Qn 1	Marking Scheme / Answer Mar			
(a)	Roles		Description	
	arithmetic logic unit	• •	Data storage space that is extremely fast b small. It is physically located inside the processor and cannot be changed without	ut
	address bus		changing the processor.	
	control unit	•	Transports required memory location processor to memory; uni-directional	from
	data bus		Where data and instructions are	stored
	process register		temporarily so that they can be quickly as by the processor when needed.	ccessed
	RAM		Part of the processor that follows instruction and decides when data should be stored,	ons
	ROM		received or transmitted by different parts of computer.	of the

## 2020 SEC 4 COMPUTING PRELIM EXAM MARKING SCHEME

Qn 2	Marking Scheme / Answer		
(a)	American Standard Code for Information Interchange		
(b)	$7_{16} = 111_2$		
	$C_{16} = 1100_2$		
	$(7C)_{16} = 1111100_2$		
(c)	$1011100_2 = 2^6 + 2^4 + 2^3 + 2^2$		
	= 64 + 16 + 8 + 4		
	$=92_{10}$		
(d)	$109 / 16 = 6 \text{ R} \ 13$		
	13 / 16 = 0 R 13		
	$(109)_{10} = 6D_{16}$		
(e)	IPv4 uses 4 bytes		
	IPv6 uses 16 bytes		

Qn 3	Marking Scheme / Answer		
(a)	- Positive: Technology has provided better videos, simulations and collaboration		
	tools for lessons to be more engaging and relevant.		
	- Positive: Open sharing of information has made education accessible to all,		
	even learners from disadvantaged backgrounds.		
	- Negative: Students' attention spans are getter shorter as they are more		
	distracted by technology and social media.		

	- Negative: Students are more prone to gaming and internet addiction.		
	- Negative: Students are more prone to cyberbullying		
(b)	Similarity:		
	Both are computer programs that copy themselves and sends copies of		
	themselves to other programs or computers.		
	Difference:		
	A worm does not need to attach itself to an existing program while a virus does.		

Qn 4	Marking Scheme / Answer			
(a)		Access Control /	Authentication	Understanding
		Authorisation		of Private Policies
	Biometrics		$\checkmark$	
	Cloud Services			$\checkmark$
	Encryption	$\checkmark$		
	Firewalls	$\checkmark$		
	Passwords		$\checkmark$	
	Social Networking sites			$\checkmark$
(b)	2FA stands for two	-factor authenticatio	on.	
	It is a form of authe	entication that uses e	evidence from some	thing the user knows
	And something the	user owns.		

Qn 5	Marking Scheme / Answer		
	Inputs:		
	- Name of Runner,		
	- Gender of Runner (Girl or Boy)		
	- Timing of Runner		
	Processes:		
	- For each gender compare the timing of students and find the name of		
	student with minimum timing, and the respective timing itself.		
	- Store all data in array/list		
	- Sort data into each gender		

Qn 6	Marking Scheme / Answer	
(a)	- Shared resources: a network allows a group of computers to make use of shared	
	resources such as printers or files.	
	- Shared internet access: depending on the network's configuration, every user	
	who logs on to the network may have access to the internet.	
	- Shared software: Software can be stored on the central server of a network and	
	deployed to other computers over a network.	
	- Shared storage: Data files can be stored on a central server for ease of access	
	and backup purposes.	
	- Communication: Computers in the same network are often able to share instant	
	messages and emails for communication.	

(b)	- Wireless has higher mobility of users, who can move about freely within the		
	range of the wireless network.		
	- It is easier to add new devices to the network as the router can be easily		
	configured.		
	- Wireless is more organised without cables.		
(c)	- Wireless is generally slower due to lower bandwidth and possible interference		
	from radio waves or microwaves		
	- Wireless is less secure and reliable due to intrusion by hackers.		

