

Cambridge International Examinations

Cambridge Ordinary Level

COMPUTER SCIENCE 2210/12

Paper 1

October/November 2016

MARK SCHEME
Maximum Mark: 75

Published

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1 (a) Any two from:

- direct access to computer processor / special hardware // machine dependent instructions
- uses up less memory
- can increase the speed of processing a program // executes instructions faster

[2]

(b)

Statements	Interpreter (✓)	Compiler (✓)
Translates the source code into machine code all at once		✓
Produces an executable file in machine code		✓
Executes a high-level language program one instruction at a time	√	
Once translated, the translator does not need to be present for the program to run		√
An executable file is produced		√

[5]

2 Any four from:

- Provides a user interface
- Handles interrupts / errors
- Memory management
- File management
- Manages peripherals (inputs/outputs)
- Provides security methods
- Allows multitasking
- Manages multiprogramming
- Enables batch processing
- Manages software installation / removal
- Allows creation of multiple accounts
- Levels of access

Р	age :	3	Mark Scheme	Syllabus	Paper
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3	(a)	(i)	Any two from:		
			serial		
			 one bit sent at a time // bits sent sequentially over a <u>single</u> wire synchronous or asynchronous 		[2]
		(ii)	Any two from:		[4]
			parallel		
			 several bits / a byte sent at a time using many / multiple wires synchronous 		[2]
	(b)		– serial		
			Any two from:		
			 serial data transmission more reliable over long distances less likely for the data to be skewed/out of synchronisation less interference as only a single wire it is a cheaper connection as only single wire needed // cheape a fast connection is not required as a printer is limited by its printer 		[3]
4	(5)	lote	syncation of Days 7 and calcumn 4 simpled		
4	(a)	ınte	ersection of Row 7 and column 4 circled		[1]
	(b)	_	Row (byte number) 7 has an odd number of 1s (five 1s) Column (bit number) 4 has an odd number of 1s (five 1s)		[2]

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5 (a) 112 [1]

(b) 56 [1]

(c) divided by 2 // value 112 was halved // multiplied by 0.5 [1]

(d) (i) 0 0 0 1 1 1 0 [1]

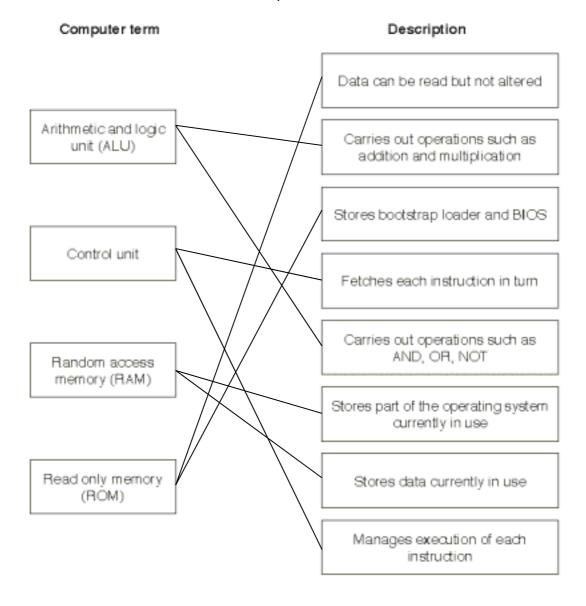
(ii) 14 [1]

- (e) Any two from:
 - run out of places to the right of register / at the end of register
 - right-most 1 would be lost
 - number would become 3 instead of 3.5
 - loss of precision

[2]

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6 1 mark for **both** correct lines from each computer term.



