CAMBRIDGE INTERNATIONAL EXAMINATIONS
Cambridge International Advanced Subsidiary and Advanced Level

MARK SCHEME for the May/June 2015 series

9713 APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

9713/12 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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1 [4]

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	✓

3   **Three** from**:** [3]

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

Disadvantages
More expensive <u>to buy</u> 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

7   **Six** from**:**   **[6]**

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)

Transaction file

Old master file

[1]

Update process

[1]

Reports

New master file

[1]
[1]
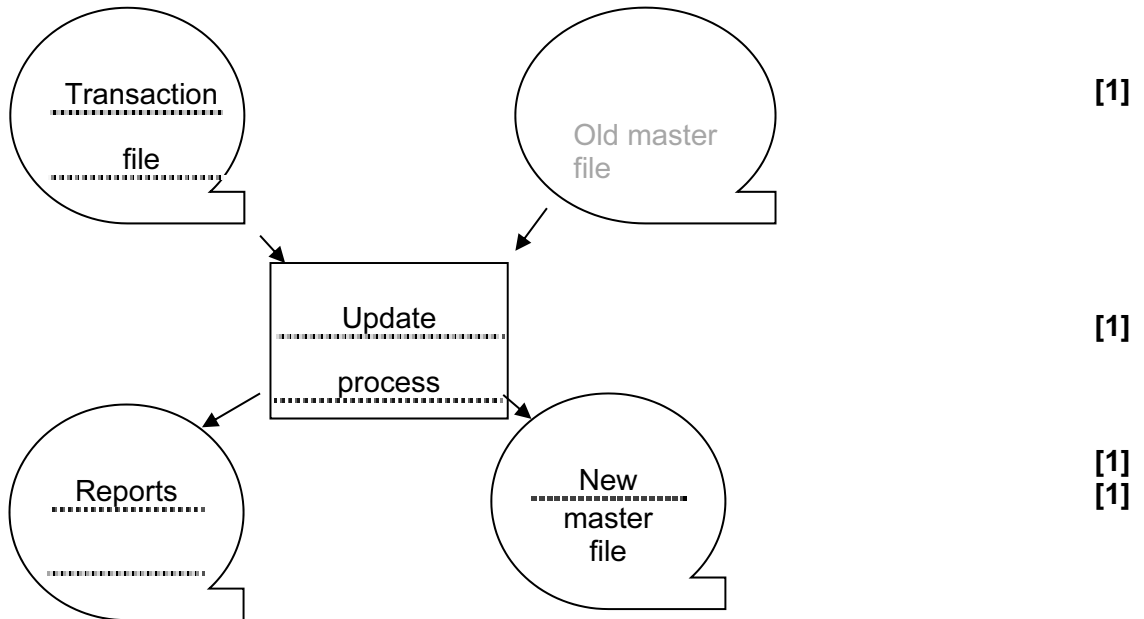
9 (a) **Two** sets of statements from: [4]

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

10 (a) Five from: [5]

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

(c) Four from: [4]

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 <u>hard copy</u> 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