

NAME :Momin Hussain

id:14672

Department:BSSE

Q1a

| P | Q | R | $P \wedge Q$ | $(P \wedge Q) \wedge R$ |
|---|---|---|--------------|-------------------------|
| T | T | T | T | T |
| T | T | F | T | F |
| T | F | T | F | F |
| T | F | F | F | F |
| F | T | T | F | F |
| F | T | F | F | F |
| F | F | T | F | F |
| F | F | F | F | F |

| P | Q | R | $Q \wedge R$ | $P \wedge (Q \wedge R)$ |
|---|---|---|--------------|-------------------------|
| T | T | T | T | T |
| T | T | F | F | F |
| T | F | T | F | F |
| T | F | F | F | F |
| F | T | T | F | F |
| F | T | F | F | F |
| F | F | T | F | F |
| F | F | F | F | F |

| P | Q | R | $P \wedge Q$ | $\sim P$ | $\sim Q$ | $P \wedge \sim Q$ | $\sim P \vee (P \wedge \sim Q)$ |
|---|---|---|--------------|----------|----------|-------------------|---------------------------------|
| T | T | T | T | F | F | F | T |
| T | T | F | T | F | F | F | T |
| T | F | T | F | F | T | F | T |
| T | F | F | F | F | T | F | T |
| F | T | T | F | T | F | F | F |
| F | T | F | F | T | F | F | F |
| F | F | T | F | T | T | F | F |
| F | F | F | F | T | T | F | F |

$(P \wedge Q) \vee (\sim P \vee (P \wedge \sim Q))$
a tautology

Q16

$$\begin{aligned} 1 & \rightarrow p \rightarrow q \\ & \rightarrow \sim q \wedge r \\ & \rightarrow \sim p \wedge \sim q \wedge \sim r \end{aligned}$$

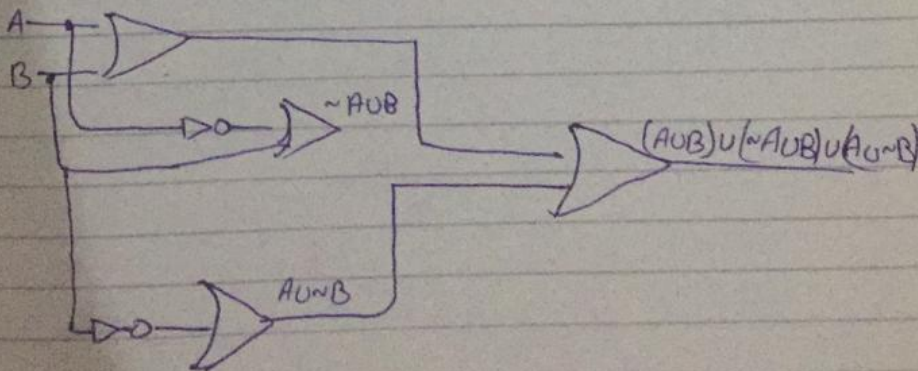
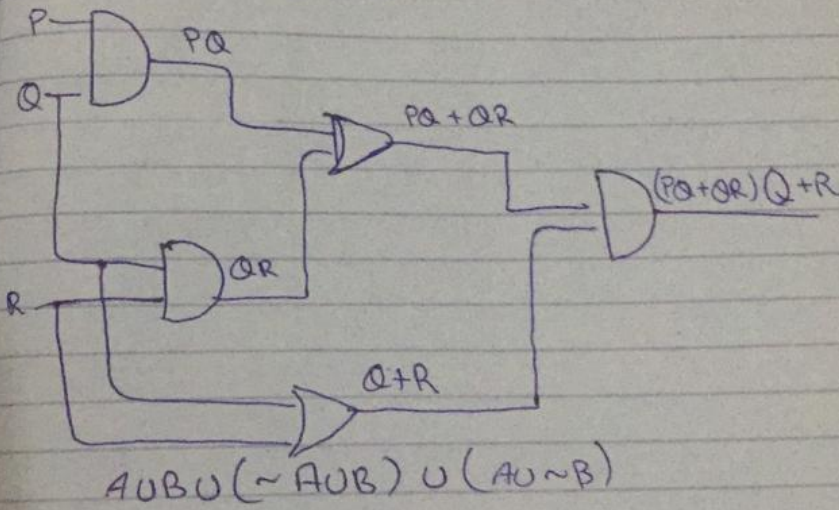
2a

$$P \rightarrow Q$$

$$Q \leftrightarrow P$$

| P | Q | $Q \rightarrow P$ | $Q \leftrightarrow P$ |
|---|---|-------------------|-----------------------|
| T | T | T | T |
| T | F | F | F |
| F | T | T | F |
| F | F | T | T |

2B1



Q 3A

$$A = \{a, b, c\}, B = \{1, 2, 3\}$$

find $P(A)$

$$P(A) = \{ \emptyset, \{a\}, \{b\}, \{c\}, \{a, b\}, \{b, c\}, \{a, c\}, \{a, b, c\} \}$$

find $P(B)$

$$P(B) = \{ \emptyset, \{1\}, \{2\}, \{3\}, \{1, 2\}, \{1, 3\}, \{2, 3\}, \{1, 2, 3\} \}$$

Q 3B

There are three form of set

Tabular forms

We list all the element of a set separated by commas and enclosed within braces or curly brackets

Examples

$$A = \{1, 2, 3, 4, 5\} \quad B = \{2, 4, 6, 8\} \quad C = \{1, 3, 5, 7, 9\}$$

"A" is set of first five natural number

"B" is the set of even number

"C" is the set of positive odd number.

Descriptive forms

state element of set in words

$$A = \{1, 2, 3, 4, 5\} \quad B = \{2, 4, 6, 8, \dots, 50\} \quad C = \{1, 3, 5, 7, 9\}$$

"A" set of first 5 natural number

"B" set of positive even integer less or equal to 50

"C" set of positive odd integer.

Set Builder Form:-

We write the common characteristics in symbolic form, shared by all the elements of the set.

Example

$$A = \{x \in \mathbb{N} \mid x \leq 5\}$$

$$B = \{x \in \mathbb{E} \mid 0 < x \leq 50\}$$

$$C = \{x \in \mathbb{O} \mid 0 < x\}$$