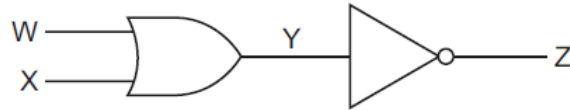1. June/2022/Paper_21/No.34
   A digital circuit is made of two logic gates.

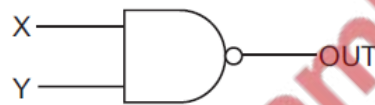
   Which row is correct for this digital circuit?

	W	X	Y	Z
A	0	0	1	0
B	0	1	0	1
C	1	0	1	0
D	1	1	0	1

2. June/2022/Paper_22/No.34
   What is the truth table for the logic gate shown by the symbol?

   A

X	Y	OUT
0	0	0
0	1	0
1	0	0
1	1	1

   B

X	Y	OUT
0	0	0
0	1	1
1	0	1
1	1	1

   C

X	Y	OUT
0	0	1
0	1	0
1	0	0
1	1	0

   D

X	Y	OUT
0	0	1
0	1	1
1	0	1
1	1	0

3. June/2022/Paper_23/No.34
   The truth table for a logic gate is shown.

inputs		output
0	0	1
0	1	1
1	0	1
1	1	0

   Which type of logic gate is it?

   A AND   **B** NAND   **C** OR   **D** NOR

4.

Combinations of logic gates are used when digital signals are processed.

(a) Describe the difference between a digital signal and an analogue signal. You may include a diagram if it helps your answer.

....

....

.... [2]

(b) Fig. 9.1 is the truth table for a logic gate X.

input A	input B	output
0	0	1
0	1	0
1	0	0
1	1	0

Fig. 9.1

State the name of logic gate X and draw the symbol that represents it.

name ....

symbol

[1]

(c) Logic gate Y is identical to logic gate X.

Draw a combination of logic gates X and Y that behaves like an OR gate. Label the inputs A and B and label the output Q.

[2]

[Total: 5]

5. June/2022/Paper_42/No.10

Fig. 10.1 is a simplified diagram of a digital circuit. The output of logic gate Y controls a buzzer.
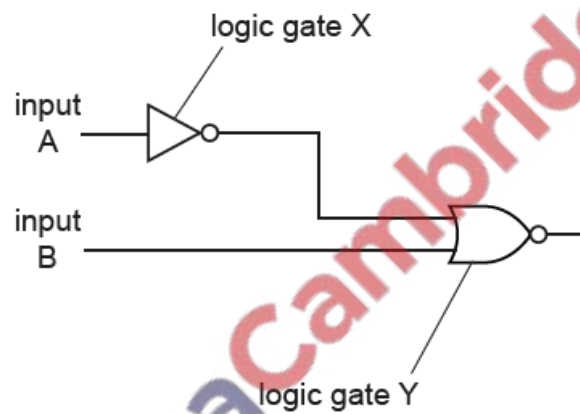

Fig. 10.1

(a) Complete Table 10.1, the truth table for the circuit.

Table 10.1

input A	input B	output of X	output of Y
0	0		
0	1		
1	0		
1	1		

[3]

(b) Input A is the output of a humidity sensor which gives logic 1 when the humidity is high and logic 0 when the humidity is low.

Input B is the output of a light sensor which gives logic 1 in bright light and logic 0 in darkness. The buzzer sounds when the output of Y is logic 1.

State the conditions of humidity and light when the buzzer is on.

.... [1]

(c) The output of the digital circuit alone is **not** able to operate the buzzer.

Ring the component from the list that must be connected between the output of the digital circuit and the buzzer.

        fuse   **heater**   **relay**   **resistor**   **thermistor**

Explain your answer.

....

....
[3]

[Total: 7]