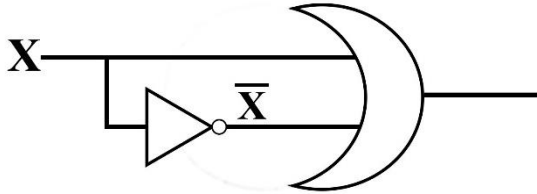


Grade 10 | Logic Gates with Boolean Function | Essay Answer

1.

| P | Q | (State) (Z) |
|---|---|-------------|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 1 |

2. $x + \bar{x} = 1$



3. $R = (P+Q) \cdot (P \cdot Q)'$

4. A) P - NOT Gate , Q - AND Gate

B) 1 & 2

5. P - AND

Q - NOT

6.

| Power Switch | Door Sensor | Water Level Sensor | Watching Machine |
|--------------|-------------|--------------------|------------------|
| OFF (0) | OPEN (0) | EMPTY (0) | 0 |
| OFF (0) | OPEN (0) | FULL (1) | 0 |
| OFF (0) | CLOSED (1) | EMPTY (0) | 0 |
| OFF (0) | CLOSED (1) | FULL (1) | 0 |
| ON (1) | OPEN (0) | EMPTY (0) | 0 |
| ON (1) | OPEN (0) | FULL (1) | 0 |
| ON (1) | CLOSED (1) | EMPTY (0) | 0 |
| ON (1) | CLOSED (1) | FULL (1) | 1 |

7.

| A | P |
|---|---|
| 0 | 1 |
| 1 | 0 |

8. $S = X.Y' + X'.Y$

9.

| A | B | A . B | A + B | $\frac{(A.B)}{(A+B)}$ | Q |
|----|---|-------|-------|-----------------------|---|
| 00 | 0 | 0 | 0 | 0 | 1 |
| 0 | 1 | 0 | 1 | 0 | 1 |
| 1 | 0 | 0 | 1 | 0 | 1 |
| 1 | 1 | 1 | 1 | 1 | 0 |



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