Qn 7	Marking Scheme / Answer		
(a)	Device I: Hub		
	Device II: Bridge		
(b)(i)	- A network interface card provides the hardware interface to enable the transfer		
	of data between a device and a network.		
	- An NIC may connect to a network physically or wirelessly.		
(b)(ii)	A SSID is a string of up to 32 bytes that identifies a wireless access point		
	(WAP) all the devices connected to it.		
(b)(iii)	- A packet is a unit of broken-up data		
	- containing a header with information about the source and destination that are		
	needed for transmission.		

Qn 8	Marking Scheme / Answer
(a)	COUNTA
(b)	PPMT
(c)	CEILING
(d)	HLOOKUP

Qn 9	Marking Scheme / Answer		
	Error 1: Line 3		
	Correction 1: Odd = $0$		
	Error 2: Line 6		
	Correction 2: If Num MODULO $2 = 0$		
	Error 3: Line 10		
	Correction 3: (Indentation should be 4 spaces less) Counter = Counter + 1		
	Error 4: Line 11		
	Correction 4: UNTIL Counter = 20		

Qn 10	Marking Scheme / Answer
(a)	

	$A \xrightarrow{P} \\ D \xrightarrow{Q} \\ T \xrightarrow{Q} \\ R \\ Correct use of NOT gate - 1 mark$							
	Correct use of AND gate $-1$ mark							
(b)			011 80					
	Α	D	Т	Р	Q	R	S	X
	0	0	0	1	1	0	1	1
	0	0	1	1	1	0	1	1
	0	1	0	1	0	0	0	0
	0	1	1	1	0	1	0	1
	1	0	0	0	1	0	0	0
	1	0	1	0	1	0	0	0
	1	1	0	0	0	0	0	0
	1	1	1	0	0	1	0	1
(-)	1 Colu	$\frac{mn 1 N}{n}$	lark					
(C)	((NU1 A) AND (NU1 D)) UK (D AND 1)							

Qn	Marking Scheme / Answer						
11							
	Suggested answer $O(N^2)$						
	FOR $x \leftarrow 1$ to N, inclusive						
	FOR $y \leftarrow x+1$ to N, inclusive						
	IF WsMarks[x] > WsMarks[y] AND WsMarks[x] > (30 * 0.75)						
	OUTPUT WsMarks[x]						
	ENDIF						
	NEXT						
	NEXT						
	Keywords (correct + capitalization						
	Overall presentation						
OR	Suggested answer O(N)						
	max_so_far $\leftarrow$ -1						
	FOR $x \leftarrow N$ to 1, inclusive						
	IF WsMarks[x] > max so far AND WsMarks[x] > (30 * 0.75)						
	OUTPUT WsMarks[x]						
	max so far ← WsMarks[x]						
	ENDIF						
	NEXT						

Keywords (correct + capitalization
Overall presentation





Qn 13	Marking Scheme / Answer					
(a)		я	h	ΟΠΤΡΠΤ	]	
		a				
	[1, 0, 0, 0]					
		1				
			1			
	[1, 1, 0, 0]					
			0			
		2				
			2			
	[1, 1, 1, 0]					
			1			
	[1, 2, 1, 0]					
			0			
		3				
			3			
	[1, 2, 1, 1]					
			2			
	[1, 2, 3, 1]					
			1			
	[1, 3, 3, 1]					
			0			
		4				
	<b>[1 0 0 4]</b>		3			
	$\left[1, 3, 3, 4\right]$		2			
	<b>[1 2 ( 4]</b>		2			
	[1, 3, 6, 4]		1			
			<u> </u>			
	[1, 4, 6, 4]		0			
		5	0			
		3	2			
	<u>[1 4 6 10]</u>		3			
	$\begin{bmatrix} 1, 4, 0, 10 \end{bmatrix}$		2			
			<u> </u>			
	[1, 4, 10, 10]		1			
	Γ1 <b>5</b> 10 101					
	[1, 3, 10, 10]		0			
		6	0			
		0				

				10	
	(One column one n	nark)			
(b)	The algorithm is us $(x + y)^N$ ,	ed to calcula	te the Binomial Co	pefficient of the k+1	th term of
	or				
	the value of ${}^{\mathrm{N}}\mathrm{C}_{\mathrm{K}}$				