

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International Advanced Subsidiary and Advanced Level

**MARK SCHEME for the October/November 2015 series**

**9713 APPLIED INFORMATION AND  
COMMUNICATION TECHNOLOGY**

**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 2015 series for most Cambridge IGCSE<sup>®</sup>, Cambridge International A and AS Level components and some Cambridge O Level components.

© IGCSE is the registered trademark of Cambridge International Examinations.

<b>Page 2</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International AS/A Level – October/November 2015</b>	<b>9713</b>	<b>32</b>

**1 Eight** from e.g.:

Electoral services enabling online voting by citizens  
 Electoral services enabling the compilation of an electoral register by the government agency  
 Taxation services to enable the viewing of tax records  
 Taxation services to enable citizens to pay taxes  
 To enable applications for official documents/passports/driving licences/identification papers by citizens  
 Health services to provide news/advice on health issues to citizens  
 Health services to enable self-diagnosis by citizens  
 Health services to find locations of doctors/hospitals  
 Education services to provide details of schools/colleges/courses  
 Education services to provide online applications for courses  
 Recruiting for government positions

**[8]**

**2 Eight** from:

*Benefits:*

Saves the cost of printing paper-based information  
 Reduced staffing costs/office requirement as fewer staff needed  
 Information can be updated easily/kept up-to-date  
 Increased access to government information  
 Information can be personalised  
 Faster access by citizens to government information/news  
 Government perceived to be more 'open'

*Drawbacks:*

Personal contact with government officials can be lost  
 Not all citizens have access to internet/computers/ICT skills  
 Concern over use of (personal) data by government

Max 6 for all benefits or all drawbacks.

One mark available for a reasoned conclusion

**[8]**

**3 Four** from e.g.:

Expand/provide the telecommunications infrastructure for access to internet in all areas  
 Provide low-cost/subsidise cost of ICT systems/computers for citizens  
 Provision of trainers in ICT for citizens  
 Provision of courses in use of ICT  
 Provide written manuals/help documents  
 Create forums for mutual help/self-help

**[4]**

<b>Page 3</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International AS/A Level – October/November 2015</b>	<b>9713</b>	<b>32</b>

**4 Eight** from e.g.:

One mark for each example, one mark for prevention, max 8 marks.

<b>Example</b>	<b>Prevention</b>
Cyber bullying – attacking/victimising others online	One from: <ul style="list-style-type: none"> <li>• Education/informing young people of consequences/unacceptability</li> <li>• Encouraging young people to report incidences</li> </ul>
Deliberate sending of malware – distribution of e.g. a virus	Ensure that anti-malware software is up-to-date/in use
Grooming – making contact/friends with intent to abuse	One from: <ul style="list-style-type: none"> <li>• Encouraging young people to report incidences</li> <li>• Monitoring web activity of young people</li> </ul>
Misuse of personal data	Ensuring that personal data is kept secure
Pharming – redirection of web traffic to fake site	One from: <ul style="list-style-type: none"> <li>• Education/informing people of risks</li> <li>• reporting incidences</li> </ul>
Phishing – asking for personal/financial details	One from: <ul style="list-style-type: none"> <li>• not opening emails from unknown senders</li> <li>• filtering of emails into appropriate folders/rejecting emails</li> <li>• not responding to emails that look suspicious/are from unknown senders</li> </ul>
Spam - unsolicited commercial advertisements received/sent online	One from: <ul style="list-style-type: none"> <li>• Use of spam filters</li> <li>• Use of different email addresses specifically for particular sites</li> </ul>
Unauthorised access to a system	One from: <ul style="list-style-type: none"> <li>• Use of firewalls</li> <li>• Use of encryption of passwords etc. so not easily read if intercepted</li> <li>• use of obscure passwords/complex passwords</li> <li>• change passwords regularly</li> <li>• limiting of access rights to authorised persons</li> </ul>
Uses of ICT devices to e.g. play loud music/annoy people on trains	<ul style="list-style-type: none"> <li>• block/remove device</li> </ul>

[8]

<b>Page 4</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International AS/A Level – October/November 2015</b>	<b>9713</b>	<b>32</b>

**5 Six** from e.g.:

Personal details can be intercepted during transfer between user and bank/shopping site  
 Personal details can be used for identity theft  
 User IDs/passwords can be stolen by cyber attackers/hackers and used for fraudulent activities  
 Financial details can be intercepted during transfer between user and bank/shopping site  
 Financial details can be used to purchase goods by third parties  
 Financial details can be used to transfer/steal funds from bank accounts of users  
 ...money taken from bank accounts without authorisation  
 Possibility of pharming – using a fake web site  
 ...goods never arrive  
 Receipt of phishing emails/calls from third person purporting to be from bank/online seller asking for personal/financial details  
 ...use of these details by third person to commit fraud  
 fraudulent claims by purchaser against seller/bank  
 ...falsely claiming non-delivery of goods  
 ...return of goods for false reasons after using them e.g. wear once of garments (e.g. event such as wedding) then return for refund of cost  
 use of stolen credit cards/credit card details  
 ...to commit fraud by purchasing goods/services

