

Cambridge International Examinations Cambridge International Advanced Level

COMPUTER SCIENCE 9608/31

Paper 3 Written Paper

October/November 2016

MARK SCHEME
Maximum Mark: 75

Published

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[Turn over

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(a)	+2.5 = 010100000000 0010 Give full marks for correct answer (normalised or not normalised)	[3]
	= 10.1 = 0.101×2^2 // evidence of shifting binary point appropriately	[1] [1]
		[Max 3]
(b)	-2.5 101100000000 0010 Give full marks for correct answer	
	One's complement of 12-bit mantissa of +2.5	[1] [1]
		[Max 3]
(c)	3 Give full marks for correct answer	[3]
	= 0.011 X 2 ³ // exponent is 3 = 11.0 // (1/4+1/8) * 8	[1] [1]
		[Max 3]
(d)	(i) Not normalised	[1]
	(ii) First two bits should be different for normalised number // because the number starts with 00	[1]
(e)	reduced accuracy increased range	[1] [1]

Mark Scheme

Syllabus

Paper

Page 2

1

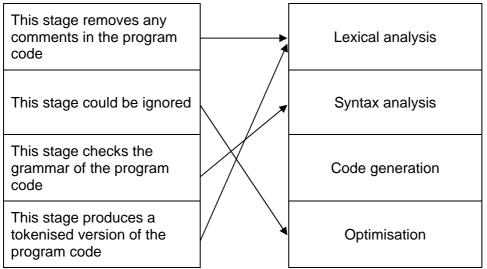
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2 (a)



C D -/

Compilation stage

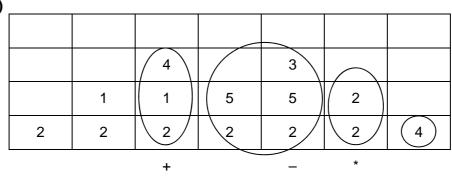


1 mark for each correct line

[4]

[1] [1]

(c) (i)



1 mark per ring

[4]

(ii)
$$x^*$$
 [1] $(w + z - y)$

Order must be correct for both parts

[1]

[Max 2]

	-	Cambri	dge Internat	ional A Level – Octo	ber/November 2016	9608	31
3				m the start of memory om some base addre			[1]
	(b) F	lash memo	ry // magnetio	c disk // hard drive			[1]
	(c) (i) Time of	entry (NOT ti	me in memory)			[1]
	(ii)			,		
		Page	Presence Flag	Page frame address	Additional data		
		4	1	542	12:07:34:49		[1 +1 + 1]
	(iii) Number	of times the	page has been acces	sed		[1]
	(iv)			1		
		Page	Presence Flag	Page frame address	Additional data		
		3	1	132	0		[1 +1 + 1]
		Accept of	only zero for '	additional data'			
	(d) E	or example					
	(u)	or evaluble	•				

Mark Scheme

Syllabus

Paper

Page 4

Longest resident: page in for lengthy period of time may be being accessed often [1] [1] ... so not a good candidate for being removed [1] [1] Least used: a page just entered has a low least used value ... so likely to be a candidate for immediately being swapped out

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4 (a) (i)

Inp	out	Out	put
Х	Υ	Α	В
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

1 mark for each correct column (A and B)

[2]

(ii) Half adder

[1]

[1] [1]

represents the carry part of the addition of two bits

[1]

represents the sum part of the addition of two bits

[1]

[1] [1]

(ii) Allow follow through from (b)(i)

A.(A.B+C)

= A.A.B + A.C

= A.B + A.C

= A.(B+C)

1 mark for each correct simplification line – max 2 1 mark for A.(B+C) if correct answer to part **(b)(i)** [2] [1]

Page	e 6	6	Mark Schen		Syllabus	Paper
			Cambridge International A Level –	October/November 2016	9608	31
5 (a	a)	(i)	Application			[4]
			Аррисацоп			[1]
			Transport			
			Internet			[1]
			Network / Link			[1]
		(ii)	software / module / program / code			[1]
(k	b)	(i)	For example: check packet port [1] to identify the application type [1] check packet destination socket [1 so that packet sent to correct application common to ensure data is reassembled in recalculate checksum of packet [1] to ensure integrity of packet [1] if packet checksum invalid [1] send message to have packet re] plication [1] mber [1] correct order [1]]		
					[Ma	ax 2 tasks]
						[Max 4]
		(ii)	HTTP/HTTPS			[1]

[1]

(iii) POP3

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6 (a)_____

Description	Term
Malware which attaches itself to another program.	VIRUS
Malware designed to redirect the web browser to a fake website.	PHARMING
Email that encourages the receiver to access a website and give their banking details.	PHISHING

(b) (i) Plain text is the <u>original</u> text

[1]

Cipher text is the encrypted version of the plain text

[1]

(ii) Asymmetric keys means that the key used to encrypt (public key) is different from the key used to decrypt (private key)
Ben acquires Mariah's <u>public key</u>

[1] [1] [1]

[1]

using Mariah's <u>public</u> key Ben sends <u>encrypted email</u> to Mariah

[1]

Mariah decrypts email ...

[1]

Using her <u>private</u> key

Ben encrypts email ...

[Max 4]