Sec 4E Computing Prelim Exam 2020

Marking Scheme

1 (a)											
	Amount of data	Size in bytes									
	2.4 MB	2 400 000									
		2 400 000									
	5 GiB	5 × 1024 ³									
(b)	Processing speed: The 3 GHz processor chip will be able to execute more instructions and run faster as compared to the 900 MHz processor chip.										
	the 900 MHz processor chip.										
(c)	Data is entered using an input device and converted into a form that the computer										
	can understand. This data may be temporarily stored in a processor register .										
	Instructions from the running	application are then inter	preted. These instructions								
	involving logical operations	may require the data	to be processed by the								
	processor's Arithmetic Log	ic Unit. The control ur	nit may then redirect the								
	processed data to an output de	evice for display in a form	that users can understand.								
2 (a)	It is usually not legal to copy, modify or distribute proprietary software whereas users are given freedom to change, copy, study and share a free and open- source software.										
(b)	1. Check and follow the webs Many websites state the term as whether copying, download	ite's terms and conditions s and conditions for using ding or hyperlinking to an	s. g the site's content, such y materials is permitted.								
	2. Limit reproduction of a copy only). The reproduced work s avoid plagiarism.	yrighted work to 10% (for hould not be modified and	educational purposes d must be properly cited to								
	3. Consider using public doma	ain material instead.									

	Like public domain software, some works are released to the public domain on
	purpose or are so old that their copyrights have expired. Although these
	materials can be copied without the need to seek permission, it is still necessary
	to acknowledge or cite the authors appropriately to avoid plagiarism.
	(Any 2)
3 (a)	On the positive side,
	 technology has enabled telemedicine, which is the use of video conferencing and other technology, for doctors to provide medical consultations and diagnoses over the Internet. This gives patients who are located in remote places or have limited mobility better access to healthcare. the use of video conferencing allows families and friends to still keep in touch with one another even when they are not allowed to visit one another. (Any 1)
	On the negative side,
	 some patients find the use of robots and other technology in healthcare impersonal and mistrust the ability of machines to provide proper healthcare. inconverte medical advice or the misure of information from the Internet
	can potentially cause people to make dangerous decisions based on incorrect diagnoses. (Any 1)
(b)	1) Threatening or urgent tone saying that the banking has been suspended.
	2) Message was not addressed to any specific name, indicating that it could have been mass-sent.
	3) The link attached did not seem like a legitimate link from the bank.
	4) Unlikely that a bank will request for personal information through an SMS.
	5) Any answer that is logical.
	(Any 2)



(c)				$X = \mathbf{A} NAND$	((A NOR B) OR	(B AND (NOT C))))						
				(A NOR	(B AND (NOT	(A NOR B)							
	A	В	С	B)	C)	OR (B AND	X						
						(NOT C))							
	0	0	0	1	0	1	1						
	0	0	1	1	0	1	1						
	0	1	0	0	1	1	1						
	0 1 1 0		0	0	1								
	1	0	0	0	0	0	1						
	1	0	1	0	0	0	1						
	1	1	0	0	1	1	0						
	1	1	1	0	0	0	1						
	1 mark for each correct 2 roug												
	i man		acii		5								
6 (a)													
0 (a)				Binary		Denary	/						
			00	01001110		78							
			01	10110111		439							
			10	0000001		540							
			10	0000001		515							
(b)	Split the Add le	ne bin ading	ary r zero	number into 4 pes to the firs	-digit groups [1] t group if it does	not have 4 digits	[1]						
	•	0001	101	1 0111									
	Conve	rt ead	ch gr	oup of 4 bina	ry digits into the	hexadecimal digit	:[1]						
	1011	B											
	0111	7											
	Hexac	ecim	al va	lue: 1B7 ₁₆ [1]									

(c)	Uses fewer characters // shorter – 10 bits are represented by 2 hexadecimal digits.
	One from any below:
	Easier to read / write / understand
	Less likely to make mistakes // less error prone
	Easier to debug
(d)	RGB colour codes
	IPv6
	MAC address
	Memory Dump
	[Any one above]



	The most commonly used wired network protocol for local and metropolitan area networks.													
	A device that provides connection between wireless devices up to 100 metres away and can connect to wired networks.													
	Seq	Sequence of bytes that is used to identify a computer or device on the internet.												
	Sequence of bytes (usually permanent in nature) that is used to identify a particular network interface card.													
	Router													
8 (a)	(i)	manage squad add player edit name remove create player new 1m for each correct box												
	(ii)	 ii) load saved squad input player's scores display players' scores upload photos save players' records [any 4 above] 												
(b)		Variable	String	Integer	Float	List								
		players												
		player_name	1											
		player_age		✓										

		player_height				\checkmark							
(c)	(1)												
	(ii)	valid_goals	goals	OUTPUT									
		false											
			-3		"Enter goals", "Invalid entry"								
			54		"Enter goals" , "Invalid entry"								
		true	20		"Е	Enter goals"							
	(iii)	Test case cond	lition	Test data									
		Normal		3.28									
		Error			"Three", " "								
		Boundary			-1, 0, 40, 41								



9 (a)																	
		Number	5	5	8	6	1	8	7	0	1	7	4	4	0	7	9
	a	Double ternate digit	10	5	16	6	2	8	14	0	2	7	8	4	0	7	18
		Result	1	5	7	6	2	8	5	0	2	7	8	4	0	7	9
	Total = 9 + 7 + 0 + 4 + 8 + 7 + 2 + 0 + 5 + 8 + 2 + 6 + 7 + 5 + 1 = 71																
	71 x 9 = 639																
	639 / 10 = 63 remainder 9																
	Check digit = 9																
(b)	INPUT num																
	INPUT num result = 0 digit = 0 [1m] num_length = length of num [1m] FOR x = 1 to num_length [1m] digit = num % 10 [1m] IF x%2 == 0 [1m] digit *=2 ENDIF IF digit > 9 [1m] digit -=9 ENDIF NEXT result *=9																
	resu	it = result%10	מרן נ	IJ													

*** End of Paper ***