CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International Advanced Subsidiary and Advanced Level

MARK SCHEME for the May/June 2015 series

9713 APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

9713/13 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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2015 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

1 (a)

converts cool low-pressure gas into hot high-pressure gas	✓
causes the liquid to evaporate into cold low-pressure gas	
monitors the pressure of the refrigerant	
is essentially situated outside the building	
monitors the temperature of the refrigerant	

(b) **[1]**

converts cool low-pressure gas into hot high-pressure gas	
causes the liquid to evaporate into cold low-pressure gas	✓
monitors the pressure of the refrigerant	
is essentially situated outside the building	
monitors the temperature of the refrigerant	

(c) **[1]**

converts cool low-pressure gas into hot high-pressure gas	
causes the liquid to evaporate into cold low-pressure gas	
monitors the pressure of the refrigerant	
is essentially situated outside the building	✓
monitors the temperature of the refrigerant	

2

Keeping a constant temperature for the printing presses is an example of batch process control.	
Batch process control is used to produce extremely large amounts of product per year.	
Discrete process control is like an on/off or stop/start process	✓
The production of the rolls of paper is an example of continuous process control	✓
Continuous process control is used to produce relatively small amounts of product per year.	
There are four types of process control	
A PLC could be used to control the temperature for the printing presses	✓
Microprocessors are not used in any aspect of process control	
Continuous process control is used in processes which appear to be unending	✓
Discrete process control is when the process is hidden	

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

Programmable logic controller
A type of microprocessor/computer/microcomputer
Used for a single purpose
Can accept both analogue and digital inputs
Uses a set of logic statements
Compares input with a pre-set value
Activates output devices/actuator
Normally programmed to operate a machine/system using just one program
Used in systems where pre-set value is constant

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

It's a proportional–integral–derivative algorithm
Used when preset value is a constant
PID causes the PLC to make proportional changes
PID calculates difference between the input value and the preset value
Causes PLC to make proportional changes to the output
PID checks the difference again
Until preset value is reached

4 (a) Three from:

Reporter types up/edits their story using word-processing software/DTP
Reporter types up/edits their story using laptop/keyboard
Takes photographs using a digital camera/phone
Import images from digital camera/phone
Edit images using picture/image editing software

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

Correct font (type) has to be chosen
Correct font size has to be chosen
Kerning to (adjust the space between individual letters in word)
Amend the leading (- the space between lines on a page)

(c) Two from: **[2]**

(Digital) signals are used to send the pages up to a satellite
Transmitted by the satellite to the printing plant/presses

5 (a) *WIMBA*
Business **[1]**
Advertising of a single company + example **[1]**

Insurance
Service **[1]**
Advertising of services such as government/tourism/banking **[1]**

New car model
Product **[1]**
Advertising of a specific product + example **[1]**

(b) Two from: **[2]**

Video of the car/company could be imported from video camera/ digital camera
Vocal introduction to company could be input using microphone

(c) Four from: **[4]**

pop ups from the other company's site may create unhappy customers who may avoid that company in future/will have poor impression of the company/will tend to ignore them
Customers will use pop-up blocking (software) which does not allow their advertising on other company's website to appear
Can make their own website better suited to their needs
Own website has shorter delay in updating/improving advertising
Company has more control over its own website than it would over the host's website
May be so many other companies' advertising on host website the company's may not be seen/not as much advertising can be used/limited space available

(d) **Four** from:

Pop-ups are small windows which suddenly appear in front of the web page user is working on/pop-unders are small windows placed underneath the web page user is working on
Pop-up instantly grabs the attention of the customer/Pop-unders don't appear to users until they close the page they are working on.
Pop-unders are not removed by pop-up blocking/pop ups are blocked by pop up blocking software

The customer regards pop-unders as less of an inconvenience than pop-ups

6 **(a)** **Four** from: **[4]**

Flexible hours refer to hours that are worked whereas compressed hours refer to days that are worked
Flexible hours give workers some choice about what times of each day they work
Flexible hours can vary from day to day
Compressed hours would be fixed for those days which were being worked fully
Workers work the same number of hours each week with flexible hours
If compressed hours were spread over two weeks, would work more hours one week than the next

