
APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

9713/32

Paper 3 Written B

October/November 2016

MARK SCHEME

Maximum Mark: 80

Published

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1 **Eight** from, max 2 per appropriate device, e.g.:

Network interface card (NIC)

- ...to connect to network
- ...to construct the data packets for transmission on the network
- ...to receive the data packets from the network
- ...to send the data packets to the network

Router

- ...to connect LANs into WAN
- ...to connect network to the internet

Switch

- ...to connect network segments together into a LAN
- ...to forward data packets to required segment of network but not all segments
- ...to manage packets by user programming

Hub

- ...to connect network segments together into a LAN
- ...to forward data packets to all segments of network
- ...a packet entering any port is forwarded/rebroadcast to all ports

Wireless access point

- ...to allow portable devices to connect to the LAN
- ...using Wi-Fi/wireless technology

Proxy server

- ...to act as intermediary for services requested by devices on LAN
- ...to enforce an acceptable use policy
- ...to provide language translation of resources accessed from LAN
- ...to act as buffer between LAN and internet for web pages accessed from LAN
- ...to provide network address translation (NAT) services to computers/devices on LAN

Firewall

- ...to prevent unauthorised access/network traffic to/from LAN by computers
- ...by inspecting contents of IP/data packets
- ...comparing contents with pre-set rules

Bridge

- ...connect two or more LANs together
- ...transfer data between two different protocols
- ...faster than a router at transferring data between networks as no analysis of data is done by bridge.

[8]

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2 Four descriptions from:

Connect memory stick to laptop on network
 ...login to network/server/website with appropriate account/access rights...
 ...using e.g. FTP
 ...FTP is a client-server architecture
 ...using a secure login
 ...copy/upload files to folder (on website server).

[4]

3 Two explanations from:

Use search engine/facility on website to locate the application documents
 Download/save/open application document
 Complete and print/submit document
 Login with user ID and password to Government website account.

[2]

4 (a) Four descriptions from e.g.:

Checking balance of account
 Viewing bank statements
 Ordering a cheque book
 Paying bills to e.g. Utility companies
 Transferring funds to another account/third party
 Setting up regular payments to third party/another account
 Viewing pending transactions
 Updating/changing personal details.

[4]

(b) Two from e.g.:

Account holder mobile (cell) phone number looked up and used to send SMS/text message to holder...
 ...to ensure that transactions originate from account holder
 ...to alert/call account holder of an irregular/unusual transaction
 ...when payment made from account
 ...details of payments/account are changed
 ...to alert when funds go below/above pre-set values.

[2]

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5 (a) (i) **One from:**

Ensuring that the person is who they say they are
 Confirming that the item/data is true/genuine.

[1]

(ii) **One from:**

Checking that a person is allowed to do what they are trying to do
 Assigning access rights/privileges to the person if they are allowed to have them.

[1]

(b) **Six descriptions from:**

Use of user ID with password/PIN known only to user
 Use of transaction authentication numbers (TAN)
 ...bank creates tans for customer
 ...TANs sent to customer/generated by code machine held by customer seeded by PIN or by number on screen/generated by captcha on screen/sent to cell phone of customer
 ...a TAN is entered after user ID/password/PIN as next level of authentication
 ...TAN checked against list issued to/held by customer
 Use of one-time password
 ...multi-factor authentication with a token
 ...token holds unique encryption key
 ...token generates sequence of characters using time/unique encryption key
 ...bank can work out/reverse-engineer the sequence to check that key is correct one
 Use of chip & PIN
 Use of security questions/memorable words
 Use of biometrics.

[6]

6 **Six from:**

Use of (virtual private network) VPN
requires login credentials/user ID plus password
 ...sets up secure tunnel on public communication systems
 ...use of encryption
 Use of authorised laptop computer/dongle
 ...only allow connection if computer authorised/dongle present
 Access via web page using https
 ...web interface provided by expert system.

[6]

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7 *Eight descriptions from e.g.:*

Sticky keys:

By pressing two keys together, users can press the alt, control or shift key first, then the character key afterwards

Filter keys:

Computer ignores brief key presses/where a key is pressed down repeatedly

Mouse keys:

The number pad can be configured to control the pointer on the screen

Settings:

To allow the size and appearance of the pointer, icons, text font size, menus etc. to be altered

Text to speech software that speaks the words to help the user

Speech recognition software to enable the user to speak into a microphone, the speech is converted into text and word-processing software is used to display the text

Predictive word processors to try to guess what the user is typing

...after one or two letters are typed in, a choice of words appears on the screen and the user can select the correct word

A mouse that can be configured to have a different type of pointer and/or leave a trail so that people with sight problems can easily pick up where the position of the pointer

Head pointers: these use a camera positioned on top of the monitor to detect the movement of the head through the use of reflective materials; software then converts these into the movement of the mouse pointer

Overlay or concept keyboards: the overlay can have much larger characters that can be picked out easily by those people with sight problems and can be selected more easily by those with poor motor control

Purpose-built keyboards: specially manufactured keyboards, e.g. Braille keyboards for blind people/keyboards with larger keys for those people who can see but not very well

Tracker balls: these can be used with either hands or feet

...most disabled people find they are easier to use than a mouse to control menus and pointers

Joysticks: can often respond to minor involuntary movements

...these are easier to control than a mouse

Touch screens: the idea is similar to the use of concept keyboards in that characters of the keyboard can be larger or images can be used to replace characters

Head wand: this is a wand or rod attached to a headband that enables people with limited or no limb movement to press the keys on a keyboard

Foot mouse: used by user's feet instead of a hand-held mouse.

