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.
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


(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
- Submit to check availability
- Enter details of each traveller
- Select payment method and submit payment details
- Print/download confirmation details/tickets


(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


(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
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  

(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.  

(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  

3 (a) Three descriptions from:

Sensors to detect e.g. movements large/high resolution  
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  

Maximum 6 marks if all answers or all descriptions.
(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

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

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

(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
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

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

(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

(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
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

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
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

**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)

[Total: 80]