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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2014 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

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]

4 **(a)** Receives and/or sends packets
…to all devices connected to it
Broadcasts data packets

(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]

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]

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]

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]

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

(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]