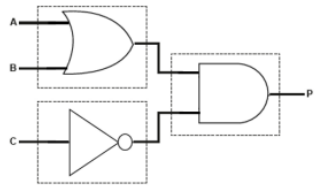
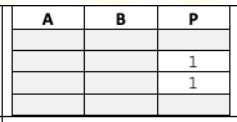
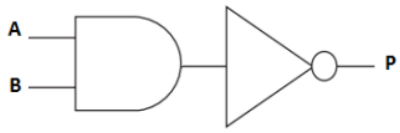
2.4 – Boolean Logic – Past Exam Questions – Solutions

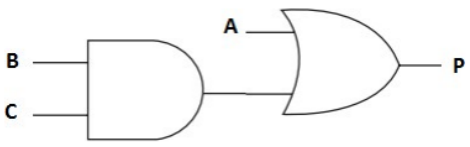
2022

2	(a)	(i)	• A **OR** B • **NOT** C • **AND** gate 	3 (AO2 1b)	1 mark per gate. Correct symbols must be used. NOT gate must have circle for inversion, OR and AND must <u>not</u> have a circle. Mark the **shape** of each gate, not the name written if given. Ignore any writing / notes. Lines do not have to be drawn or joined up, but if they are, gates must have the **correct number of inputs/outputs**. Penalise once then FT.
2	(a)	(ii)	• To show **all possible inputs** (to the logic circuit)… • **…**and the **associated/dependent** output (for each input)	2 (AO1 1b)	For 2nd BP, must be clear that the output is linked to the input values given. "All possible combinations of inputs and outputs" gains the first mark (all possible inputs) but not the second. "The output **for** each possible input" gains both marks
2	(a)	(iii)	• 8 // eight	1 (AO2 1a)	Accept other answers that equate to 8 (e.g. 2^3)

Sample Paper

1	a			2 (AO1 1b)	1 mark for each correct answer in table 'True' or 'T' are also credit worthy.
	b			1 (AO1 1b)	Correct Answer Only

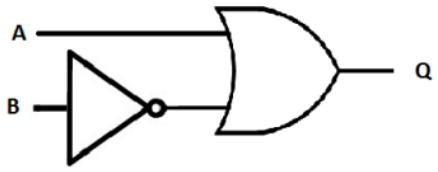
2020

4	f	i	1 mark per bullet point • B AND C • OR gate with two inputs, one of which is A • …correct connection of these two gates with no additional gates / connections	3 AO1 1b(3)	Shape must be accurate 
4	f	ii	1 mark per bullet point • Correct completion of A and B inputs as **1 1** • 0 output for 01 input • 0 output for 10 input • 0 output for 11 input	4 AO1 1b(1) AO2 1b(3)	CAO **A** **B** **P** **0** **0** **1** **0** **1** **0** **1** **0** **0** **1** **1** **0**

2019

5	(e)		1 mark per missing bit **A** | **B** | **Q** 0 | 0 | 0 0 | 1 | 1 1 | 0 | 1 1 | 1 | 1	4 AO2 1b (4)	Accept T / True

2018

3	(a)	(ii)	**A** | **B** | **Q** 0 | 0 | **1** 0 | 1 | **1** 1 | 0 | **1** 1 | 1 | **0**	4	1 mark per row
3	(b)		1 mark per bullet, max 2  • OR gate with **two inputs** // NOT gate **on B input** • Logic system as above with no other gates, with labelled inputs of A and B.	2	First mark can be awarded if candidate has either a NOT gate from B, or an OR gate with two inputs anywhere in their answer. Second mark is only awarded of the logic system as shown is given with no other additional gates. Correct logic diagrams needed for OR and NOT, including circle on NOT. Use professional judgement. Ignore labelling. No need to label Q output.

2014

7			**A** | **b** | **NOT(a AND b)** 0 | 0 | 1 0 | 1 | 1 1 | 0 | 1 1 | 1 | 0 1 mark for row two and three. For row 4, 1 mark for correctly identifying 1 1 as the inputs, and 1 mark for the correct output 0)	4	No follow through on row 4.