

MARK SCHEME for the May/June 2015 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.

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

Workers will not have to work as hard as if they were in an office	
It is easier to get all the workers together for meetings and briefings	
It would be easier for managers to supervise workers	
Not so much money would have to be spent on the company's utility bills	✓
There would be no distractions for workers preventing them from working	
Lower costs as company can rent smaller offices	✓
The workforce would probably be happier so there would be improved motivation to work and increased productivity	✓
It would be easier to sell steel	
The cost to the company of the phone calls would be cheaper as home phone charges are lower	
More staff would be retained so money wouldn't have to be spent on training new staff	✓

2

[4]

You can reach a larger audience by phone than by using a website	
Running a website is cheaper than paying telephone operators	
They can be sure all targeted customers are reached as not everybody will see the website	✓
Phone calls always result in a successful sale	
They can contact customers whose internet speed is so slow they may not be able to use the website	✓
They will know accurately how many sales they have made	✓
You cannot get immediate feedback from your potential customers	
Customers would never buy steel using a website	
Websites can have video and photographs	
It is more personal so it might be easier to persuade customers to purchase steel	✓

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	Cambridge International AS/A Level – May/June 2015	971

3 Three from:

Compares temperature from sensor to the pre-set value
If sensor temperature is higher/lower than pre-set value microprocessor sends a signal...
...to the actuator
If lower, microprocessor/actuator switches heater on
If higher, then microprocessor/actuator switches heater off

4 (a) Three from:

[3]

A router/modem to connect to the internet
A fax machine to fax phone orders to main office
A landline phone to communicate with manager/main office/customers
A mobile phone in case landline phone is damaged
A printer to print orders to be faxed
Headset/touch phone to phone conference with the main office
Microphone/speakers/headset to communicate with customers

(b) Three from:

[3]

Word processor to type up orders
Database software to edit customer details
CTI software to communicate with customers
Time management software to record hours of work
E-mail software to send messages to colleagues

5 Four from:

[4]

Advantages
You can see the facial expressions/body language of other participants
You can see/amend/share documents that you want to discuss with each other
Easier to identify whose turn it is/who wants to contribute next
Once equipment is bought less expensive to run/set up/organise than a phone conference

Disadvantages
More expensive to buy hardware/software
If there are problems with internet connection, conference may be interrupted
More equipment needed so greater chance of problems

Max three for all advantages/disadvantages

6 Four from:

[4]

Spreadsheet – prepare population statistics
Web browser – look up resources for worksheets/students to use
DTP – produce worksheets
Image editing software to edit maps

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	Cambridge International AS/A Level – May/June 2015	9710

7 Six from:

Benefits

- ICT make lessons more interesting/entertaining
- ICT make lessons more varied
- Internet allows students to investigate ideas
- Internet allows students to carry out research
- Neatness of students work makes it easier for teacher to mark
- ICT provides a more interactive learning environment
- Teachers can spend less time with students with special needs because of ICT resources/
- ICT resources can help students with special needs
- Teachers have more varied teaching aids/can make use of multimedia in lessons
- Teachers can use/produce computer based tests/can use ICT to assess students' performance/students can assess own performance
- Teachers can use spreadsheets/databases to record test scores/produce graphs of progress
- Easier to compare class/students' performance/track progress
- Tests can be computer-marked saving teachers' time
- Easier to monitor student activities using monitoring software

Drawbacks

- Takes a lot of time to prepare ICT materials
- Can be difficult to ensure all students are on task if no monitoring software is available
- More resources are available so students might make inefficient use of these
- More difficult to co-ordinate activities
- Plagiarism can cause teachers' problems

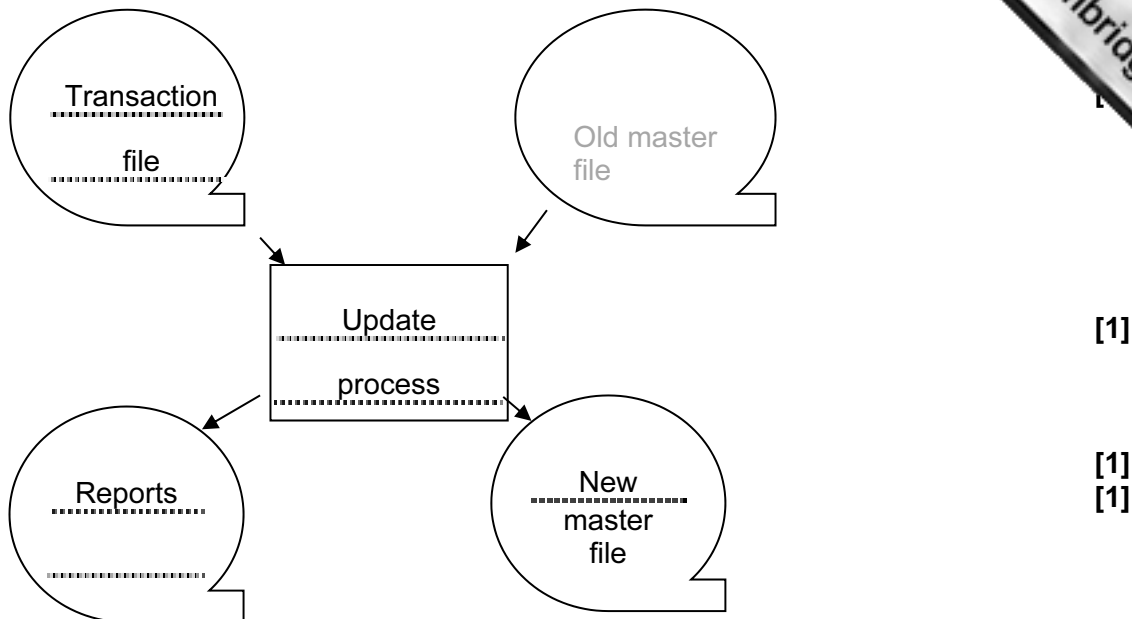
Must have at least one of each to gain full marks

