

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International Advanced Subsidiary and Advanced Level

**MARK SCHEME for the March 2016 series**

**9713 APPLIED INFORMATION AND  
COMMUNICATION TECHNOLOGY**

**9713/12**

Paper 1 (Written A), maximum raw mark 80

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Page 2	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – March 2016	9713	12

- 1 (a) *Laser*  
Fast output for large volume jobs/high quality printout [1]  
For sending communications to suppliers in order to give a good impression/letters to loyalty card holders/flyers/bar codes of products/to print out daily sales figures/invoices [1]
- Inkjet*  
High quality, glossy colour printouts/cheaper to run than colour laser printer [1]  
To print out posters/information to customers about special offers [1]
- Dot matrix*  
They produce multiple copies simultaneously/can print continuously [1]  
Used to print out orders to suppliers so that different copies can be stored in different departments (accounts/manager/grocery)/print payslips/receipts at checkouts [1]
- (b) (i) *Examination of documents*  
Looking through technical and user documentation about the current system/ documents produced by current system/two of checkout receipts/ payslips/order forms/invoices [1]  
Find out information about transaction types and goods on sale/to study what data is collected and what information is output/to identify inputs and outputs of the system [1]
- (ii) *Questionnaires*  
Asking users of the current system questions about the current system in the form of hard copy/complete form on paper/on-screen [1]  
Collect data directly from a large number of system users [1]
- (iii) *Interviews*  
Asking users of the current system questions about the current system face to face/in person [1]  
To get more in depth answers from management/users of current system regarding the current system/eliciting answers by asking follow up questions dependent on the replies given [1]

<b>Page 3</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International AS/A Level – March 2016</b>	<b>9713</b>	<b>12</b>

(c) Six from:

Systems documentation:

A detailed overview of the whole system

What is expected of the system/purpose of the system

Data Flow Diagrams/systems flowcharts

The results of systems analysis

Test plan and test results

Overall design decisions...

...the choice of hardware and software

...file, input and output structures

Systems flowcharts

Program documentation:

Description of the software/purpose of the software

What the software does and its features

Program listing - a complete copy of the code used

Annotation explaining what each module of code does

Reasons for choosing those pieces of existing software that were used instead of the programmer having to write code

Input and output data formats

Program flowcharts/algorithms

Notes that will help any future programmer to make modifications to the system

[6]

2 (a) Three pairs of answers from:

Afraid that a lot of staff will see customers' personal information and that it will become public knowledge/given to the wrong sort of people

Explain that access to the information is restricted to just a few staff/staff are trustworthy and know their responsibilities to the customer

Afraid that the information may be passed on to other organisations

Explain that the information is covered by the data protection legislation which forbids the handing on of data to unauthorised third parties/explain the systems in place to protect the data/limited amount of data will be collected

Because they do not trust the information held to be accurate

Allow the customer to view the information held about them

Customers may intend to use the new online shopping method only, which may not allow them to scan loyalty cards

Amend the online shopping system to enable customers to type in their loyalty card number/enable it to be scanned by delivery driver

Might think they have to pay for the loyalty card

Explain that the card is free to obtain

Might not be aware of the scheme

Produce posters/flyers/web site ads publicising the scheme

Thief could steal their card and use their discounts

Introduce a PIN system

[6]

<b>Page 4</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International AS/A Level – March 2016</b>	<b>9713</b>	<b>12</b>

**(b) Six from:**

Sales reports can be used  
 Can see what products are selling well/poorly/popular/unpopular...  
 This leads to ordering more/fewer of those products  
 Can offer discounts on poorly selling products  
 Future ordering can be based on past sales  
 Can order immediately if out of stock  
 Can ensure stock never runs out  
 Reports on customer spending habits via analysis of till receipts/loyalty cards  
 Based on customer spending habits target marketing/vouchers sent to specific customers  
 Business performance management to indicate where investment may be needed  
 Individual checkout operators have their performance measured  
 Can determine training needs for specific workers  
 Can identify individual departments which are not performing as well as others  
 Predictions can be made for budgeting over future years  
 Payroll reports can be produced to ensure total salaries paid is affordable **[6]**

**3 (a) (i) Two from:**

Reduces the size of the file  
 File will take up less storage space on the manager's computer  
 Means that the file arrives more quickly than it otherwise would **[2]**

**(ii) Three from:**

Use comments which do not alter the document  
 Johannus can then amend or reject comments as appropriate  
 Comments can be in different colours/forms to indicate importance of change  
 Use of comments/titles in headers and footers to establish version  
 Use of text highlighting to show amendments **[3]**

**(b) Three from:**

Printed in grey scale  
 Draft quality should not be used  
 Care must be taken when drawing graphs to choose colours/patterns that will be distinguishable in grey scale  
 The chart should be large enough for all parts to be seen when it is printed/not distorted by fitting to a page **[3]**

<b>Page 5</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International AS/A Level – March 2016</b>	<b>9713</b>	<b>12</b>

(c) (i) **Three** from:

Film negatives are produced from digital files  
(Ultraviolet) light is allowed to pass through the film negatives...  
...to expose the printing plate  
Design is produced on computer system (using suitable software)  
Design etched by producing 'spots' on plate...  
...density of/sizes of spots determine the resolution of etching  
Precise nature of etching allows for halftones to be produced  
Aluminium plate is bent around the plate cylinder  
Plate cylinder has ink directed onto it  
Rotates against blanket cylinder forming an image  
As blanket cylinder rotates it presses against the paper causing the image to be printed  
Impression cylinder just presses paper against the blanket cylinder **[3]**

