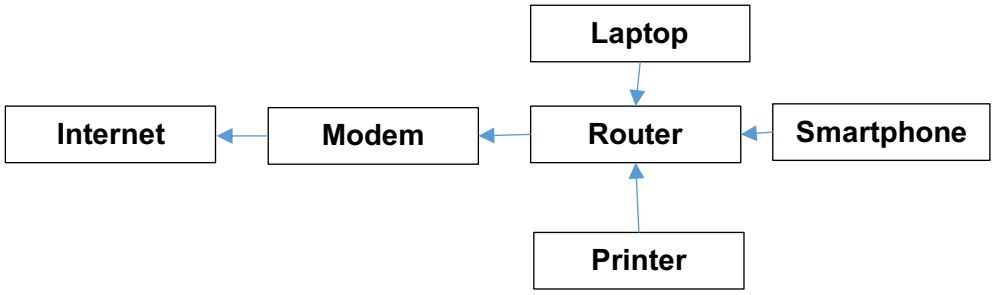
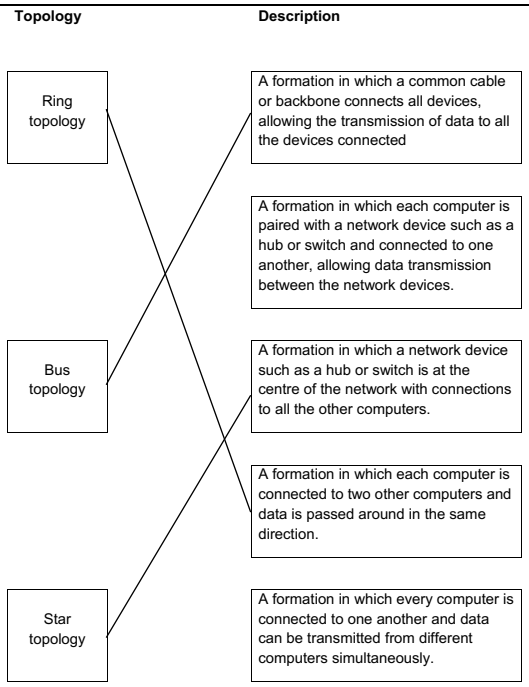
Sec 4 O Level Prelim 2019 Computing Paper 1 Marking Scheme

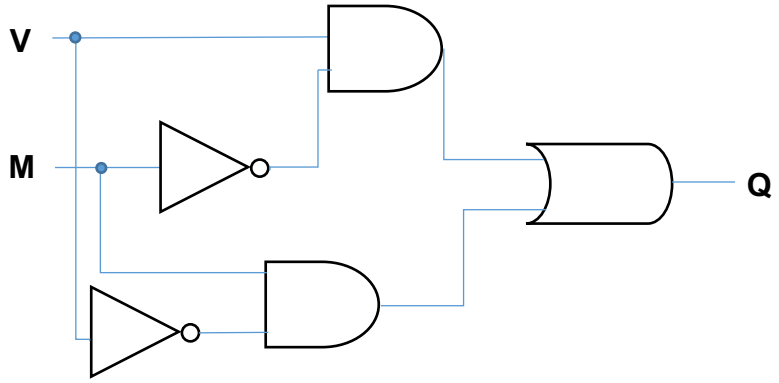
1	**(a)**	203 (with working)
	(b)	AD (with working)
	(c)	Manufacturer identification number Device serial number
	(d)	27 and not 31. Not the one.
2	**(a)**	A bit is a binary digit which can take on the value of either 0 or 1. A byte is a binary number made up of eight bits.
	(b)	2.45 GB 2048 B
	(c)	 Devices with label Correct connecting lines
	(d)	

