2019 Computing Sec 4 Prelim Paper 1 Marking Guide

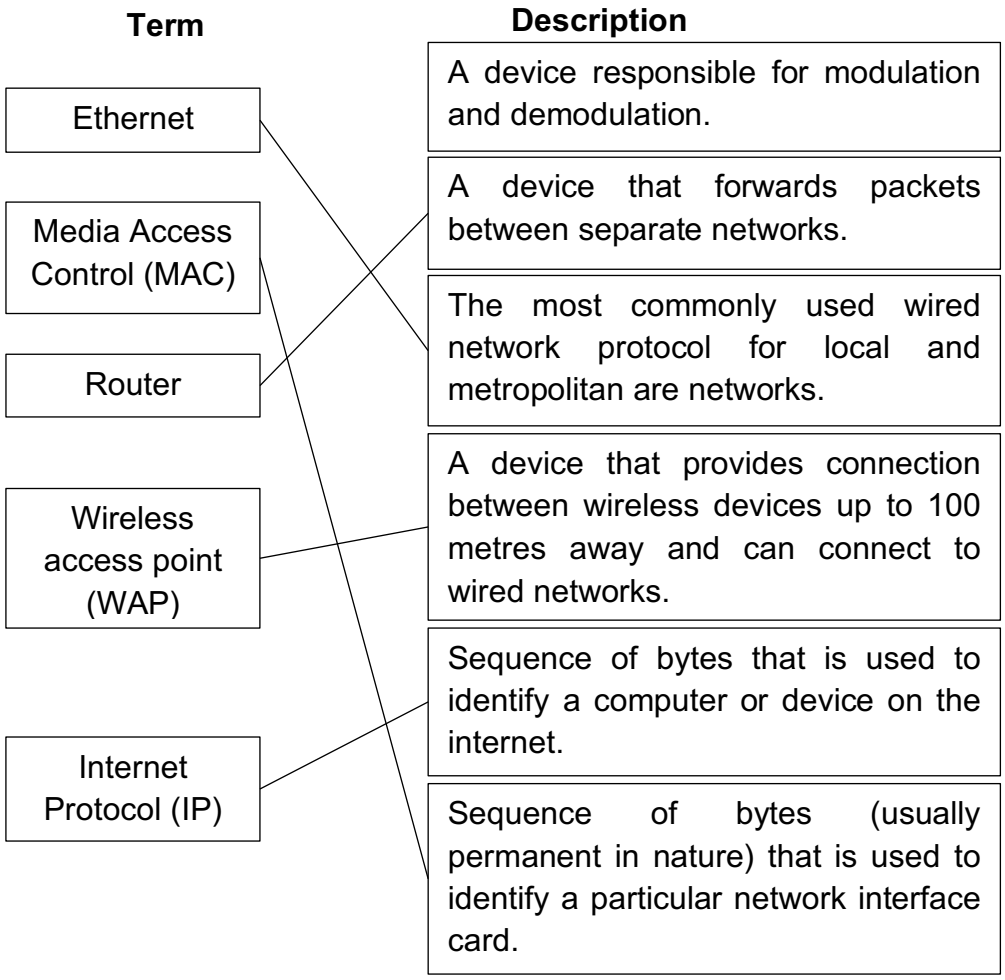
Qn	Answer & Marking Guide
1a	A1: Text
	B1: Currency
	B2: Percentage
1bi	*Correct formula and arguments* =PMT(B2/12, B3, B1)
1bii	*Correct formula and arguments* =SUM(D8:D11)
1biii	*Correct formula and arguments, accept arguments from other columns* =COUNT(C8:C11)
2ai	*One mark for correct answer, one mark for correct working.* 1001 1011
2aii	*One mark for correct answer, one mark for correct working.* BE
2aiii	*One mark for correct answer, one mark for correct working.* 205
2b	As memory dumps are usually large, …
	…the hexadecimal number system is ideal for displaying bytes in a compact manner.

3a *one mark for each correct column*

GrpA	GrpB	X	Count	Check	Output
[]	[]	2	1		
[2,]		3	2	1	
[2,3]		4	1		
			3	1	
	[4]	5	2	0	
			4	1	
			3	2	
			2	1	
[2,3,5]		6	1		
			5	1	
			4	2	
	[4,6]	7	3	0	
			6	1	
			5	2	
			4	3	
			3	1	
			2	1	
[2,3,5,7]		8	1		
			7	1	
			6	2	
			5	3	
	[4,6,8]	0	4	0	
					[2,3,5,7]
					[4,6,8]

3b Separate…

…prime and composite numbers into two lists.

