Question No 1 :

Draw a network to represent statement. Use the truth table to determine the truth value of following statement, given that P is Open and Q is Close.

(P **ν** Q **ν** R) **∧** (~Q **ν** P)

~Q

P

Q

P

R

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| P | Q | R | P **ν** Q or R | ~Q | ~Q **ν** P | (P **ν** Q **ν** R) **∧** (~Q **ν** P) |
| T | T | T | T | F | T | T |
| T | T | F | T | F | T | T |
| T | F | T | T | T | T | T |
| T | F | F | T | T | T | T |
| F | T | T | T | F | F | F |
| F | T | F | T | F | F | F |
| F | F | T | T | T | T | T |
| F | F | F | F | T | T | F |

Question No 2:

make use of one of De Morgan’s laws to write the given statement in an equivalent form.

1. It is not the case that the students cut classes or took part in the demonstration.

Solution:

If

P: the students cut classes

Q: took part in the demonstration

Then according to statement ~(P v Q) is the form of Demorgan’s law in which

~(P v Q) = ~P **∧** ~Q Hence the equivalent statement will be

The students did not cut the classes and did not take part in the demonstration.

Question No 1:

Draw a network to represent statement. Use the truth table to determine the truth value of following statement, given that P and R is Open, and Q is Close.

(~P **∧** Q **∧** R) **ν** ( P **∧** R)

R

Q

~P

R

P

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| P | Q | R | ~P | ~P **∧** Q **∧** R | P **∧** R | (~P **∧** Q **∧** R) **ν** ( P **∧** R) |
| T | T | T | F | F | T | T |
| T | T | F | F | F | F | F |
| T | F | T | F | F | T | T |
| T | F | F | F | F | F | F |
| F | T | T | T | T | F | T |
| F | T | F | T | F | F | F |
| F | F | T | T | F | F | F |
| F | F | F | T | F | F | F |

Question No 2:

make use of one of De Morgan’s laws to write the given statement in an equivalent form.

1. She did not visit France and she did not visit Italy.

Solution:

If

P: She visited France

Q: she visited Italy

Then according to statement ~P **∧** ~Q is the form of De morgan’s law in which

~(P v Q) = ~P **∧** ~Q Hence the equivalent statement will be

It is the case that she visited France or visited Italy

Question No 1 :

Draw a network to represent statement. Use the truth table to determine the truth value of following statement, given that P is Close, Q is Open and R is Open.

P **∧** [(Q **∧** ~ R) **ν** R]

Q

~R

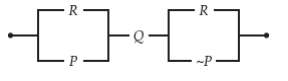
P

R

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| P | Q | R | ~R | Q **∧** ~ R | [(Q **∧** ~ R) **ν** R] | P **∧** [(Q **∧** ~ R) **ν** R] |
| T | T | T | F | F | T | T |
| T | T | F | T | T | T | T |
| T | F | T | F | F | T | T |
| T | F | F | T | F | F | F |
| F | T | T | F | F | T | F |
| F | T | F | T | T | T | F |
| F | F | T | F | F | T | F |
| F | F | F | T | F | F | F |

Question No 3:

Make symbolic notations of the following switching network.



Solution:

**(P V R) ∧ Q ∧ (R V ~ P)**