

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International Advanced Subsidiary and Advanced Level

MARK SCHEME for the October/November 2014 series

**9713 APPLIED INFORMATION AND
COMMUNICATION TECHNOLOGY**

9713/31

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.

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- 1 (a) Four from:
 Named sensor such as light/infrared
 ...on satellite/NOAA/NASA/LANDSAT
 Data mining from existing research documents
 From expert geologists
 ...collected by appropriate method
 ...analysed and interpreted/entered into knowledge base [4]
- (b) Two from e.g.:
 Soil type/type of soil in the location
 Chemicals in soil/soil composition
 Density of soil
 pH of soil
 Details/descriptions of any ores found
 Geological location of site
 Geological makeup/details/landscape of site [2]
- 2 Eight from:
- Advantages:
 Contains the knowledge of many experts
 Provide permanent record of process
 Can enhance his own knowledge
 Produce results quicker/reduces time taken to produce results
 Fewer errors in work
 No need to check with other inspectors/geologists if in doubt over findings
 No need to carry/have access to paper records/information/reference books
- Disadvantages:
 Can lead to demotivation/less thought process by operative
 Inspectors need to be trained to use the system
 Expert system follows rules while operative might have “insight”/use common sense
 Expert system does not easily adapt to new/different conditions
 Expert system needs to be up-to-date to provide the most useful information for the inspectors to use
 Updating may take the system offline and make it unavailable
- Maximum 6 marks for all advantages or all disadvantages
 One mark available for a reasoned conclusion. [8]
- 3 Three from:
 Analysing the geology of an area/location
 Analyse/interpret the records/data of observations
 Create a model describing the geology of the area e.g. rock boundaries/faults/water flow
 Create a 3D representation of the area showing rock formations/likely mineral deposits/
 fluid flow/oil in rocks/spaces between rocks [3]

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- 4 (a) Receives and/or sends packets
...to all devices connected to it
Broadcasts data packets [2]
- (b) Direct flow of data packets to specific/individual devices connected to it
Stores details of mac address of connected device(s) in order to direct packets
...to attempt to avoid congestion on network [2]
- (c) Use radio waves
...to connect into existing network [2]
- (d) To control data traffic
To analyse traffic/checks (inspects) contents of data packets
To allow or deny access by network traffic
Blocks/allows IP addresses
...compares with block/allow list [2]
- 5 (a) Two from:
http: Web browser on client/laptop sends http request message
Company server sends http response/completion data to client/laptop
Application layer protocol using IP/TCP to transfer data
Web browser displays data using hypertext/markups in documents
- Two from:
FTP: FTP client/application on laptop used to login in with user ID/password
Active or passive FTP mode selected depending on company server settings
Data type, e.g. ASCII/binary/EBCDIC, of data transfer determined
Mode, e.g. Stream/block/compressed, of data transfer selected [4]
- (b) Four from e.g.:
Encrypt the data before sending
...using keys known only to him/recipient
Use secure/encrypted connection via wireless/Wi-Fi/cable
...use https connection
...use SSL connection
Avoid using public Wi-Fi hotspots
...to try to ensure that signals are not intercepted
Use secure VPN
...to connect over public telecommunications systems [4]
- (c) Six from e.g.:
Email for sending messages and attachments
Electronic/video conferencing to discuss/share findings with other geologists
Use instant messaging services to discuss findings with other geologists
VoIP for voice phone calls findings with other geologists/report to offices
VPN for connection into company network
Webmail for email to sending messages and attachments/check messages
FTP for uploading files/downloading documents [6]

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6 (a) Six from:

Benefits:

- Customers do not need to travel to make a booking so save travel costs/time
- Customers can compare bookings with different companies
- Customers can make bookings from anywhere
- Customers can make bookings at any time
- Customers has instant confirmation available
- Reduced staff for branches/agents so saving money on salaries/wages
- Customer base not restricted by time zones

Drawbacks:

- Cannot authenticate customers for security purposes
- No personal contact with customers/agents
- Customers with special requirements may not be able to ask questions/get information online
- Do not have street presence to attract new customers
- Reliant on customers having internet access

Maximum 4 marks for all benefits or all drawbacks. [6]

(b) (i) The use of ICT/computer systems to intentionally deceive (others) for personal gain [1]

(ii) Four from, e.g:

- Personal identities can be stolen
- Money can be taken from bank accounts
- Goods can be intercepted
- Online tickets can be intercepted

[4]

7 Eight from, e.g:

- Use of ICT/computer systems
 - ...to cause/inflict harm on others
- Deleting/amending/distributing personal data
 - ...gained from company/government databases
- Misuse of personal data
 - ...to gain access to services not entitled to
 - ...to distribute SPAM emails
- Spreading of viruses
 - ...to cause harm to files/data
- Cyberbullying
 - ...with use of social networks/email/text messages

[8]

8 Two from:

- Create Gantt charts
- Create PERT charts
 - ...helps to identify the short and long term targets for the task of creating the software
 - ...helps to prioritise the tasks
 - ...helps to create a critical path

[2]

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9 Any **six** points from (max 3 problems and 3 solutions):

Any 3 problems from:

Hackers attempting to access files and copy visitor credit card/personal details
 Unauthorised alterations to web site/customer details
 Security of data when customer details transferred/stored
 Uploading of virus to site
 Uploading of spyware
 Spammer obtaining email addresses and sending spam
 Denial of Service attack

Any 3 appropriate solutions from:

Firewall to control access by computers
 Description of appropriate authentication technique
 Use of encryption of data when being transferred or stored/use of secure website/https/SSL
 Use of digital certification to verify website
 Use of up to date anti-virus application
 Use of anti-spyware software
 Use of spam filtering software
 Install a firewall, and configure it to restrict traffic coming into and leaving your computer

[6]

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10 Methods from e.g.

Weblog:

Have a chronological record of postings
 Perception of greater access
 Can have multimedia elements
 Consumes time to create and update
 Unfiltered/uncensored

Emails:

Emails sent to registered subscribers
 Send emails with information/attachments of newsletters

Website:

Information posted
 Online questionnaires collect views

Forum:

Can be accessed from anywhere
 Have a large audience
 Wide range of users produces range of ideas and views
 Usually only text-based
 Malicious postings could be possible
 Moderators/administrators can censor postings
 Difficult to identify posters of malicious postings

e-Petitions:

Petition is set up on (government/politician) website
 Petition checked for authenticity to ensure that
 ...there is not one already on that topic
 ...it does not contain confidential, libellous, false or defamatory statements
 ...it does not contain offensive, joke or nonsense content
 Petition is available for anyone to sign

Social networks:

Use of social networks for “branding”/public image of politicians
 Use for voter registration – collecting names of voters
 Allow voters/supporters to express opinions/make comments on social network pages
 Encourage voters/supporters follow/engage with politicians

[6]

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11 (a) Two from:
 Use tele-conferencing to hold discussion
 Members can log in at different times to post views/comments [2]

(b) Six from:

Advantages:

Members can be from all over the world/anywhere/wider range of views or opinions available
 Timings do not have to take account of travel time
 Travel and accommodation do not have to be arranged or paid for
 Use of moderators to ensure appropriate language/tone of contributions
 Contributors cannot remain anonymous
 No need to employ staff/researchers so reduced costs

Disadvantages:

Organiser/moderator has less influence over the discussion
 Contributors/citizens need IT skills/access to IT facilities
 Interaction between organiser/moderator is reduced
 Members often contribute less online than face-to-face
 Reactions of members cannot be observed easily

[6]

[Total: 80]