2018 SEC 4 COMPUTING PRELIM PAPER 1 MARKING SCHEMES

Qn 1	Marking Scheme / Answer							
(i)	A byte is a unit of data (or memory) that is made up of eight bits.							
(ii)	A gibibyte = 1024 mebibytes							
	$= (1024)^{\circ} \text{ kibibytes}$ $= (1024)^{\circ} \text{ bytes}$							
	$= 2^{-10247}$ bytes. = 2 ⁻¹⁰²⁴⁷ bytes. Hence $x = 30$.							
(iii)	256 000 000 bytes = 256 GB							
0.0	$4 \text{ TB} = 4\ 000\ 000\ 000\ 000\ \text{bytes or } 4 \times 10^{\circ} \text{bytes}$	1						
Qn 2	Marking Scheme / Answer	Marks						
(i)	Dave is wrong. A 64-bit computer can theoretically access 2 ^a bytes of memory, which is about 18 exibytes; a 32-bit one can access only 2 ^a bytes, which is about 4 gibibytes.							
(ii)	(A) A modern computer is likely to have 8 gigabytes of RAM installed.	1						
Qn 3	Marking Scheme / Answer	Marks						
(a)	$(2E7)_{16} = (2 \times 16^{2}) + (14 \times 16) + (7 \times 1) = 743$	2						
(b)	$(10\ 1011\ 1101\ 0000\ 0100)_{2} = (2BD04)_{15}$	2						
(c)	$(3172)_{10} = (C64)_{16}$	2						
Qn 4	Marking Scheme / Answer	Marks						
(i)	Possible quantities	2						
	Number of friends							
	 Hourly rental lee for the karaoke room, in Singapore dollar Service charge in percentage 							
	 Government tax in percentage 							
(ii)	Input Output	3						
	<i>hours</i> : number of hours spent, rounded up to <i>Cost_per_pax</i> : Amount of money, in							
	smallest integer greater or equal to itself. Singapore dollars (SGD), to be paid by							
	<i>FnB</i> : Amount, in Singapore dollars (SGD), spent each friend.							
	N: Number of friends							
	F: Hourly rental fee for the karaoke room, in							
	Singapore dollar.							
(iii)	Sample modified pseudo-code:	2						
	INPUT hours, x, N, F							
	$Cost_per_pax = (F*hours + (x \times 1.07 \times 1.1)) / N$							
On 5	OUTPUT Cost_per_pax Marking Scheme / Answer							
(i)		3						
(1)		· ·						
(ii)	1 repeat 3 (step)	2						
	right							
Qn 6	Marking Scheme / Answer							
(i)	6	1						
(ii)	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39							
	40 -39 -38 -37 -36 -35 -34 -33 -32 -31 -30 -29 -28 -27 -26 -25 -24 -23 -22 -21 -20 -19 -18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 C o d i n g i s v e r y i n t e r e s t i n a : L o t s o f f u n t							
	"I love it!"							
(iii)	2							
(iv)	The output represents the number of words in the list words that has more than 2 vowels.							

Qn 7	Marking Scheme / Answer						Marks		
(a)	N = 1	L		i		Output		1	
		[7]							
				0		[7]			
(b)	N = 2	L	i	i		Output		2	
		[5,3]	1			Output			
	-		0						
		[3 5]		0					
				1					
	-		1						
(c)	N – 4					[3,5]		3	
	19 – 4	L [7 1 5 2]	i		i	Output			
		[7, 1, 3, 3]	0						
					0				
	-	[1,7,5,3]			1				
	-	[1, 5, 7, 3]			1				
		11,0,7,0			2				
	-	[1, 5, 3, 7]							
			1		3				
					0				
	-				1				
	-	[1.3.5.7]			2				
	_		2		2				
					0				
	-				1				
			3		0				
					0	[1,3,5,7]			
(d)	It sorts a give	a given list of number in ascending order.							
Qn 8		Marking Scheme / Answer							
	1 highes	est = 0 Error 1: Line 4							
	2 lowes	t = 0 Type: run-time error							
	4 numb	ber = input("Enter a number:")							
	5 if r	umber > highest Error 2: Line 5 mber = highest Type: syntax error							
	7 if r	number < lowest: Correction: if number > highest:							
	8 nu	umber = lowest Error 3: Line 6, 8 (highest_lowest) Type: Logic error							
		(iiigiiest,	LUWESL/			Correction: highest =	<mark>number,</mark>		