3 (a)	Advantage: A magnetic hard disk is relatively cheaper than solid-state memory card. [reject: storage capacity (a solid-state memory card can also provide large storage capacity)] Disadvantage: A magnetic hard disk is culnerable to drops and mechanical shocks while a solid-state memory card is not as vulnerable to drops and mechanical shocks.
(b)	Optical external storage / DVD / solid state external hard disk
(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 interpreted by the processor's control unit. These instructions may request the data to be processed by the processor's ALU. The control unit may then redirect the processed data to an output device for display in a form that users can understand.
4 (a)	(i) Surnames as password can be easily guessed by intruder. (ii) Hard-to-guess passwords consist of a mixture of lower-case letters, upper-case letters, numbers and symbols.
(b)	(i) Phishing is the use of emails and fake wbesites that appear to be from reputable companies in order to steal personal information such as passwords from users. (ii) Any ONE sign: - email asks for persona data or confidential information. - email uses generic greeting. - email has inaccurate logos OR grammatical and spelling errors. - email seems to come from an address or contact that does not match the supposed source of email. - email contains hyperlinks with destinations that do not match what the hyperlink text says or are otherwise unexpected. - tone of email is excessively urgent or threatening.
(c)	Two-factor authentication is a type of authentication that uses evidence from both something the user knows and something the user owns.

		To access user's account, user has to confirm identity by providing a secret password or personal identification number (PIN), followed by a one-time password (OTP) generated from the security token or a mobile phone that the user owns.
	(d)	On the positive side, technology has enabled more exciting and engaging forms of entertainment such as incentives to meet or team up. On the negative side, some people may be addicted to computer games or social networking sites. There is an increasing concern that such technology is causing people to become deficient in real-life social skills or abandon their responsibilities.
5	**(a)**	NOR
	(b)	X = ((A NOR B) OR (A AND C)) NAND C

A	**B**	**C**	A NOR B	A AND C	((A NOR B) OR (A AND C))	**X**
0	0	0	1	0	1	1
0	0	1	1	0	1	0
0	1	0	0	0	0	1
0	1	1	0	0	0	1
1	0	0	0	0	0	1
1	0	1	0	1	1	0
1	1	0	0	0	0	1
1	1	1	0	1	1	0

1 mark for each correct 2 rows

	(c)	 1 mark for each of the logic gate (AND, OR, NOT)
6	**(a)**	Inputs: 1) Loan: loan amount required 2) Period: Repayment period Outputs: 1) Monthly repayment amounts 2) Corresponding interest rates Processes: 1) Calculate the interest amounts based on different interest rates and add each interest amount to the loan amount 2) Divide the total sum by the repayment period (in months)
	(b)	Any 1: (1) Range check – The repayment period should be between 5 – 35 years inclusive and the loan amount should be between $10 000 - $1 000 000. (2) Format check – The inputs should be made up of numerical integers only.
	(c)	

Test case condition	**Test data**
Normal	Loan amount: 200 000 Repayment period: 20
Error	Loan amount: three million Repayment period: 50

7 (a)

B2: currency

B4: percentage

(b)

(i) = PMT(B4/12,B3,B2)

(ii) = B5*B3

(iii) = B6+B2

(c)

= HLOOKUP(B12,B9:D10,2,TRUE)

8

Error 1: WHILE Counter <= len(Idnum)
Correction: WHILE Counter < len(Idnum) or WHILE Counter != len(Idnum)

Error 2: NewID += Idnum
Correction: NewID += Idnum[Counter]

Error 3: OUTPUT “Credit card no: NewID”
Correction: OUTPUT “Credit card no: ”, NewID

9 (a)

X	count	sum	digit_sum	OUTPUT
	0	0	0	
10			1	
11			2	
27	1	27	9	
21			3	
36	2	66	9	
0			0	
2			2	
17			8	
72	3	138	9	
				138

1 mark for each correct column of values

(b)

The purpose of the algorithm is to find the sum of the first 3 numbers inputted that are divisible by 9.

10	Paritybit = “”
	Sum = 0
	
	INPUT packet
	
	FOR x = 0 to 6
	  IF packet[x] == 1:
	  Sum += 1
	  ENDIF
	
	IF Sum %2 == 0:
	  Paritybit = “1”
	ELSE
	  Paritybit = “0”
	ENDIF
	
	OUTPUT packet + Paritybit