(b) **Two** from: **[2]**

Allows workers to organise their working lives to suit their personal needs
Can choose to work off-peak hours as travelling to work outside peak times is easier and cheaper
If workers stay late to finish a job, they can take time off at a later date
If the job requires great concentration, it can be done at quiet times of day

(c) **Two** from: **[2]**

Can match working hours with busy and not-so-busy times
Easier to allow for workers' personal needs which leads to a reduction in absenteeism/ improved punctuality
Working flexitime hours would appeal to many technicians so it helps recruitment/reduces the number of staff leaving for another job
Reduces the need for training new staff
Working flexitime hours is popular leading to greater productivity

7 (a) **One** pair from:

Assembling of car body, painting of car body
Assembling of car body, fitting of chassis
Assembling of car body, road testing the finished car
Assembling the chassis, painting of car body
Assembling the chassis, fitting of chassis
Assembling the chassis, road testing the finished car
Assembling of car engine, painting of car body
Assembling of car engine, fitting of chassis
Assembling of car engine, road testing the finished car
Painting of car body, fitting of chassis
Quality control, road testing the finished car
Painting of car body, road testing the finished car
Fitting of chassis, road testing the finished car

(b) **One** pair from: **[1]**

Quality control with any activity except road testing

Or **two** of:

Assembling of car body
Assembling the chassis
Assembling of car engine

(c) **Four** from: **[4]**

Assembling the chassis, assembling of car engine are not affected
Painting of car body will now start at 0600/finish at 1200/delayed by six hours
Fitting of chassis will now start at 1200/finish at 1800/delayed by six hours
Quality control will be extended to 1800/extended by six hours
Road testing will now start at 1800/finish at 1900/delayed by six hours

8 **Four** from: **[4]**

Requires a dedicated telephony server
The operator's phone communicates directly with the server
The server controls all the phones
Operator's phone is not directly connected to their computer
Any computer in the system can be used to control any phone
The server controls all the phones
Allow supervisors, for example, to intervene if the call proves too complex for the operator to handle
(The server) can direct a call to the appropriate operator
Suitable for large call centres

9 (a) Four from:

Card number
Expiry date
Name (as shown on card)
Card Security Code
Address

(b) Four from: **[4]**

At the end of each billing period
Transaction file is sorted into same order as master file
Sorted on customer number
First record in the transaction file is read
First record in the old master file is read
If it matches, transaction is carried out
If records don't match, computer writes master file record to new master file
Computer calculates the bill
Using cost of units from master file
Using units used from transaction file
Processed record is written to new master file
Bill is printed
Process is repeated until end of old master file

10 (a) Two from: **[2]**

Magnetic tape has serial access and the files would be sequential/batch processing required
Tapes have a greater longevity than most other media
Tapes are cheaper per unit of memory

(b) *Amendment*
Customers' details change **[1]**
Addition
New customer **[1]**
Deletion
Customer closes account/dies **[1]**

11 (a) Data flow diagram
Using (two from :) terminators, processes, flow arrows and stores
The diagram would represent inputs, outputs and processing

System flowcharts
Using particular input, output, storage and processing symbols
The diagram would represent inputs, outputs and processing (only if not given for DFDs)

(b) **Two** from: **[6]**

(Use of live/normal data) such as a number between 0 and 16000 for the bill
(Use of live/normal data) such as a customer number which is exactly 12 characters
(Use of live/normal data) such as a customer number which is digits only
This data should be accepted by the system

Two from:

(Use of abnormal data) such as 16001 or “sixteen thousand”
(Use of abnormal data) such as a customer number which is less than or greater than 12 characters
(Use of abnormal) such as a customer number which contains text
This data should be rejected by the system

Two from:

(Use extreme data) such as 0 or 16000 for the customer bill
This data should be accepted by the system

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

Amend rule to ensure the acceptable value for the bill is >= and <= and not just > and <
Amend rule to ensure that it uses 0 to 16000
Amend rule to ensure it checks it is numeric
Amend rule to make sure < has not been used instead of > and vice versa
Amend rule to ensure length check is 12 exactly
Field descriptions are included which adequately inform about field contents