**[6]**

**6 Six** from e.g.:

Search engine to allow queries/complex searches to find suitable goods  
 Categories of goods/grouping of similar goods together to facilitate making a choice/finding suitable goods  
 Use of images/video/animation to illustrate goods to encourage purchase  
 Use of links to other goods to draw attention to associated goods  
 Use of links to goods purchased by others to suggest purchases  
 Provision of wish list store goods that might be purchased later  
 Use of cookies to suggest additional purchases based on current purchases  
 Provision of customer reviews of goods viewed/found by searches

**[6]**

Page 5	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – October/November 2015	9713	32

**7 Eight from:**

Virtual shopping cart adds costs of goods and delivery charges to produce total cost  
Virtual shopping cart submits order to website/company payment gateway  
Need to supply login details/access user account to 'proceed to checkout'  
Update of stock levels on stock control system  
Payment gateway forwards request/details to buyer's credit card company  
...using encrypted data for transmission  
Credit card company checks the card/account number exists  
Credit card company checks for sufficient funds/credit  
Credit card company checks if card/account is blocked/stolen/frozen  
...authorises the payment if valid  
Payment gateway tells virtual shopping cart that payment has been authorised/is successful  
Payment gateway starts transfer of funds from buyer credit card account to website/shop account  
Payment made and transaction finalised  
Confirmation of/input of delivery details  
Confirmation sent to buyer/Peter via email  
Order tracking process is initiated so Peter can follow the progress of the order

[8]

**8 Eight from:**

Use of Hyper Text Transfer Protocol Secure (https)  
...a padlock icon is displayed to show that a secure connection has been established/URL changes colour  
...to encrypt the exchange using a digital (SSL) certificate  
...digital (SSL) certificate contains user's public key/uses two-key encryption/private and public keys  
Uses Secure Socket Layer (SSL)  
...digital (SSL) certificate exchanged  
...digital (SSL) certificate contains encryption code/client browser's 'public' key  
...public key used to encrypt data for transmission by server to client browser  
...client browser used 'private' key to un-encrypt data for display  
...private key not shared with anyone  
Encrypted data can be intercepted  
...but cannot be read/unscrambled without encryption/private key  
Process/procedure called Public Key Infrastructure

[8]

**9 (i) Four from:**

Acts as buffer between LAN and internet/WAN  
Store frequently used websites/pages  
...to facilitate faster access  
...from internal network/LAN  
...pages updated at intervals  
Network Address Translation  
...to obscure/hide internal LAN addresses  
...to increase number of available network addresses for access to internet  
Can be used to filter out/block out unwanted/inappropriate websites

[4]

<b>Page 6</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International AS/A Level – October/November 2015</b>	<b>9713</b>	<b>32</b>

**(ii) Three** from:

Connected/situated between LAN and internet  
 ...acts as gateway from/to LAN  
 Used to control access to/from LAN  
 ...to keep data secure/safe from unauthorised computer/access  
 Used to inspect packets/data leaving/entering LAN from outside/internet/WAN  
 ...checks list of key words/URL  
 ...allows authorised data/packets through  
 ...drops/refuses access to unauthorised data/packets **[3]**

**(iii) Two** from:

Stores company files/data  
 ...company documents/templates  
 ...for access via network/LAN  
 ...by company employees **[2]**

**(iv) Three** from:

Allows remote login/connection to network  
 ...via Wi-Fi  
 ...by mobile devices e.g. laptops/smartphones  
 ...allows/facilitates guest login  
 Obviates need for additional wiring  
 ...when extending network/adding computers **[3]**

**10 Four** from e.g.:

Intranet uses IP protocols to share resources within a company  
 Intranet may make use of dedicated server to provide access to web-based resources  
 Extranet extends intranet by allowing remote access to intranet  
 Employees can connect to intranet by VPN to connect over public communication networks  
 Extranet can allow (parts of) intranet to be used by non-employees (via VPN) to connect over public communication networks. **[4]**

<b>Page 7</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International AS/A Level – October/November 2015</b>	<b>9713</b>	<b>32</b>

**11 Eight** from e.g.:

Both cables and wireless are used because:

*(Dedicated) cables:*

- Can reach areas that wireless cannot penetrate
- ...wireless will not pass through (some) obstacles/walls/materials
- Provide higher bandwidth than wireless connection
- ...greater data throughput available for intensive computer-based tasks e.g. database/intranet/CAD/CAM
- Are more secure
- ...more difficult to eavesdrop/hack into (cables) are more reliable
- ...provide a constant download/upload speed/bandwidth
- Are easy to use/install
- ...no need for configuration/security codes
- Have a greater range
- ...single cable can reach further than wireless/can use switch/hub to extend distance easily

*Wireless:*

- Provides easier to add devices when extra staff or nodes required in offices
- ...no need to install extra cabling
- ...extra cabling can be more expensive
- Provides access where the structure of the building is not suitable for cabling
- ...materials may be difficult to penetrate for cables e.g. stone/steel
- ...restrictions on alterations/additions to building because it is old/protected
- Allows mobility of devices
- ...devices are not fixed or tethered by cables
- ...offices can be re-arranged with the need for physical connections to be moved
- Allows flexibility
- ...devices can be positioned wherever there is a signal
- Can provide guest logins
- ...can provide logins for guests/visitors with no need for physical connection

Max 4 for all (dedicated) cables or all wireless.

**[8]**

**[Total: 80]**