8 (a) Three from:

[3]

- Name
- Contact details i.e. phone/address
- Holiday entitlement
- Job title
- Employee number/ID number/payroll number/works number
- Social security/national insurance number
- Department worked in
- Date employed
- Date of birth

(b)



9 (a) **Two** sets of statements from: [4]

Look at the terminators and flow arrows in the DFD which show the volume of input data...
...which leads to decisions on appropriate input devices

Look at the terminators and flow arrows out of the system which indicate the quantity/ format of the output/required output...
...which leads to decisions on appropriate output devices

Look at the processes involved (in storing and analysing results)...
...the processing requirements will be known ...
...which will give an idea about the size and speed of the processor required

Look at the stores in the DFD which will show how much data needs to be stored...
... the storage requirements will be known
...which is needed to identify the size and number of storage devices

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

Using collected information/results of observation to see exactly what job each worker is doing

Joanne will have interviewed payroll workers/manager to find their requirements

Will use the DFD to come to a conclusion about the user/system requirements

From user requirements she will produce a requirements specification...

...list of the features of the system that is required

Identify general requirements such as what the user wants the overall system to do

Identify specific requirements

Example of specific requirements

Results of examining documents will help identify required hardware/software

Results of observation will help identify required hardware/software

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10 (a) Five from:

- Table of indexes is stored
- The index will allow for direct access...
...needed when accessing individual worker records quickly
- The records will be held sequentially to allow for serial access...
...used to process all records one after the other
- Suitable because payroll will process all records one after the other

Magnetic/hard disk would be most suitable [1]

(b) Six from: [6]

- Type of database is chosen (flat file/relational)
- If it is going to be a relational database, number of tables is decided upon
- A key field to identify each record is chosen
- Relationships are designed/Entity Relationship Diagrams are designed
- Appropriate field names are chosen...
...relating to data content of field and unique name
- Field data type is selected such as text, number, Boolean, appropriate to field contents
- Field lengths are chosen so that space/memory is not wasted, but leaves room for expansion
- Validation rules are designed
- Validation rules are chosen appropriate to field contents
- Validation error message(s) designed
- Field descriptions are included which adequately inform about field contents

11 (a) Two from: [2]

- Employee must be loyal to their employer...
...for as long as they are employed by the company
- Must not tell rival companies about their work
- Employee is free to use skills and knowledge acquired from company after they leave them

(b) Four from, data must be: [4]

- Kept secure
- Fairly and lawfully processed
- Processed for limited purposes
- Adequate, relevant and not excessive
- Accurate and up to date
- Not kept longer than necessary
- Processed in accordance with the individual's rights
- Not transferred to countries outside that country unless it has adequate protection for the individual interests of the individual or another person

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(c) **Four** from:

- Payroll workers must not share any payroll data with anybody/outside the organisation/other employees.
- Payroll workers should sign a confidentiality agreement/have a duty of confidence
- Information about an individual should not be passed to another organisation without permission of the individual
- Information should be anonymised where possible
- Information should be aggregated where possible

12 (a) **Two matched** pairs from: [4]

- Scanner
Used to import hard copy images/photographs
- Digital camera
Used to download photographs stored on the camera

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

- Cropping – removing a portion of the image
- Rotating – turning the image through an angle
- Flipping – getting a mirror image
- Filling – filling a shape with colour
- Drawing of lines and shapes
- Adding text in a variety of fonts

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

- Clip art library/gallery
- Photograph library/gallery
- Libraries of pre-prepared designs

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

- Increase in unemployment of print workers
- Re-training of print workers
- Change in working practices of print workers
- Print workers' skills will no longer be required