1   The logic diagram below (Fig. 2) shows a system made up of two connected logic gates.
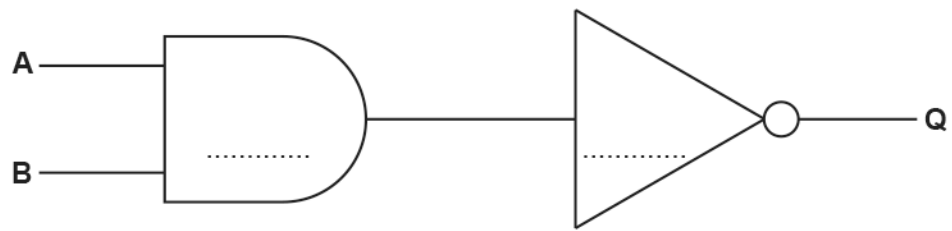

Fig.2

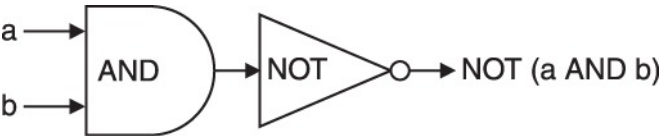**(i)** Label the names of the two gates on the diagram above.   [2]

(ii) Complete the truth table below to show the output from this logic system.

A	B	Q
0	0	
0	1	
1	0	
1	1	

[4]

2   The following logic diagram shows the expression NOT (a AND b).

Complete the missing boxes in the truth table below to show the value of NOT (a AND b) that will be output for each possible set of values of a and b.

a	b	NOT (a AND b)
0	0	1
0		1
1	0	

[4]

3   A cinema uses the following criteria to decide if a customer is allowed to see a film that has a 15 rating:

Customers have to be 15 years of age or older to see the film. They also need to either have a ticket or have the money to buy a ticket.
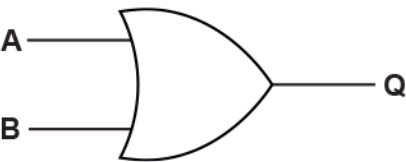
The table shows the inputs to the system that will output whether the customer can watch the film.

Input	Criteria (True / False)
A	The customer is 15 or over
B	The customer has a ticket
C	The customer has the money to buy a ticket

Draw this system using logic gates.

[2]

4   Complete the truth table for the following logic gate.

A	B	Q
0	0	0
0	1	1
	0	
1		

[4]

5   The logic diagram below (Fig. 2) shows a system made up of two connected logic gates.
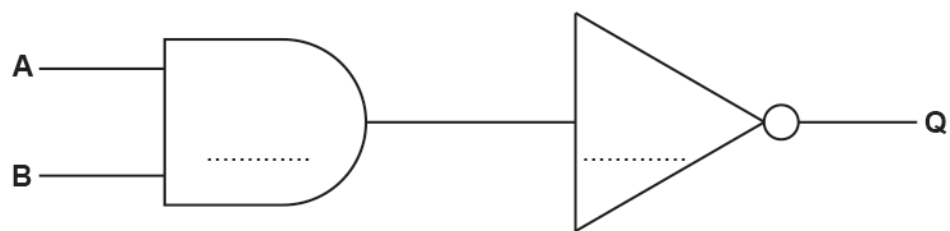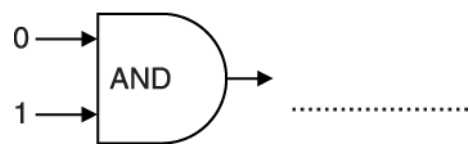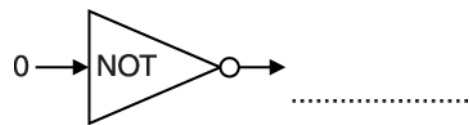

Fig.2

Draw the logic diagram represented by Q = AV¬B

[2]

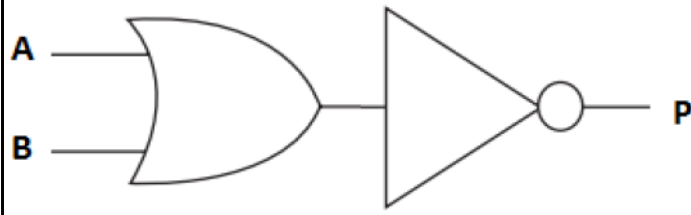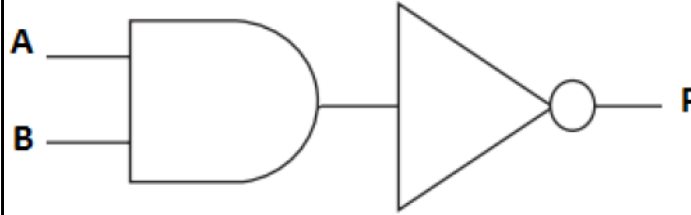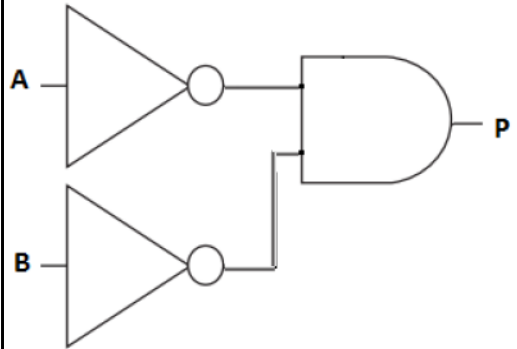6   State the output of each of the following logic circuits for the inputs given.

[2]

7(a) Complete the truth table in **Fig. 1** for the Boolean statement `P = NOT(A AND B).`

A	B	P
0	0	1
0	1	....
1	0	....
1	1	0

Fig. 1

[2]

(b) Tick (✓) **one** box to identify the correct logic diagram for `P = NOT(A AND B)`.

P = NOT(A AND B)	Tick (✓) one box

[1]

8 Complete the truth table below for the Boolean statement p = NOT (A AND B).

A	B	P
FALSE	FALSE	TRUE
FALSE	TRUE	
TRUE	FALSE	
TRUE	TRUE	FALSE

[2]

9 Fig. 1 is a circuit diagram.
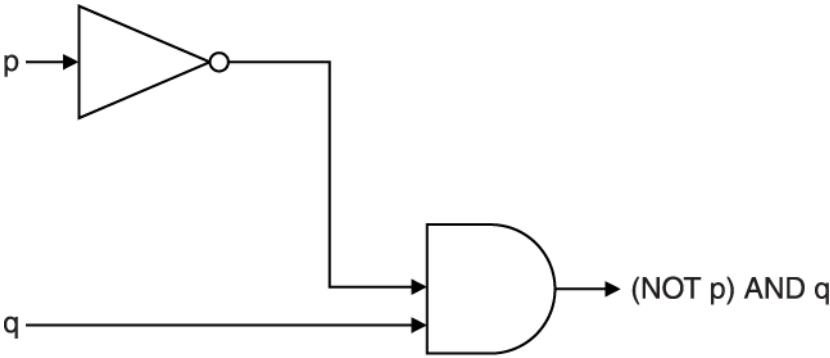
Fig. 1

Complete the truth table for Fig. 1.

p	q	(NOT p) AND q
0	0	0
1	0	0

[3]

END OF QUESTION PAPER