certificate
Vehicle Registration document [3]

(ii) **Two** from e.g.:

People can have better access to forms when and where they wish
Lowers many costs/overheads of offices and officers
Gives people better image of government
Less chance of bribery and corruption [2]

(b) **Four** advantages from:

Personal details can be stolen from post/from company databases leading to identity theft
Phishing to acquire e.g. usernames/IDs/passwords by pretending to be a trusted entity to gain access to e.g. bank accounts
Pharming to redirect user to a bogus/fake/rival website
Money taken from personal accounts as a result of pharming/phishing
Tickets intercepted from online booking details
Loss of bank/credit card details so tickets purchased and intercepted by others
Skimming of credit cards
Spyware to steal e.g. login details/account numbers
Hacking resulting in loss of personal details/logon details/usernames/passwords leading to e.g. theft of money from bank accounts/unauthorised use of credit cards [4]

7 (a) **Three** from e.g.:

Incomes
Allowances/capital allowances
Expenses such as e.g. sundries [3]

(b) **Two** from e.g.:

Money transfer from own online bank account using electronic funds transfer
Use of a credit/debit card on the government website
Use of a third party financial transaction service [2]

8 (a) Two from:

Programmes are created in broadcasting centre and sent to a local transmitter
Sound and vision sent separately and combined at transmitter station
Radio/electromagnetic wave signal sent from local transmitter mast
Received by directional aerial/aerial pointing towards transmitter [2]

(b) Two from:

Programs are sent to a central switching station for encoding/modulating/uplink
Encryption of signal
Signals sent to satellite in stationary orbit
Satellite transcodes signal onto signal for transmitting from transponder
Satellite sends signals to earth
Dish on property collects signal
Decoder transcodes signal so that it can be displayed on the television screen [2]

(c) Four from:

Can carry more channels that a terrestrial system
Able to access more customers via satellite/only need to have line-of-sight of the satellite
More revenue possible as can charge for access to services
Higher perceived quality of service/picture
Can provide more HD channels as higher bandwidth available
Can charge for pay-per-view channels/events
More consistent reception/less susceptible to interference/weather
Signals not blocked by hills/buildings as much/easily as terrestrial signals
No need to have multiple transmitters across the country
No need for distribution network to transmitters
No need to plan transmitter coverage
Provides a more detailed Electronic Programme Guide (EPG) for viewers/customers
Terrestrial transmitters produce a lot of waste heat/power wasted in cooling [4]