Max 6 for all hardware or all software.

[8]

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8 **Six** from e.g. :

Coded website with semantically meaningful HTML so visually impaired people can use text-to-speech software and/or text-to-Braille hardware
Hard-coding of fonts etc. is avoided to allow users to adjust/configure to suit needs
Textual equivalents provided for images for visually impaired
Links named meaningfully so easy to understand
Text and images are large/enlargeable so users with poor sight can read/understand the content
Flashing effects are omitted/optional so users prone to seizures caused by these effects are not put at risk
Distracting animations/pop-ups kept to minimum to avoid distracting visually disabled people
Clickable links and areas are large to help users who cannot precisely control a mouse
Pages are coded so that users can navigate by use of the keyboard /single switch access device alone so users who cannot use a mouse can access the site
Links are underlined/coloured, this ensures that colour deficient users will be able to spot them
Videos are closed captioned/sign language version is available so that hearing impaired users can understand the video.

[6]

9 (a) **Two** from:

Proof-reading/by reading the leaflet carefully to find errors
...to correct inaccuracies of spelling/grammar/factual accuracy.

[2]

(b) **Four** from:

Spell checker has a built in dictionary
Spell checker compares every word in leaflet with in-built dictionary
Spell checker highlights words which it cannot find in the dictionary
Spell checker suggests alternative spellings
Spell checker can have words added/amended in the dictionary
Spell checker can be instructed to ignore incorrect/unusual spellings
Spell checker can contain technical terms/abbreviations
If word is spelled correctly spell checker moves to next word.

[4]

10 **Four** from:

All documents from company must have the same look/appearance
...to present a consistent image to public
...to present corporate image
...so company can be recognised by public
More than one employee can work on the same documents to produce leaflet
...so that time taken to produce company document is reduced
...so that number of errors/mistakes/suitable example (e.g. incorrect address) is reduced.

[4]

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11 *Eight from e.g.:*

Web-based/online advertising using

-pop-ups on web pages to draw attention of viewer
-pop-unders on web pages to draw attention of viewer
-advertises on third party websites to attract viewers to own website
-advertises on search engine pages to direct viewers to own website
-sponsored links on web pages to direct viewers to own website

Customer-based advertising/social networking advertising

-by inserting adverts into social network streams/timelines/blogs to direct viewers to own website

Television advertising by

-sponsorship of programmes to attract viewers attention
-product placement within programmes to put product in context/in view of watcher
-virtual advertisement(s) overlaid using computer graphics into e.g. Sports programmes to put product in view of watcher

'Infomercials'

-with presenters describing and displaying the product
-that give/state telephone number/website details where prospective customers can find more information/sales

Radio advertising

-by inserting audio/spoken adverts between/in programmes

Newspaper/magazine advertising

-with printed adverts on pages
-by having mini-booklets within magazines.

Max 5 marks for all descriptions.

Additional 3 marks for valid comparisons.

[8]

12 *Six from e.g.:*

- Drop down lists offering a choice to respondent
- Radio boxes allowing only one choice to be made
- Text boxes to gather free response answers/comments
- Single character boxes to ensure data entry is appropriate
- Validation rules to ensure that only reasonable data/comments/information is collected
 -place a limit on number of characters in text boxes/in open-ended answers
- Inclusion of instructions/help/FAQs available to assist in completing the form
- Pop-up boxes to explain questions in more detail
- Multi-lingual options for different languages
- Branching logic to route participants around questions that do not apply to them
- Progress bar so participants can see how far they got in questionnaire
- Automatic survey/questionnaire expiry to set an end date for responses
 - ...with re-direct to end-of survey URL/web page
- Integration of answers from previous questions into new specific questions
- Use of real-time survey results can be shown to participants
 - ...in the form of a graph displayed at the end of the survey/use of questionnaire

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Can send customised email(s) to participants to remind them/as a ‘thank you’/incomplete questionnaire alert
 Can send report (for analysis) on survey/use of questionnaire/answers to specific questions to customised list of personnel
 Can include a ‘forward to’ option so that participants can send the questionnaire link to others
 Can be set up to prevent multiple responses from same participants
 Can include an opt-out option so that participants are not repeatedly invited to complete the questionnaire(s).

[6]

13 *Eight from:*

Results are available quicker than paper-based questionnaires
analysis does not have to wait for transcription into computer system
 No printing costs/wastage of paper
 No need to transcribe the results into computer for analysis
no transcription errors
 More accurate because data entered directly into computer-system
 ...data can be exported to statistical software/spreadsheets
 ...data can be extracted easier
 Participants can be selected/screened
can be sent an email/text inviting participants to answer the questionnaire
 More honest answers from participants
people answer more honestly when using the internet as they feel more anonymous
 More flexible because the order of questions can be changed easily
 Style of questionnaire can be tailored/customised
images/audio/video can be added to questionnaire
 Respondent can be asked different questions depending on responses to questions
 Incentives can be offered for completing the questionnaire
e.g. Money off next purchase of product.

[8]