**Reg. L1F21BSCS0379**

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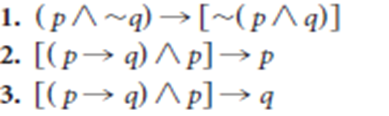
**Section. A9**

**ASSIGNMENT NO 5**

**LOGIC THINKING**

**Question No 1:**

Construct a truth table for the given statement.



SOLUTION

1. **[P ᴧ ͂ q]→ [ ͂(P ᴧ q)]**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| p | q | ͂ q | P ᴧ ͂ q | P ᴧ q | ͂ (pᴧq) | [P ᴧ ͂ q]→ [ ͂(P ᴧ q)] |
| T | T | F | F | T | F | T |
| T | F | T | T | F | T | T |
| F | T | F | F | F | T | T |
| F | F | T | F | F | T | T |

**2. [(P → q) ᴧ P ]→ p**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | P →q | (P→q )ᴧ p | [(P → q) ᴧ P ]→ p |
| T | T | T | T | T |
| T | F | F | F | T |
| F | T | T | F | T |
| F | F | T | F | T |

**3. [(P → q) ᴧ P ]→ q**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | P →q | (P→q )ᴧ p | [(P → q) ᴧ P ]→ q |
| T | T | T | T | T |
| T | F | F | F | T |
| F | T | T | F | T |
| F | F | T | F | T |

**Question No 2:**

Determine whether the given statements are equivalent.





**SOLUTION**

1. **The statement is not equivalent.**

P=if Kevin wins, Q=then we will celebrate

P implies Q (IF P THEN Q)

Q=if we will celebrate, P=then we will celebrate

Q implies P (CONVERSE)

**2. The statement is equivalent.**

P=if she attends the meeting, Q=she will make the sale

P implies Q (IF P THEN Q)

~Q=if she does not make the sale

~P=then she did not attend the meeting

~P implies ~Q(INVERSE)

**Question No 3:**

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





1.3x-7=11

Then x is not equal to 7

**The original statement is** **true**.

3x=18

X=6;

2. If a is not equal to 3

Then |a|is not equal to 3

**The original statement is**  **not true** .

Placing a value in || will never equal to 3.

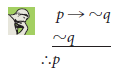
**Question No 4:**

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



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| p | q | ͂ p | ͂p →q | ͂ p | q |
| T | T | F | T | F | T |
| T | F | F | T | F | F |
| F | T | T | T | T | T |
| F | F | T | F | T | F |

Argument is valid (row 3)



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| p | q | ͂ q | p→ ͂q | ͂ q | p |
| T | T | F | F | F | T |
| T | F | T | T | T | T |
| F | T | F | T | F | F |
| F | F | T | T | T | F |

Argument is invalid

**Question # 5**

We have discussed fallacies in class. Please give two examples of fallacies which we have not discussed in class. Explain them.

**Answer :**

**The false dilemma**

Basically you make your argument very short even you get only two options behind to choose, having said that there can be even more options for selection.

**For example:**

“Either you go on your foot or by the bike to the university.” There can be even more options too but the statement shows only two from which one has to be selected.