

**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.

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Page 2	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – October/November 2014	9713	31

- 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]

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – October/November 2014	9713	31

- 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]

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – October/November 2014	9713	31

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]

<b>Page 5</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International AS/A Level – October/November 2014</b>	<b>9713</b>	<b>31</b>

**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]

<b>Page 6</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International AS/A Level – October/November 2014</b>	<b>9713</b>	<b>31</b>

**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]

<b>Page 7</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International AS/A Level – October/November 2014</b>	<b>9713</b>	<b>31</b>

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]**