Page 6	Mark Scheme	Syllabus	Paper
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7 (a) (i) 2 marks for 4 correct outputs, 1 mark for 2 correct outputs

1 mark for correct gate

Α	В	Working space	X
0	0		0
0	1		0
1	0		0
1	1		1

AND gate

(ii) 2 marks for 4 correct outputs 1 mark for 2 correct outputs

1 mark for correct gate

Α	В	Working space	Х
0	0		0
0	1		1
1	0		1
1	1		1

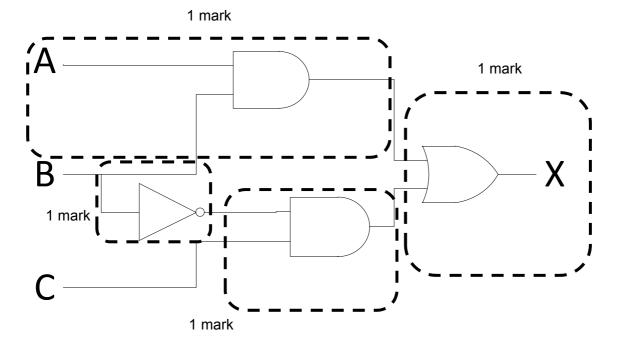
OR gate

[3]

[3]

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(b)(i) 1 mark per correct section.



(ii) 4 marks for 8 correct outputs 3 marks for 6 correct outputs 2 marks for 4 correct outputs 1 mark for 2 correct outputs

Α	В	С	Working space	Х
0	0	0		0
0	0	1		1
0	1	0		0
0	1	1		0
1	0	0		0
1	0	1		1
1	1	0		1
1	1	1		1

[4]

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8

Statement	TRUE or FALSE
MIDI stores the actual music notes in a compressed format	FALSE
JPEG files are examples of lossless file compression	FALSE
MP3 files are, on average, 90% smaller than the music files stored on a CD	TRUE
MP4 files are examples of lossy file compression	TRUE

[4]

9 (a) Any two from:

- a large number of requests are sent to the network/server all at once
- designed to flood a network/server with useless traffic/requests
- the network/server will come to a halt/stop trying to deal with all the traffic/requests
- prevents users from gaining access to a website/server

[2]

(b) 1 mark for each security threat and 1 mark for matching description

Security threat	Description
Viruses	software that replicatescauses loss/corruption of data // computer may "crash"/run slow
Hacking/cracking	 illegal/ unauthorised access to a system/data
Phishing	 a <u>link/attachment</u> sends user to fake website (where personal data may be obtained)
Pharming	 malicious code installed on user's hard drive / computer user is <u>redirected</u> to a fake website (where personal data may be obtained)
Spyware/key logger	 send/relay key strokes to a third party

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10 (a) Any three from:

- hyper text mark-up language
- uses both structure and presentation
- web-authoring language/software // used to create websites/webpages
- uses tags to define e.g. colour / font / graphics / layout

[3]

(b)

File name: ComputerSciencePapers

Protocol: http(://)

Web server name: www.cie.org.uk

[3]

11 (a) 1 mark per nibble

0010 1010 1111

[3]

(b) 1 mark for identification of each sensor, max 2 for each description

Infrared/motion sensor

- Receives infrared rays/heat
- Sends data to microprocessor
- Receives microwaves
- Placed in the corner of a room, across a doorway
- Used to detect the heat of an intruder // used to detect if an infrared beam has been broken by an intruder

Pressure sensor

- Receives current if circuit created // stops receiving current if circuit is broken
- Sends data to microprocessor
- Placed on a window/door, at the entrance
- Used to detect a change in pressure

[6]

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12 Any **four** from:

- Freeware needs owner's permission to share/copy/amend whereas free software can be shared/copied/amended without permission
- Freeware the owner retains copyright / is subject to copyright whereas free software the owner releases copyright/ is not subject to copyright
- Freeware is normally provided without a fee whereas free software a fee may be charged
- Freeware is distributed without the source code whereas free software is distributed with the source code
- Freeware can be restricted in use e.g. non-commercial whereas free software can be used without restriction

NOTE: The question asks candidates to explain the differences, so each mark needs to have a comparison.