<table>
<tr><td>4</td><td>


</td></tr>
<tr><td>5</td><td>iteration
repeating
selection
sequence
fixed</td></tr>
<tr><td>6a</td><td>Arithmetic logic unit (ALU): processes data by performing basic mathematical and logical operations</td></tr>
<tr><td>6b</td><td>Control unit: follows instructions and decides when data should be stored, received or transmitted by different parts of the computer</td></tr>
<tr><td>6c</td><td>“multi-core” processors contain multiple processing units inside a single package. …</td></tr>
<tr><td></td><td>… These “multi-core” processors can perform more than one instruction at the same time, and thus are more powerful than “single-core” processors.</td></tr>
<tr><td>7a</td><td>Positive:
• On the positive side, the Internet has enabled diverse cultures to interact and share ideas with each other. Social networking sites have also allowed users to remain connected with friends, family and colleagues even over long distances.

Negative:
• On the negative side, some people use the Internet to reinforce their existing opinions or to spread rumours and misinformation.</td></tr>
<tr><td>7b</td><td>Any two from:
• The rise of self-driving vehicles is likely to open new areas of growth</td></tr>
</table>

<table>
<tr><td></td><td>in the travel industry. Singapore is one of the first countries where self-driving cars are being tested, and if successful, the technology will likely revolutionise the motor industry.
• There are also multiple new companies that offer on-demand rides via mobile applications. These developments have led to sweeping changes in the taxi service industry as well as employment opportunities for taxi drivers.
• Mapping technology is also another area of growth with an increased focus on making 3D maps and geospatial data more accessible and useful to travellers.</td></tr>
<tr><td>7c</td><td>• Is it acceptable for robots to replace humans in providing certain kinds of healthcare?
• Is it acceptable to transfer private medical information over the Internet?

Also accept other suitable answers</td></tr>
<tr><td>8ai</td><td>NOR</td></tr>
<tr><td>8aii</td><td>AND</td></tr>
<tr><td>8bi</td><td>one mark for each term separated by OR
X = A AND C OR B AND C OR NOT A AND NOT C, or
X = A AND C OR B AND C OR A NOR C</td></tr>
<tr><td>8bii</td><td>one mark for every two correct rows
<table>
<tr><th>A</th><th>B</th><th>C</th><th>Working Space</th><th>X</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td></td><td>1</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td></td><td>0</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td></td><td>1</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td></td><td>1</td></tr>
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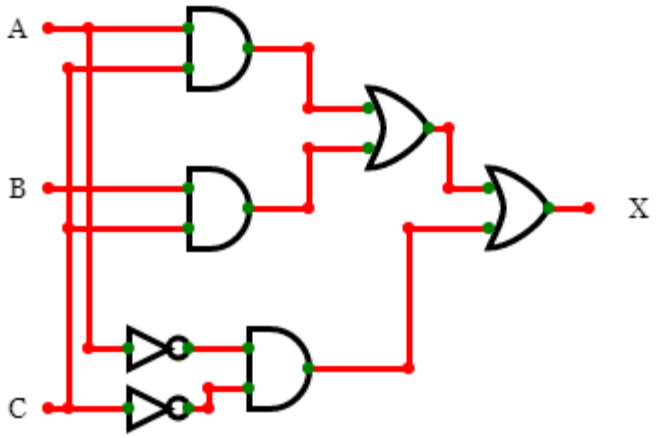
<tr><td>1</td><td>1</td><td>1</td><td></td><td>1</td></tr>
</table></td></tr>
<tr><td>8biii</td><td>one mark for AC sub-circuit
one mark for BC sub-circuit
one mark for NOT A and NOT C
one mark for use of two OR to collate results</td></tr>
</table>

	
9a	Odd
9b	0000 1010
	1101 1110
9c	*one mark for each point 1 to 4.* 1. ASCII value for H is 72. 2. Looking at first byte, which is H. 3. Convert first 7 bits to denary = 72. 4. Therefore, party bit is appended. 5. To confirm, perform the same on another byte that did not suffer transmission error.
9d	Use of Checksum. …
	…A checksum is a calculated value that is sent together with the data. At the destination, the checksum is recalculated and compared to the sent checksum value.
10	one mark for each correct identification, one mark for each correct correction
	Line 4 `WHILE Num is not equal to 0`
	Line 10 `Flag[Count] = TRUE`
	Line 17 `IF Flag[Count] == TRUE THEN`
	Line 18 `OUTPUT Large[Count]`

11	- Input two numbers
	- Checking for smaller of the two…
	- …Correct initialization of loop counter
	- Use of Loop…
	- with correct management for correct number of iterations
	- Check for factor(% = 0)…
	- …with correct use of AND or otherwise
	- Output result
	
	Sample Algo:
	INPUT x, y
	IF x > y THEN
	  Check = y
	ELSE
	  Check = x
	WHILE Check > 0
	  IF x % Check = 0 AND y % Check THEN
	  OUTPUT Check
	  Check = 0
	  ENDIF
	  Check = Check - 1
	ENDWHILE	