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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International Examinations

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]**

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]**

(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]**

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]**

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]

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]