Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

COMPUTER SCIENCE **0478/11**

Paper 1 **October/November 2016**

MARK SCHEME

Maximum Mark: 75

Published

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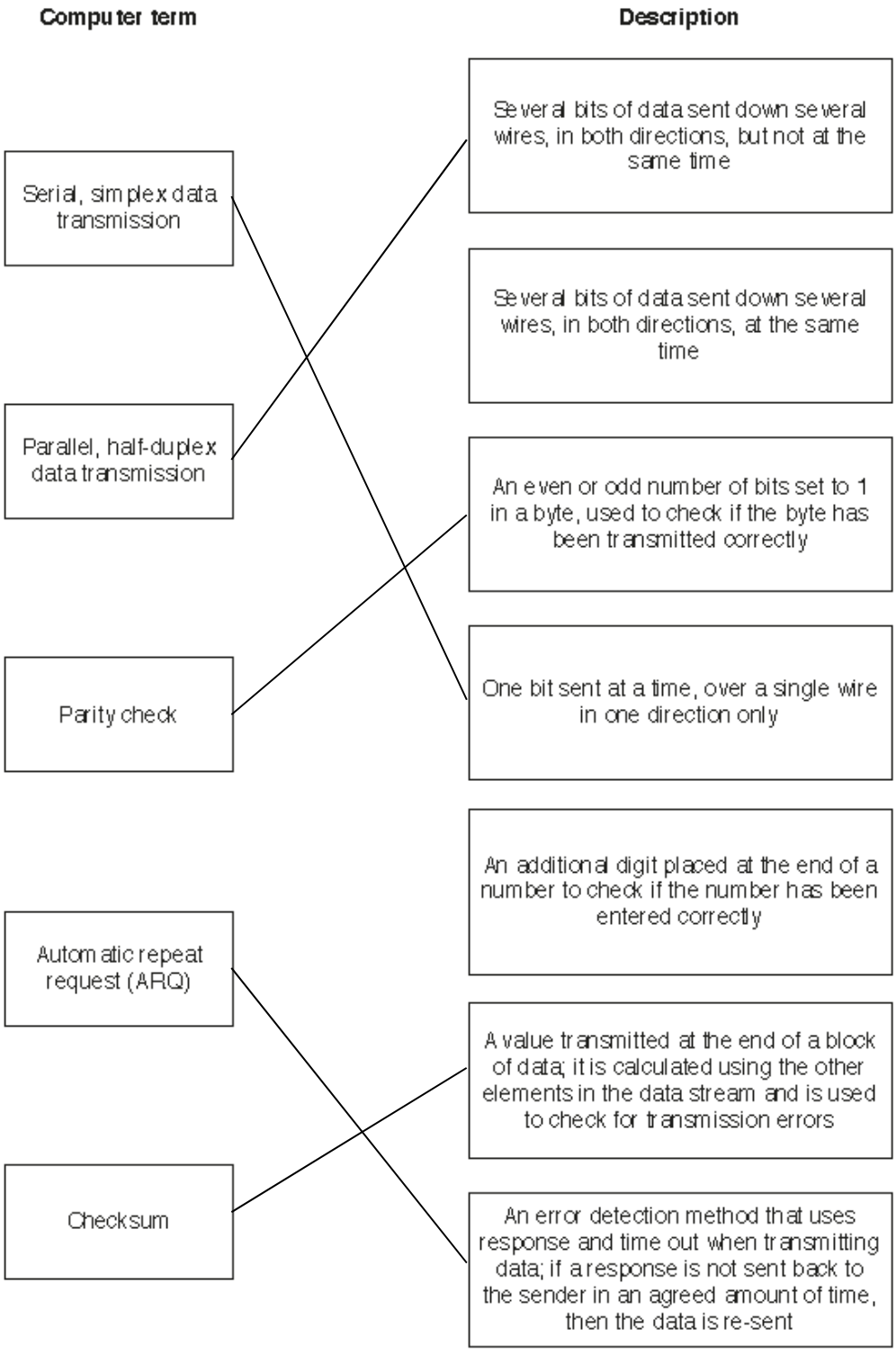
1 In any order:
- Fetch
- Decode
- Execute [3]

2
- Hacking
- Virus
- Cookies
- Cracking
- Pharming [5]

3



[5]

4 **(a)** Any **two** from:

- Easy to make a mistake
- Can be slow if not trained
- Dirt/food can get into keys [2]

(b) Any **two** with identification and explanation from:

- Fewer typing errors may be made …
- … because one button is pressed to order an item
- Speed up the time to enter an order …
- … because fewer buttons are pressed to complete the order
- May require less training …
- … because it is easier to identify an order item from its image rather than typing it
- Can stop dirt/food damage …
- … normally has a protective layer // because there are no keys for dirt/food to get into

[4]

(c) 1 mark for security measure, 1 mark for description.

