

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**GCE Advanced Level**

**MARK SCHEME for the May/June 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 May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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**1 (a) Three descriptions from:**

Online check in for flight choice of (available) flight times/destinations  
 Seating choices/reserve seating for flights  
 Hotel room reservation for accommodation  
 Car rental reservation at destination airport travel insurance  
 Special meal requests on board flight  
 Special requirements for disabled travellers  
 Chaperones bookings for children travelling alone  
 Frequent flyer/loyalty scheme for discounts/facilities

**[3]**

**(b) Four from:**

Choose home country/select choice of departure airport  
 Choose destination country/select choice of destination airport  
 Select flight departure date from dropdown list/ calendar  
 Select flight departure time from dropdown list/ calendar  
 Select/choose connection times  
 Select flight return date from dropdown list  
 Select flight return time from dropdown list  
 Select number of travellers  
 Select type of seat/class of travel  
 Submit to check availability  
 Enter details of each traveller  
 Select payment method and submit payment details  
 Print/download confirmation details/tickets

**[4]**

**(c) One from:**

Digital ticket sent by email/download exists as digital record (of booking/reservation) in airline computer system  
 Contains reservation number and e-ticket number

**[1]**

**(d) Four from:**

Travel opportunities/availability can be researched at any time and at own pace  
 Quickly compare prices and facilities of flights  
 Prices may be cheaper online/online offers available  
 Bookings can be made at any time  
 Bookings can be made from anywhere with internet connection  
 Bookings can be made quicker than via the telephone or personal visit to airline  
 No chance of double bookings  
 Immediate confirmation of booking/information about unavailability of flights can be (re-) printed by customer/airline at any time so ticket cannot be lost

**[4]**

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**2 (a) Two from:**

- Fewer (many) premises so reduced costs can provide assistance/availability for longer hours
  - Can manage staff/resources more efficiently so reduce costs
  - Reduces vulnerability to single points of failure within communication systems
  - Reduces costs of forwarding calls to multi-site locations
  - Reduces costs of line rentals as calls are queued within company system
- [2]**

**(b) Advantages from:**

- No need to go to travel agents
- Assistance always available
- Can access assistance from anywhere/use mobile devices

**Disadvantages from:**

- No direct personal contact with airline personnel
- Use of untrained/non-expert operators
- May not be treated as urgent/centre may screen the call and not answer immediately
- Touch tone/menu system may be complicated/difficult to use
- Long waits for call to be answered
- May be asked the same information several times
- Need access to a telephone/mobile or cell phone
- People with (hearing) disabilities may find using call centres difficult
- (Regional) accents of operators may be difficult to understand

Maximum 4 marks if all advantages or all disadvantages. **[6]**

**(c) Two from:**

- Can queue calls waiting for attention
  - Can route calls to next available operative
  - Displays caller number
  - Combines voice and data input to the computer system
  - Supervisor can intervene in call
- [2]**

**3 (a) Three descriptions from:**

- |                               |  |
|-------------------------------|--|
| Sensors                       | to detect e.g. movements large/high resolution monitors...to display video/images of simulations |
| Joystick/yoke                 | to move items/change direction   |
| Headphones/set                | to output audio/hear instructions or warnings  |
| Loudspeakers                  | to produce ambient sounds  |
| Microphone/headset microphone | to input sound/voice   |
- [6]**

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**(b) Three descriptions from:**

Not real so safer/safety/no danger of being hurt/not so stressed as using a real aircraft  
 Unusual scenarios can be rehearsed/practised  
 Can practise/revisit different scenarios/situations/specific aspects of flying aircraft  
 Can practice take-off/landings at particular airports  
 Can record/replay actions taken to check progress

**[3]**

**4 Descriptions from:**

Input costs/values....  
 example: wage/salary/ICT/insurance costs  
 Calculate the total the company costs  
 Input price of tickets/projected/ticket sales  
 Input required/desired profit margins  
 Use goal seek to determine breakeven/ profit level  
 Use “what if” scenarios by altering data/values/costs  
 Run the model to compare it with actual situation

