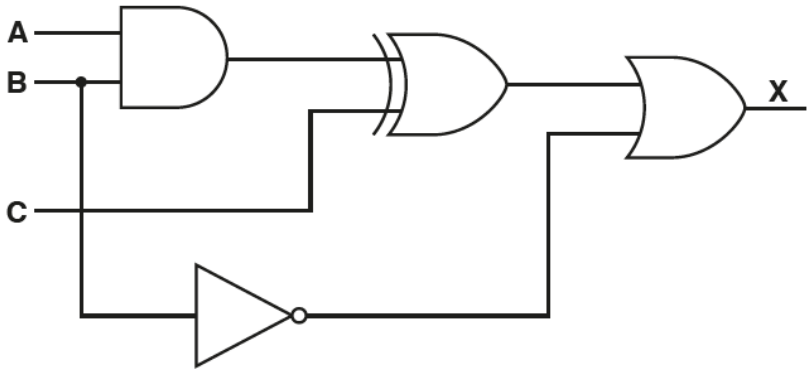
1. Nov/2021/Paper_11/No.3

A logic circuit is shown:



(a) Write the logic expression for the logic circuit.

.....

..... [3]

(b) Complete the truth table for the given logic circuit.

A	B	C	Working space	X
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		

[2]

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(c) Identify **one** logic gate **not** used in the given logic circuit. Draw the symbol for the logic gate **and** complete its truth table.

Logic gate: .....

Symbol:

Truth table:

A	B	Output
0	0	
0	1	
1	0	
1	1	

[3]

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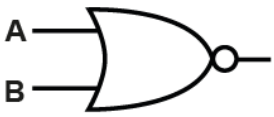
2. Nov/2021/Paper_12/No.2

(a) Complete the truth table for each of the following two logic gates.



A	B	Output
0	0	
0	1	
1	0	
1	1	

A	B	Output
0	0	
0	1	
1	0	
1	1	

[2]

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(b) Draw a logic circuit for the following logic expression.

X = NOT(NOT(**A** AND **B**)AND **C**)

[2]

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3. Nov/2021/Paper_12/No.3

Andy likes to play computer games.

(a) Andy uses several input devices to play the games. These include a keyboard and a microphone.

Describe the principal operation of a microphone.

.....

.....

.....

.....

.....

..... [3]

(b) Andy plays some of the computer games over the internet. He has several devices that connect wirelessly to the router in his house.

(i) Identify the topology of Andy's home network. Justify your choice.

Topology .....

Justification .....

.....

[2]

(ii) The router has a wireless access point (WAP) to allow the devices to connect wirelessly.

Identify **three** functions of the router in Andy's network.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

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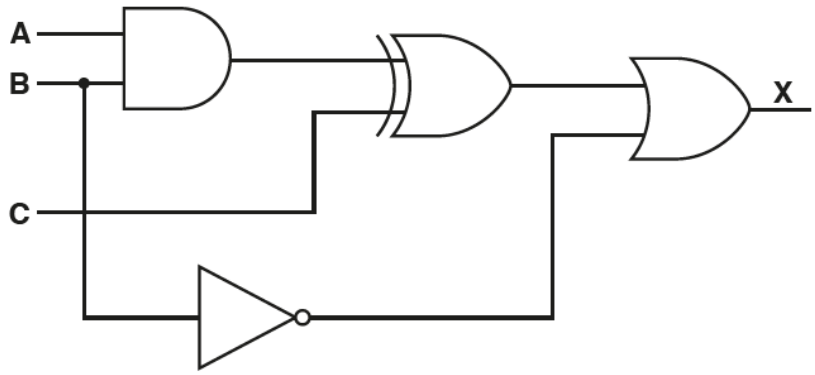
4. Nov/2021/Paper_13/No.3

A logic circuit is shown:



(a) Write the logic expression for the logic circuit.

.....

..... [3]

(b) Complete the truth table for the given logic circuit.

A	B	C	Working space	X
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		

[2]

PapaCambridge

(c) Identify **one** logic gate **not** used in the given logic circuit. Draw the symbol for the logic gate **and** complete its truth table.

Logic gate: .....

Symbol:

Truth table:

A	B	Output
0	0	
0	1	
1	0	
1	1	

[3]

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5. Nov/2021/Paper_11/No.5

Kiara has a washing machine and a refrigerator.

(a) She has an embedded system in her washing machine.

Describe what is meant by an **embedded system**, using the washing machine as an example.

.....

.....

.....

..... [2]

(b) The washing machine's embedded system makes use of both Random Access Memory (RAM) and Read Only Memory (ROM).

State the purpose of RAM and ROM within the washing machine's embedded system.

RAM .....

.....

ROM .....

.....

[2]

(c) The temperature in her refrigerator must be kept between 4 and 6 degrees Celsius.

The microprocessor in the refrigerator turns on the cooling if the temperature is too high, and turns off the cooling if the temperature is too low.

Explain why the system in the refrigerator is a control and not a monitoring system.

.....

.....

.....

.....

.....

..... [2]

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6. Nov/2021/Paper_11/No.8

Tick (✓) **one** box in each row to identify the logic gate that each statement describes.

Statement	AND	NAND	NOR	XOR	OR
The output is 1 only when both inputs are 1					
The output is 1 only when both inputs are different					
The output is 1 only when both inputs are 0					

[3]

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7. Nov/2021/Paper_12/No.3

A logic expression is given:

S = (**A** AND **B** AND **C**) OR (**B** XOR **C**)

(a) Draw the logic circuit for the given expression.

[4]

(b) Complete the truth table for the logic expression:

S = (**A** AND **B** AND **C**) OR (**B** XOR **C**)

A	B	C	Working space	S
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		

[2]

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