(ii) **Four** from:

Improved print quality  
Plates are more consistent which helps re-printing/plates identical every time they are produced  
Production of plates is much quicker  
Easier to amend magazine prior to printing/no need to produce plates until final print  
Cheaper as fewer plates need to be produced  
Safer because it reduces the use of hazardous chemicals/reduces volume of waste materials produced **[4]**

4 (a)

Field Name	Data Type
Tyre_ID	Text/alphanumeric
Price	Numeric, currency
No_In_Stock	Numeric, integer
Mix	Boolean
Manufacturer	Text/alphanumeric

5 correct answers – **3 marks**  
4 correct answers – **2 marks**  
3 correct answers – **1 mark**  
1 or 2 correct answers – **0 marks**

**[3]**

<b>Page 6</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge International AS/A Level – March 2016</b>	<b>9713</b>	<b>12</b>

**(b) (i)** To ensure data is copied accurately from one medium to another [1]

**Two** from:

Visual verification

Visually compare data on screen/printout with original/source document

Double data entry

Two people type in data/one person types in data twice

Computer compares two versions

Keyboard freezes/sound made/data flagged if differences occur

Decide which version is correct if differences are spotted [2]

**(ii) Three** from:

Validation is to make sure that data entered is sensible for that field [1]

Tyre\_ID field would be subject to a format check/input mask to ensure it consists of two letters followed by three digits [1]

Price field would be subject to a range check of...(any sensible range of rupees) [1]

**5 (a) Two** from:

Cameras to inspect the tyre

Grippers to pick up tyre

Spanners to unlock/tighten nuts on wheel [2]

**(b) Four** from:

There are lower running costs/no need to pay robot's wages

Work/work rate is of a consistent standard

NW Tyre is now in a position to offer a 24/7 service

It is a safer/less dangerous environment for humans

Greater productivity [4]

**6 (a) Six** from:

Has a limited menu so all the options can be clearly shown on a single screen

The use of a touchscreen will reduce the number of input errors compared to using a keyboard

Selecting an item on screen is easier than controlling a mouse

Entry of data is quicker than with a keyboard/mouse

Needs less room than a screen and keyboard/mouse

Amount of training required is less than with other devices

Touchscreen is more robust than keyboard/mouse for use in greasy/dirty conditions

More suitable for disabled cashiers [6]

Page 7	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – March 2016	9713	12

(b) Six from:

Decides whether a supplier should be contacted...

... if so, gives the name of the supplier

Uses the IF function to compare the number of items in stock/contents of B2 with the minimum stock level/contents of C2...

...and if lower, displays the supplier name/contents of H2

... if not, lower it displays "No order"

VLOOKUP is used to search the lookup table of suppliers/G2:H4

A match to the value in cell D2 is searched for in column G

Needs to be an exact match because of the 'FALSE' part of the formula

The '2' instructs that when a match is made then the appropriate value is read from the second column/column H of the lookup table

The \$ is used to ensure that the references to the lookup table/G2:H4 are maintained when the formula is replicated

[6]

(c) Eight from:

Coils of tubing filled with a refrigerant...

...one coil is inside the room and the other is outside

Compressor converts cool low-pressure gas into hot high-pressure gas

The gas flows to a condensing unit outside the building

Condensing unit allows refrigerant to cool/cool gas to form liquid

Back in the building it passes through a valve...

... which causes the liquid to evaporate into cold low-pressure gas

Evaporating unit is situated inside the restaurant...

...absorbs heat from surrounds thereby cooling restaurant

Correctly positioned evaporating unit described/shown on diagram

Correctly positioned condensing unit described/shown on diagram

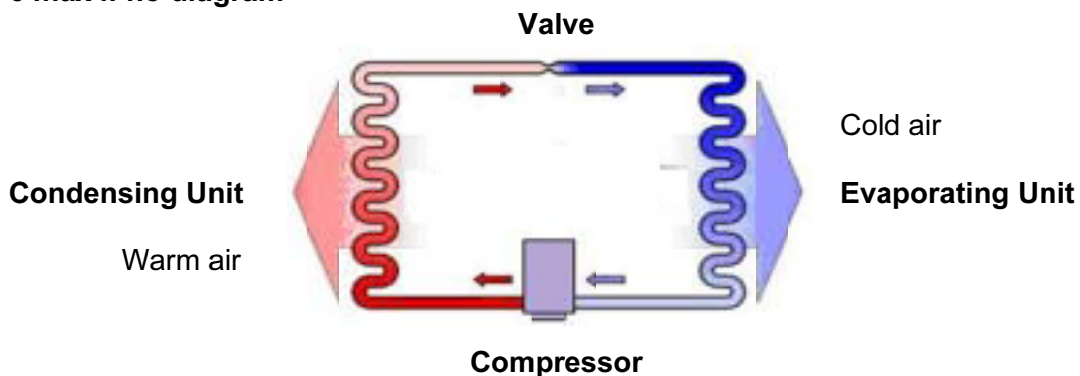
Correctly positioned valve described/shown on a diagram

Correctly positioned compressor described/shown on diagram

Correct indication of warm air described/shown on a diagram

Correct indication of cold air described/shown on a diagram

6 max if no diagram



[8]