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**APPLIED INFORMATION & COMMUNICATION TECHNOLOGY**

**9713/32**

Paper 3 Written B

**May/June 2016**

MARK SCHEME

Maximum Mark: 80

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**Published**

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<b>Page 2</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International A Level – May/June 2016</b>	<b>9713</b>	<b>32</b>

**1 (a) Three** descriptions from e.g.: **[6]**

Ascending bid auction with all bids open for all bidders to see  
 ...time limitation on bidding process  
 ...buyers bid on item and highest bid gets the item  
 ...bid (usually) has to meet reserved price  
 Descending bid auction price starts high but is lowered until a bid is accepted by seller  
 Single/first-price sealed bid auction where bids not viewable by all buyers  
 ...highest bid gets the item  
 Second price sealed bid auction where highest bidder pays price bid by the second highest bid  
 Reverse auction which has multiple sellers competing...  
 ...on prices to attract buyers  
 Bidding fee auction where buyers pay to bid on items  
 ...lowest unique bid wins  
 Business-to-individual auctions where businesses auction items to individuals  
 Individual-to-individual auctions where individuals sell to other individuals  
 ...buy it now option

**(b) Four** from e.g.: **[4]**

Fraud when item is not delivered/sent/provided after payment is made  
 ...item sent is not as described on auction site/item is less valuable than that shown on site  
 ...buyer payment details are used to buy goods/services not authorised by buyer  
 The auction site may be fake and set up to defraud buyers/difficulty finding authentic auction sites  
 Sale of stolen goods...  
 ...to unsuspecting buyers  
 Fake bids (by seller) to unfairly raise the price so buyer pays more  
 Seller/auction site lacks protection for buyers when payment is made and goods not received  
 ...site will not pay back money  
 Security of personal information may be at risk  
 ...liable to e.g. identity theft/fraudulent use of financial details

**2 (a) Five** from e.g.: **[5]**

There is no need to send cash in the postal system so it can't get lost/stolen in transit  
 Currency transactions are done by the company so no need for exchange by buyer/no need to worry about changing currencies  
 Credit card details are often stored on the auction site so cannot be intercepted during payment  
 Seller is guaranteed payment by credit card company so there is no delay before goods are sent/seller receives money quickly  
 Buyer does not have to pay the full amount at once/can spread payments  
 Consumer protection in many countries means that if goods faulty/do not arrive then money can be claimed from credit card company.

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge International A Level – May/June 2016	9713	32

(b) Four from e.g.: [4]

Credit card company will make a charge for each transaction so increased costs to seller  
 Cost of equipment/administration fees to process credit card transactions  
 Buyers can request a chargeback if dissatisfied up to six months after the transaction  
 ...seller has to spend time/money proving that the purchase was legitimate  
 Credit card might be stolen/cloned so payment is refused/ reclaimed after the goods sent out

3 Four from e.g.: [4]

Third-party/escrow:

Buyer orders/buys goods and securely pays third-party  
 Third-party holds the payment  
 Third-party tells seller that payment has been received and goods can be despatched  
 Buyer receives goods and inspects to ensure that the goods are satisfactory  
 Third-party releases payment to seller

Debit cards:

Use of debit cards to immediately transfer cost from buyer account to seller account  
 Online banking to directly transfer of funds from buyer to seller bank account

Use of vouchers:

Use of vouchers/tokens purchased from auction site to pay for goods

Use of digital currency/bitcoins:

Bitcoins purchased on exchange  
 ...kept in folder ('wallet') on smartphone/computer  
 Value in bitcoins transferred from buyer to seller wallet  
 ...by peer to peer file sharing

Use of cheques (which is a promise to pay) to pay before shipping/wait for clearance of cheque before shipping

Cash with payment on delivery

4 (a) Five from: [5]

Barcode is made up of black and white lines  
 ...widths and spacings of the lines encode numbers  
 ...code for 1 and 0  
 Four different thicknesses to lines  
 ...can code as thinnest is '1', thickest is '4'

Information represents:

Manufacturer code to identify the manufacturer of the item  
 Country of origin code to identify the country of origin of item  
 Universal Product Code (UPC) with a number of digits (12) that uniquely identify the item  
 Product code to uniquely identify the item  
 Checksum/check digits to ensure data integrity

<b>Page 4</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International A Level – May/June 2016</b>	<b>9713</b>	<b>32</b>

**(b) Four** from e.g.: **[4]**

- Can hold more characters
- ...can code for different characters e.g. symbols, text, numbers
- Can recover from severe damage/dirt
- ...still scannable if only 30% of code is visible
- Can be scanned faster
- ...scanned at greater angles than one-dimensional barcodes
- Can be scanned by apps on smartphones
- ...customers can scan items to find out more information
- Can hold links to other related items...
- ...advertising links/links to promotions/competitions
- Can be scanned and used at checkouts to provide lists of items purchased
- ...during payment

**5 Four** from e.g.: **[4]**

- Customer collects device from kiosks at entrance to store/Customer enters personal details/scans card at kiosk to release device
- Scan each item as taken from shelf in store
- ...device calculates (running) total
- Can enter product details/number of items manually
- Device displays product details/price for customer to check
- Can use button to remove item
- Take all items and device to kiosk
- Scan 'finish' code at kiosk/press button indicate finished
- Item details transferred wirelessly to POS terminal to kiosk
- ...total price to pay presented to customer