Qn 9			N	larking Sch	eme / Ansv	ver			Marks
	C	ode Snippe	et			Types of V	alidation C	Check	3
	not yea	ar.isnum	eric()	_		Ran	ge Check		
	-				/•		_		
	len	(year)!	=4		\succ	Forn	nat Check		
	len	(vear)-	0	-		Prese	nce Check		
	Cen	(ycur)-	0		 •	Trese			
	if	(year<0	or			Leng	gth Check		
	yea	ar>9999):		Ť				
0.10									
Qn 10			Μ	arking Sche	eme / Answ	er			Marks
On 11	IPV4 Address	s / IPV6 A	ddress / Mao	e Address (A	Accept just I	P Address)			2 Marks
	(1) D	1 ()		ai king Sch	and / Answ	CI			
	(1) Proto (2) Dom	ain Name	e) of Web Serv	ver					U
0-12	(3) Path	of page to	request						Maadaa
Qn 12	Dhighing as for	na ta tha ua	M a of amails t	arking Sche	eme / Answ	er	These a	dataila aguld	
(a)	then be used	rs to the us to <mark>commit</mark>	a range of f	o stear perso rauds such a	nal informa as buying go	bods or service	ers. These c ces using the	he details or	2
	even taking o	ut loans by	/ forging a p	erson's iden	tity.		U		
(b)	Communicate	e persona	1 informati	on in per	son or th	rough secur	ed web	sites only.	2
~ /	Do not click on links, download files or open attachments in emails from unknown sources.								
	Check online accounts and bank statements regularly to ensure that no unauthorized transactions have been made.								
On 13	Marking Scheme / Answer								Marks
(a)	The OR gate		1	and King Sci		wei			1
(b)		D	C	D	Б	Б	C	V	3
	A 0	<u> </u>	0 0	0 0	<u>E</u>	F	<u> </u>	X	
	0	0	1	0	1	0	0	0	
	0	1	0	0	1	1	1	1	
	0	1	1	0	1	0	0	0	
	1	0	0	0	0	0	0	0	
	1	1	0	1	1	1	1	1	
	1	1	1	1	1	0	0	1	
(c)									5
			v	AND					
			sr	TOT		OR	5		
				 \	AND				
			т	NOT					
1									1

Qn 14	Marking Scheme / Answer	Marks
(a)(i)	Text	1
(a)(ii)	Number	1
(a)(iii)	= (-B\$2 + sqrt(B\$2*B\$2-4*B\$1*B\$3))/(2*B\$1) OR = (-\$B\$2 + sqrt(\$B\$2*\$B\$2-4*\$B\$1*\$B\$3))/(2*\$B\$1)	2
(b)	Ken received cash by taking a special loan package. He receives \$3000 initially and for the next 24 months, receives \$100 month. The bank charges 2% interest per month and at the end of the 24 months loan period, Ken has to return to the bank a lump sum amount of \$7867.50.	3
Qn 15	Marking Scheme / Answer	Marks
	 For client-server networks, <i>centralised control</i> of data and resources makes it easier to schedule backups of all shared files at regular intervals as compared to P2P networks where data and resources are stored locally within each computer. For example, Synology software and hardware backup network resources to a Network-attached Storage (NAS). For client-server networks, <i>security may be enhanced</i> as access rights can be controlled centrally at a server as compared to P2P networks where security is handled by each computer. For example, antivirus software such as MacAfee can be installed. For client-server networks, there is a higher setup cost due to the need for a higher-performance server. For P2P networks, the setup cost is lower as basic computers can act as 	2
	 For client-server networks, there is administrative costs needed for the maintenance of server and clients which will not be incurred for P2P networks. 	
Qn 16	Marking Scheme / Answer	Marks
(a)	Teleworking is working from home by using technology to support communication and work.	1
(b)	Phone / Conference calls are cheaper using VoIP.	1
(c)	 (i) 1 mark for any of the following: Less time is spent on commuting for meetings Meetings can be organised and held at any time People do not have to spend time away from their families (ii) 1 mark for any of the following: Face to face contact is still considered important for meetings People may not be able to focus so well on work if they work from home May be difficult to arrange a meeting when people are in places of different time zones 	2