Any **two** from:

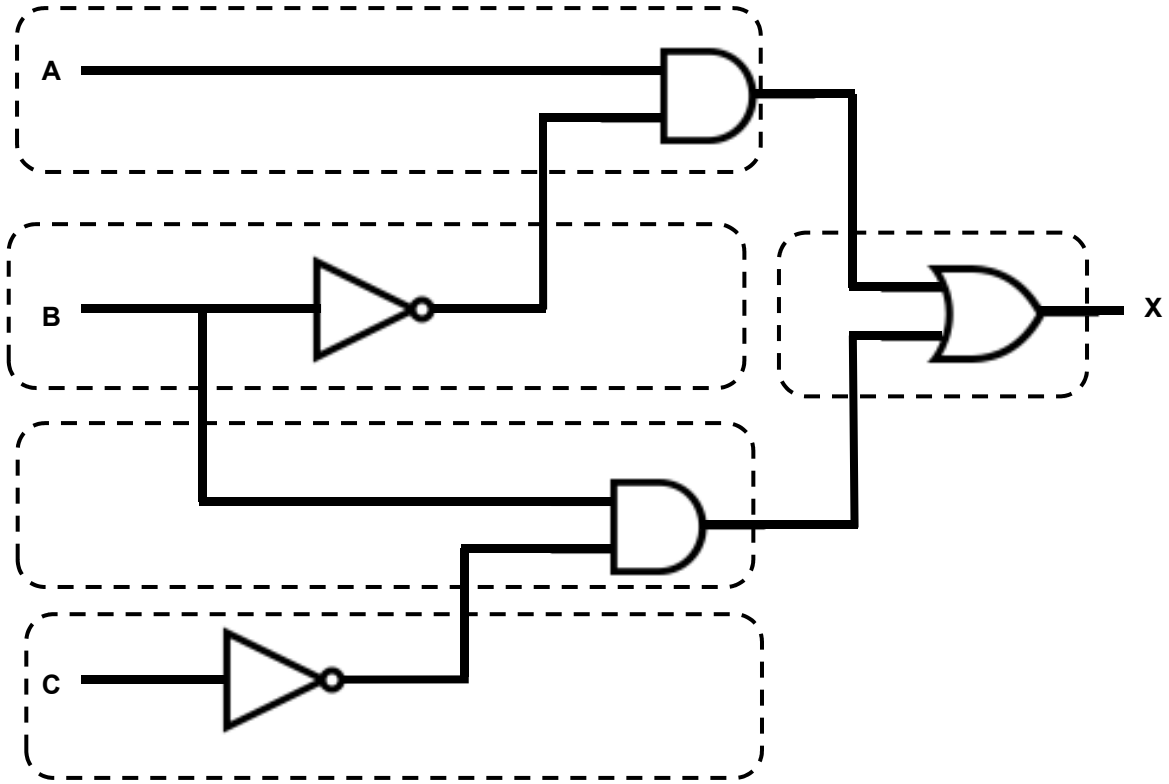
- Encryption
- If the data is accessed or stolen it will be meaningless

- Biometric device
- Can help prevents unauthorised access to the system (only award once)

- Firewall
- Can alert to show unauthorised access attempt on the system
- Can help prevent unauthorised access to the system (only award once)
- Can help protect against viruses and malware entering the system

- Anti-spyware
- Can stop the keys being logged that, when analysed, would reveal the password to the data [4]

5 **(a)** 1 mark per correct section.



[5]

(b) 4 marks for 8 correct values
3 marks for 6 correct values
2 marks for 4 correct values
1 mark for 2 correct values

A	B	C	Working space	X
0	0	0		0
0	0	1		0
0	1	0		1
0	1	1		0
1	0	0		1
1	0	1		1
1	1	0		1
1	1	1		0

[4]

(c) Register Z [1]

(d) **(i)** (byte) 5 [1]

(ii) (column) 4 [1]

(iii) corrected byte is: **1 0 0 1 1 1 1 1** [1]

(iv) that gives the value: **1 5 9**
(follow through applies) [1]

(v) Any **two** from:

– The byte would be transmitted without having 5 consecutive 1's
– The fault condition would not be recognised [2]

6 Any **two** from:

High level language

– easier/faster to write code as uses English-like statements
– easier to modify as uses English-like statements
– easier to debug as uses English-like statements
– portable language code

Any **two** from:

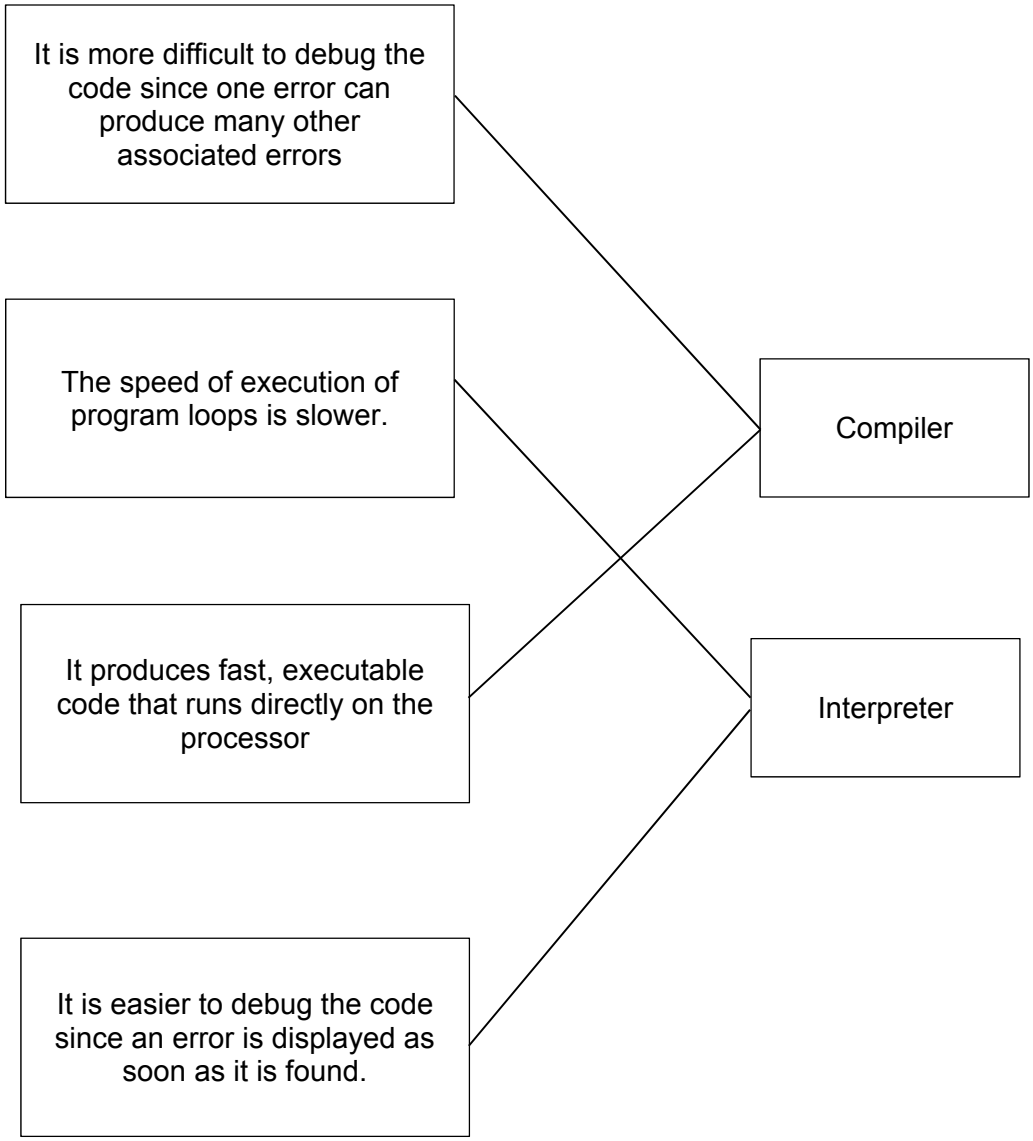
Low level language

– can work directly on memory locations
– can be executed faster
– translated program requires less memory [4]

7 Any **four** from:

– reaches maximum brightness quickly
– colours are vivid
– good colour definition/contrast can be achieved
– screens can be thinner/thin
– more reliable as LED's are long lasting
– consume very little/less energy [4]

8



[4]

9 Any **six** from:

– infrared / motion / pressure (sensor) // sensor detects movement/pressure
– signals/data sent (continuously) to microprocessor
– converted from analogue to digital (using ADC)
– microprocessor compares value with those stored in memory
– if sensor value does not match the stored value(s) …
– … signal sent to switch on the light
– … signal sent to keep the light on
– … light remains on for a period of time (30 seconds)
– if sensor value matches the stored value(s) …
– … light will remain off
– … will turn off after period of time (30 seconds)
– works in a continues loop [6]

10 (a) (i) 2 marks for 3 correct binary conversions, 1 mark for 2 correct binary conversions [2]

0	**0**	**0**	**1**	**1**	**0**	**1**	**0**	**1**	**1**	**1**	**1**

(ii) 1 mark for each correct hex value converted

1 A F [3]

(b) 2 marks for working + 1 mark for correct answer

Working
– 1200 × 8 = 9600 (bytes)
– 9600/1024

Answer
– 9.4 kilobytes [3]

(c) Any **one** from:

MAC address

– Media Access Control (address)
– unique number that identifies a device (connected to the Internet)
– address is made up of manufacturer id + serial number of device
– address is allocated by the manufacturer

Any **one** from:

IP address

– Internet Protocol (address)
– location/address of a device on the Internet
– address is unique for given Internet session
– address is supplied when a device connects to the Internet
– address is allocated by the network [2]

(d) – record (layer)
– handshake (layer) [2]

11 Any **six** from:
– Help stop the misuse of computers
– The use of computers needs to be governed
– Help keep users safer when using computers
– Provides rules for using computers
– Help stop intellectual property theft
– Helps prevent the misuse of personal information
– Reference to laws (relevant example)
– Reference to security issues (relevant example)

NOTE: Answer must refer to the importance of ethics and be more than a description of ethics. [6]