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

Benefits:

- Less staff required at checkout so reduced labour costs
- ... one staff member can look after 4 self-service kiosks
- Reduced floor space taken up by kiosk so more space for goods
- ... one self-service kiosk takes up 20% of normal checkout space
- Customers with few items can check out more quickly since reduced queuing time/more checkouts...
- ... more customers can be served in given time leading to greater profits
- Customers are not embarrassed when buying personal items/do not have enough money to pay for all the goods

Drawbacks:

- Increased incidence of theft from store leading to increased prices
- Loss of personal touch/contact by customers with checkout staff
- Customers can be irritated by failure to scan/identify the item being purchased/need to check age of customer...
- ...staff member is required
- ...time taken to remove security tags on expensive items can slow the process of checkout
- Spot checks of users required
- ...triggered by too few items/previous history/unusual purchases/first use
- Disabled customers may have difficulties using the system

**Max 4** for all benefits or all drawbacks

Page 5	Mark Scheme	Syllabus	Paper
	Cambridge International A Level – May/June 2016	9713	32

7 (a) **Four** benefits from e.g.: [4]

Contains the knowledge of many experts/botanists/scientists  
 Produce results quicker/reduces time taken to produce results  
 No need to carry/have access to paper records/ information/ reference books  
 Fewer errors in identification of plants  
 Can enhance scientist's own knowledge  
 Provide permanent record of identification of plant  
 No need to check with other experts/botanists/scientists if in doubt over findings

(b) **Four** drawbacks from e.g.: [4]

Expert system does not identify new species of plant/plants not known to science  
 Expert system needs to be up-to-date to provide the most useful information for the scientists to use  
 Scientists need to be trained to use the system  
 Expert system follows rules while scientists might have "insight"/use common sense  
 Can lead to demotivation/less thought process by scientists  
 Updating may take the system offline and make it unavailable  
 Expert system may not function/may fail in remote area so become unavailable

8 (a) **Four** from e.g.: [4]

From expert botanists/scientists...  
 ...collected by appropriate method/interview  
 ...analysed and interpreted  
 ...entered into knowledge base  
 Data mining...  
 ...from existing research documents/botanical records  
 Set up the rules for analysing the data...  
 ...entering/writing rules base

(b) (i) **Three** from: [3]

Starts with the data/data driven  
 ...reasons toward the identification/answer/solution  
 Uses If-Then statements  
 Searches rules until one is found to be true/If statement is true  
 ...adds results/new information from the Then... statement to knowledge base  
 ...new data can produce new solutions

(ii) **Three** from: [3]

Starts with the identification/answer/solution/goal driven  
 ...looks for data to support the identification/answer/solution  
 Uses If-Then statements  
 ...each statement is tested and if true, previous one is also true  
 ...previous statement becomes the 'new' goal to be tested  
 ...if not true, added to list of goals for which data must be found

<b>Page 6</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International A Level – May/June 2016</b>	<b>9713</b>	<b>32</b>

**9 Eight from:** **[8]**

Benefits from e.g.:

Students can make contact with/view/access students from other places/countries  
 Students can structure their own learning  
 Students can repeat tasks as many times as necessary  
 Students can work at own pace  
 Students can work on a laptop/mobile device anywhere/no need to be in classroom  
 Students can view/use/access interactive media of subject matter  
 Students with disabilities can use on-screen tools to help with studies  
 Students can have their work be assessed at stages  
 ...and can receive results in a short time  
 It can be cheaper than regular updates of text books

Drawbacks from e.g.:

Student have less/reduced/no social interaction with a teacher  
 The students/could go off task  
 The system is unable to answer all/every questions from student  
 The system is only available where/when a computing device/network is available

**Max six** for all benefits or all drawbacks

**10 (a) Three from:** **[3]**

Acts as 'barrier' between internal and external networks/internet  
 Scans content of data packet  
 ...reads packet sender's IP address/reads domain of sender  
 ...checks against database/list of IP addresses  
 ...checks against database/list of forbidden key words  
 Permits access/passage of packet if not forbidden/ if on allowed list  
 Drops packet if on forbidden/not on allowed list

**(b) Three from:** **[3]**

Student data is scrambled/made unreadable while stored/during transmission on network  
 ...with use of encryption key/software  
 Requires use of encryption key/software to unscramble the student data for viewing/use by  
 Use of/access to encryption key/software known only to authorised user/teacher

<b>Page 7</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International A Level – May/June 2016</b>	<b>9713</b>	<b>32</b>

**11** Six reasons to use/explanations of use of a proxy server from:

**[6]**

- Acts as a cache for frequently used remote resources
  - ...to reduce access times/network traffic over internet connection
- Acts as a central device/node for filtering of internet access/activity
  - ...to control/require username and password for internet access/activity so that inappropriate material is not accessed/viewed/inappropriate activities are prevented
- Acts as a central device/node for logging/monitoring of internet access/activity
- Allows use of multiple (internal) IP addresses through one (external) IP address on internet
  - ...uses network address translation (NAT)
  - ...so many computing devices/computers can be used through one internet connection
- Can act as a firewall to restrict/control access to internet

**[Total: 80]**