

MARK SCHEME for the March 2015 series

**0417 INFORMATION AND COMMUNICATION
TECHNOLOGY**

0417/12

Paper 1 (Written Paper), maximum raw mark 100

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 March 2015 series for most Cambridge IGCSE[®] components.

1 (a) Three from:

- Temperature sensor
- Light sensor
- Humidity sensor
- Number pad

[3]

(b) Three from:

- Sprinkler
- Heater
- Light
- Motor

[3]

2

Storing photos in a camera	✓			[1]
Storing file server backups		✓		[1]
Storing high definition movies			✓	[1]
Storing large numbers of payroll records		✓		[1]

3

Inputting diagrams as they are being drawn	Graphics tablet	[1]
Inputting printed text to a computer to be processed by another software package	Optical Character Reader	[1]
Inputting moving pictures, often pre-recorded, into a computer.	Video camera	[1]
Used by a pilot to control a flight simulator	Joystick	[1]

4

This type of network usually requires the use of WiFi			✓	[1]
Usually is cabled and often housed in a single building		✓		[1]
Covers a large area and is often connected using a router	✓			[1]
Requires the use of Wireless Access Points (WAPs)			✓	[1]

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- 5 (a) The device used for switching channels on a television is called **a remote control** [1]
- (b) A method of inputting answers from a candidate's exam paper is called **OMR** [1]
- (c) A printer which is suitable for producing large volumes of high quality printout is called **a laser printer** [1]

6 **Six** from

- Microprocessor stores required temperature as preset value
- Microprocessor stores cooking time/start time as preset value
- End times as preset values
- Microprocessor subtracts cooking time from end time
- Microprocessor compares the result with current time
- If the current time and the start/calculated time are the same microprocessor switches on heater
- Microprocessor compares temperature from sensor to pre-set temperature
- If temperature is lower than preset value microprocessor sends a signal to actuators...
...to turn heater on
- If higher than preset value microprocessor sends a signal to actuators...
...to turn heater off
- Microprocessor compares current time with end time/start time preset value
- If current time is less than end time preset value then cycle continues else...
...microprocessor sounds buzzer/beeper [6]

- 7 (a) END REPEAT is missing after RIGHT 60/ instruction 5/ before instruction 6 [1]
- BACKWARD 100 is missing after PENUP/ instruction 6/ before instruction 7 [1]
- REPEAT 3 is missing after second PENDOWN/ instruction 7/ before instruction 8 [1]
- (b) REPEAT 5 should be REPEAT 6 [1]
- The first FORWARD 50 should be FORWARD 40 [1]

8 (a) **Five** from:

- Account number
- Sort code
- Expiry date
- Amount to withdraw
- PIN
- Card limit
- Choice of language
- Receipt required (Y/N) [5]

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(b) Six from:

- No embarrassment of not having sufficient funds
- Less time spent queuing
- Can get money any time of day or night
- Own bank may be further to travel to than nearest ATM
- Can use most ATMs/does not have to be own bank
- Have choice of languages so is easier to understand/be understood

- When getting cash late at night may be susceptible to mugging
- Machine may be out of order/run out of cash
- Can only be given denominations in the machine
- Limit to the amount that can be withdrawn

Must have at least one advantage and one disadvantage to gain full marks

One mark can be awarded for a reasoned conclusion [6]

9 Eight from:

Parallel running – There is always the old system to fall back on in the event of the new system failing/information is not lost/always a second copy/Direct changeover – If things go wrong lose all data/ old system is not available

Direct changeover – benefits are immediately available

Parallel running is more expensive to implement as two sets of workers have to be employed

Direct changeover – less likelihood of errors as system will have been fully tested

Direct changeover is quicker to implement than parallel running

Direct changeover – training is more difficult to organise

Parallel running – training can be gradual

Direct changeover would be more suitable as company probably would not be able to afford to use parallel running

Direct changeover would be more suitable as the company needs it to be implemented quickly

Must have at least one mark for reason for choice in order to gain full marks [8]

10 Seven from:

Mainframes/PCs/laptops needed for applications which require high speed processing

Mainframes/ PCs/laptops needed for applications which require greater internal memory capacity

Mainframes/ PCs/laptops needed for applications which require greater backing storage capacity

Mainframes/ PCs/laptops/tablet computers needed for applications which require bigger displays

Mainframes/ PCs/laptops needed for applications which require more manageable keyboards

Mainframes/ PCs/laptops needed for applications which require easy navigation from screen to screen

Mainframes/ PCs/laptops have access to wider range of application software

Still need mainframes to carry out complex mathematical functions

Mainframes/ PCs/laptops are easier to monitor use [7]

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11 (a) Four from:

- If computer is switched off, work in RAM is lost but backing storage stores data for future
- More likely that data is accidentally deleted in RAM
- RAM is more expensive than backing storage per unit of memory
- RAM is bulkier than backing storage per unit of memory
- Software package may be so large that it is physically impossible for RAM to store it.
- Operating system may be so large that it is physically impossible for ROM to store it.
- Data may need to be transferred from one computer to another and can't do that with RAM

[4]

(b) Four from:

- Memory is needed which cannot be changed – ROM
- Memory is needed which can be changed – RAM
- Instructions that need to be unchanged have to be stored such as BIOS/ program cycles in a washing machine/program instructions in games
- There needs to be memory that holds the work that is being currently done by the user
- There needs to be memory that holds the software that is being currently used by the user
- Non-volatile memory is needed – ROM

[4]

12 (a) Two from:

- Can be sure every parent/student gets a copy
- Easier to target who the head wants to get it
- Not every home has a computer/internet access

[2]

(b) Three from:

- Cost of delivery/paying someone to deliver
- Costs school extra to print copies/ink costs
- Extra cost if colour is included
- Cannot use multimedia
- More difficult to amend/update
- Limited to parents of school children

[3]

13 (a) Four from:

- Countif functions have a range and a criteria argument
- In this example the range is A2:A10
- The criterion is <31
- It searches through the range A2:A10
- Counts the number of cells/values...
...that contain numeric values...
...that have a value less than 31
- Returns/displays that count.

[4]

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(b) (i) 4

(ii) **Two** from:

9-4 is 5

But this 5 now includes the blank cells/includes those who haven't worked at all

The blank cells are not greater than 33 but are still included [2]

14 (a) **Five** from:

Data is gathered/collected from experts

Knowledge base is designed/created

A structure to relate each item in the database/knowledge base is created

An interrogation technique to access the data is created

A user interface/method of displaying the results/method of inputting data/input

screen/output screen is designed/created

The inference engine is designed/created

The rules base is designed/created

The system is tested [5]

(b) **Two** from:

Prospecting

Tax

Careers

Chess games

Animal/plant classification/identification [2]

15 (a) Text/alphanumeric [1]

Number/currency [1]

Date/number [1]

Number/integer [1]

(b) Price (Rs) must be ≥ 120 and ≤ 255 [2]
1 mark for ≥ 120 and 1 for 'and ≤ 255 '

(c) (i) Year_released < 2007 OR Price (Rs) ≥ 145 [5]
1 mark for Year_released
1 mark for <2007
1 mark for Price (Rs)
1 mark for ≥ 145
1 mark for OR

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(ii) 1,2,4,5 if answer to (i) is correct – apply follow through if answer to part (i) is incorrect
-1 for each incorrect or missing/additional id number down to a minimum of 0

16 Two from:

Lawful protection....

.....Given to authors of software /companies /publishers

Relates to the software/name/work the author/publisher/company created/published

Prohibits purchaser from making unlimited copies/lend it to others/change the software/sell software/books/intellectual property without the company's/author's permission

[2]