**Assignment # 5**

Please read the following instructions:

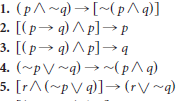
1. Please provide a complete solution.
2. Plagiarism or Cheating is not allowed. **Even if you cheat in only one question, you will be marked zero in the *entire* assignment.**
3. SECTION: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. ROLL NUMBER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Total Marks: 20**

**Submission Due date: 3rd feburary 2022 (on portal)**

Question No 1: (6 Marks)

Construct a truth table for the given statement.



**Solution:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **P** | **Q** | **1.** | **2.** | **3.** | **4.** |
| F | F | T | T | T | T |
| F | T | T | T | T | T |
| T | F | T | T | T | T |
| T | T | T | T | T | T |

|  |  |  |  |
| --- | --- | --- | --- |
| **P** | **Q** | **R** | **5.** |
| F | F | F | T |
| F | F | T | T |
| F | T | F | T |
| F | T | T | T |
| T | F | F | T |
| T | F | T | T |
| T | T | F | T |
| T | T | T | T |

Question No 2: (4 Marks)

Determine whether the given statements are equivalent.





**Solution:**

First Statement: Not Equivalent

Second Statement: Equivalent

Question No 3: (4 Marks)

Write the contrapositive of the statement and use the contrapositive to determine whether the original statement is true or false.





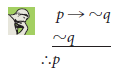
**Solution:**

First Statement: If x=7, then 3x-7 = 11. The original statement is true.

Second Statement: If |a|=3, then a=3. The original statement is false.

Question No 4: (2 Marks)

Use a standard form to determine whether each argument is valid or invalid.



**Solution:**

First Statement: Valid argument; modus ponens.

Second Statement: Invalid argument; fallacy of the converse.