CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International Advanced Subsidiary and Advanced Level

MARK SCHEME for the October/November 2014 series

9713 APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

9713/12 Paper 1 (Written A), 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.

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International Examinations

1 **(a)**

Responses can be machine readable	
As the questionnaires would be anonymous, system users might exaggerate their responses	✓
Users can take them away and complete them in their own time	
It is quicker to collate data	

[1]

(b)

System users might not answer honestly and give the answers they think the interviewer wants to hear	✓
Questions can be tailored to suit the individual	
Supplementary questions can be asked	
It is possible to make sure that all users' opinions are collected	

[1]

(c)

You can see the system first hand	
The observer will get a good overall view of the process	
System users might behave differently if they know they are being watched	✓
Users do not have to spend time away from work	

[1]

2

Identify who the manager is	
Identify the sources and volume of input data and collection methods	✓
Identify the input documents currently in use	✓
Determine how much each worker is paid	
Determine the frequency of the addition and deletion of records	✓
Identify the colours used in the company logo	
Identify the manual and computer procedures necessary to achieve the current output	✓
Identify how many workers there are	
Identify the manufacturer of the packaging	
Determine the location of the food mixer	

[4]

3 (a) *Store*
The actual data output from the system recorded for future use

Process box
<u>Data</u> processes are put in a process box/accept an example

Data flow arrow
Each arrow (is labelled to) shows what data is flowing at that point in the diagram/gives the direction of data flow

Terminator
When data flows from or to somebody or somewhere outside the system, that somebody or somewhere is called a terminator **[4]**

(b) **Three** from:

To establish all the relevant features of the existing system
To identify problems with/limitations of the existing system
To help identify the required inputs, outputs, storage and processing requirements of the system
To determine the quantity and format of the output/type of output devices required
Volume of data being input will be known
To help determine an appropriate method of input/type of input devices
To help him determine the size and speed of the processor required
To determine how much data needs to be stored
To help him know what to recommend in terms of size and number of storage devices
To help identify the user requirements
To help identify suitable hardware and software
To help programmers to develop and improve a new system
Helps show job duplication **[3]**

4 **(a)** *Mixing ingredients*

Batch process control **[1]**
Raw materials are mixed for a certain length of time/amount of each ingredient could be
controlled by computer/length of time for each stage could be controlled by computer **[1]**

Production line
Discrete process control **[1]**
Each container is filled and has a label put on it which is like an on/off or
stop/start process/in between cartons the process pauses/stops **[1]**

Refrigeration
Continuous process control **[1]**
Process is virtually unending/low temperature needs to be maintained continuously **[1]**

(b) Six from:

Benefits
Quantities of ingredients can be measured more accurately
Time spent on a task can be monitored more accurately
Temperature can be set more accurately
There will be greater productivity
Fewer hours will be worked by each worker so less paid in wages
Whole process can be continuous/no need to stop e.g. at shift changeovers
The product is produced to a more consistent standard

Drawbacks
If incorrect programming whole batch may be lost
Initial costs of computer equipment/technical staff to set it up/initial setup/installation may be expensive
Cost of retraining workforce will be high
One mark is available for a reasoned conclusion

Must have at least two of each to gain full marks **[6]**

5 Six from:

Noisy environment so noise of printing is not a factor
Limited data output required so quality is not important
Time interval is such that speed of printing is not an issue
Environment may contain food particles so laser/inkjet may not be robust enough
Running costs of dot matrix printer are lower than laser/inkjet
Ribbon would need to be changed less often than an inkjet cartridge
Paper would not need to be refilled as often as inkjet/laser
Inkjet may produce printouts where the ink will 'run' if damp environment
Chemicals from a laser printer could contaminate the food mixture **[6]**

6 (a) Two from:

Working less than the normal working hours…
…of a full time employee
Working mornings or afternoons only…
…rather than a whole day
Working fewer days…
…rather than the than a full working week **[2]**

(b) Two from:

More free time/more time to spend with family due to fewer hours worked
Will still be doing work that they have been trained for/are used to…
…if they had to change jobs they might lose their skills/self-confidence
Less stressful as they can miss rush hour traffic **[2]**

(c) **Two** from:

Lower wages due to fewer hours worked
Lower wages as part time workers tend to be on lower rates of pay
Less likely to receive in job training
Difficult to become part of company's pension scheme/health scheme
May have to work unsociable hours/shifts
May have to find another job to supplement income **[2]**

7 **(a)** **Three** from:

Can be put in strategic locations
Can be aimed at a much wider audience than a local area
Easier to update as you do not have to reprint a lot of copies
Use more professional images
Cannot be so easily destroyed/defaced whereas flyers can be thrown away
Posters are more difficult to ignore/eye catching
Takes a shorter time to put up a poster than to deliver flyers **[3]**

(b) **Four** from:

Flyers can be delivered to all households in a locality
Posters/presentations can only be seen in a limited number of places
Can be sure that all of their target audience will see the advertising
Can be printed on own PC and printer/poster more likely to need professional printers
Can cost less to distribute than renting a space
Can be included in newspapers/magazines reducing costs of distribution
Flyers can contain more information than a poster **[4]**

8 **Inputs**
Two from

Required room temperature entered by keypad/touch screen/remote control
Current temperature from temperature sensor
Time at which system comes on entered by keypad
Length of time system is to be on/time at which time system switches off entered by keypad

Outputs
Two from

Actuator/signal to heater to switch on/off
Actuator/signal to boiler to switch on/off
Actuator/signal to pump to switch on/off
Temperature on LED/LCD
LED/LCD to show if heater is on or off **[4]**

9 (a) Four from:

Easier to keep track of projects/workers/Johanna
Some companies have management systems and cultures that are not (yet) well adapted to the flexibility of home working
Not all tasks are best performed in a self-managing environment
Workers might work more effectively with a manager directly overseeing them
Would not have to subsidise manager's home computer/utility costs
Data would be <u>more</u> secure as it would not leave the office
She might not have good enough time management skills to work effectively from home **[4]**

(b) Two from:

Young children/pets at home demanding attention
Have to take dog for a walk
Family members/neighbours/friends popping round for a chat/visiting
Television may tempt her to watch her favourite programme **[2]**

10 Five from:

Agree a date and time
Send a reminder shortly before start
Ensure webcam, microphone, speakers are ready
Carry out tests on microphone and speakers/headphones
Large screen/monitor so that trainer can see participants/to output images
Large screen/monitor in offices so that participants can see each other as well as trainer
Speakers so that participants/trainer can hear each other
Microphone – to input voices/so that workers can speak with the trainer
Webcam – to input video/so that images of each examiner can be transmitted/sent
Webcam normally fixed to top of monitor/moved to ensure trainer can be seen
Broadband network connection/router used to transmit voice/pictures between offices
Make sure software is loaded and connection to internet/network connection is working
Participants log on to system/conference/training session **[5]**

11 (a) Five from:

Browse product/item categories
Find/select product/book/item category
Browse products/books/item
Select product/book/item
Search for product/book title/author/item
Choose format
Choose quantity
Add to/place selected products in shopping basket
Enter/log on using username and password **[5]**

(b) Four from:

If you work certain hours and cannot get to book shop in normal opening hours
Where it's difficult to leave the house due to young family
People with disabilities making it difficult to walk
When you live in remote areas/live long way from shops
The shop you want to use only has an online presence
The book/product is not available in the local shop
May not have any type of transport to get to the shop   **[4]**

(c) Four from:

May not have a computer with a reliable internet connection
May not have a reliable electricity supply
May not have the computer skills necessary
Some people may not have a credit/debit card
Some people with sight disabilities may not be able to see details on the screen
Some people with poor motor skills/hand disabilities might not be able to control the mouse
                                                                                    [4]

12 (a) Four from

Format the reporter's story
Template of the newspaper is created
Typesetting/kerning to adjust spacing between characters
Fonts and font size chosen
Leading/space between lines is chosen
Margin sizes are chosen
Crop the images to remove unwanted material
Resize the image to fill the layout
Choose the orientation   **[4]**

(b) Three from:

Encoded/digital signals are used to send the pages up to a satellite
Satellite receives the data signals
Satellite directs the signals towards the destination fax machine/signal is transmitted to the printing plant
Signal is received by the antenna/receiver   **[3]**