|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | q | p q | (p q) |
| T | T | F | F | T |
| T | F | T | T | F |
| F | T | F | F | T |
| F | F | T | F | T |

## Question 4

## Question 5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | q | p q | (p q) |
| T | T | F | F | T |
| T | F | T | T | F |
| F | T | F | F | T |
| F | F | T | F | T |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | p | p q | (p q) |
| T | T | F | F | T |
| T | F | F | F | T |
| F | T | T | T | F |
| F | F | T | F | T |

## Question 6

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | q | p q | (p q) |
| T | T | F | F | T |
| T | F | T | T | F |
| F | T | F | F | T |
| F | F | T | F | T |

|  |  |  |
| --- | --- | --- |
| p | p | p p |
| T | F | T |
| F | F | T |

This is an example of a Tautology

## Question 7

|  |  |  |
| --- | --- | --- |
| p | p | p p |
| T | F | F |
| F | F | F |

This is an example of a Contradiction

## Question 10

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| p | q | r | q | q r | p(q r) |
| T | T | T | F | T | T |
| T | T | F | F | F | F |
| T | F | T | T | T | T |
| T | F | F | T | T | T |
| F | T | T | F | T | F |
| F | T | F | F | F | T |
| F | F | T | T | T | F |
| F | F | F | T | T | F |

## Question 11

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | p q | p ( p q) | p |
| T | T | T | T | T |
| T | F | T | T | T |
| F | T | T | F | F |
| F | F | F | F | F |

Therefore the statement was TRUE

## Question 12

Express the following propositions in symbolic form:

“The program will terminate if and only if the input is not numeric or the escape

key is pressed”

“Either Jane is studying computing and Jack is not studying mathematics or Jack

is studying Mathematics”

p = the program will terminate

q = the input is numeric

r = the escape key is pressed

(pq) r

x = Jane is studying computing

y = Jack is studying Maths

x ( y y)

## Question 13

Given the following propositions:

“Jane starts work at 9am”

“Jane never uses public transport”

Write each of the following statements in symbolic form:

(i) Jane does not start work at 9am and always uses public transport

(ii) Jane uses public transport if and only if she does not start work at 9am

(iii) It is false that Jane starts work at 9am or that she never uses public transport

p = “Jane starts work at 9am”

q = “Jane uses public transport”

1. p q
2. q q
3. FALSE = p  q