**[6]**

**5 (a) Five from:**

Site navigation via menus physically disabled people  
 Reading text is difficult for visually impaired  
 Understanding images/plans/layout is difficult for visually impaired  
 Poor choice of colours/contrasts/too many animations is difficult for visually impaired  
 Following commentaries/audio instructions/movie or video soundtracks is difficult for hearing impaired  
 Understanding instructions is difficult for people with cognitive impairment/learning difficulties  
 Understanding banking process is difficult for people with cognitive impairment/learning difficulties

**[5]**

**(b) Software configurations could include e.g.:**

Sticky keys feature so that e.g. shift key is not needed for upper case  
 Filter keys to prevent (unintended) multiple key presses  
 Use of zoom feature/large font size for easier reading  
 Non-display of images on web site/use of alt text  
 Use of voice recognition for commands/input of data  
 Use of text to voice  
 Eye control software to move cursor

**[3]**

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**6 Explanations from:**

- Use of customer ID to identify user
- Use of PIN known only to customer
- Ask for random digits (from PIN)/characters from password
- Use of image as “SiteKey” known only to user
- Use of card reader using customer bank card to generate unique TAN
- Biometrics unique to individual
- Security question/answer known only to individual
- Use of digital certificate to ensure customer is genuine

**[6]**

**7 (a) Five from:**

- User interface for input of question/query
  - using multiple choice items
  - allow entry of customer’s financial details
- Explanation system to show how to use the advice system
- Knowledge base editor to enter/amend current financial facts e.g. tax rates/allowances
- Database of facts/knowledge base to hold/store current financial data e.g. tax rules
- Rules base to hold/store financial “rules”
- Inference engine to interrogate database and rules

**[5]**

**(b) Two from:**

- Expert systems do not forget details but humans may do so
- Copies of expert systems can be made but training humans takes time
- Expert system advice is more consistent but human advice may not be the same
- Expert systems give better advice than humans because it is based on the knowledge of many experts
- Can be more efficient than humans when dealing with many cases/customers
- More consistent with advice/decisions than humans
- Documentation is produced automatically
- Fraud/errors are reduced

**[2]**

**(c) Two from:**

- Humans can apply judgments/common sense but expert systems cannot
- Humans can be creative in unusual situations but expert systems cannot
- Humans can learn from experience but expert systems have to be reprogrammed
- Experts systems do not recognise when there is no preferred outcome/solution to a financial problem
- Costs of installation/costs of training personnel to use it

**[2]**

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**8 Five** from e.g.:

- Use of presentations/slideshow software to enhance lectures/lessons
- Monitor progress with online tests
- Use of CAL to allow individual learning
- Use of CBT to allow learning at own pace
- Use of internet access for research
- Use for collaborative learning
- Use of computers in formative assessment

**[5]**

**9 Six** from e.g.:

- Use of database software to keep records of work done
- Use of spreadsheet software to analyse test marks
- Use spreadsheet/database/data manipulation to display progress as graphs or tables
- Use word-processing software to write reports on students and letters to parents
- Use mail-merge to create batches of reports
- Use of email to report progress of individual students
- Social networks/SMS/text message to communicate with students/parents about general student/school progress

**[6]**

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**10 (a) Three** devices from, max **two** marks for each:

Network card (NIC):

- Has unique MAC address
- Connects physical layer with data link layer
- Checks address of received packet to see if it should pass it up to host computer
- Prepares data packet for sending along media

Hub:

- Receives and broadcasts packets to all devices connected to it

Switch:

- Receives packets and sends packets only to their specified destination

Router:

- Connects networks together/LAN to WAN
- Forwards a data packet to its destination on another network

Modem:

- Converts analogue signals to/from digital signals for modulation/demodulation onto carrier waves so that ordinary telephone systems can be used

Bridge:

- Connects multiple network segments
- Translates packets to/from different network protocols

Repeater:

- Reconstitutes and sends packets to next segment of network

**[6]**

Guidance: 1 mark for device  
1 mark for description

Description must match device.

**(b) Three** from:

Virtual Private Network

- Uses public communications networks such as internet
- To provide remote access to a central company network
- Users require authentication to use it
- Use of data encryption when transferring data
- Use of “tunnels/tunnelling” (over public networks)

**[3]**

**[Total: 80]**