**SD-230 Problem Solving and Programmatic Logic**

**Assignment # 1**

**Huijun Li**

**Question 1: Draw the truth tables for each of the following expressions (2 mark each):**

|  |  |  |  |
| --- | --- | --- | --- |
| ~ (A /\ B) | | | |
| Step:1 | | Step:2 | Result |
| A | B | A /\ B | ~(A /\ B) |
| T | T | T | F |
| T | F | F | T |
| F | T | F | T |
| F | F | F | T |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ~A \/ ~B | | | | |
| Step:1 | | Step:2 | | Result |
| A | B | ~A | ~B | ~A \/ ~B |
| T | T | F | F | F |
| T | F | F | T | T |
| F | T | T | F | T |
| F | F | T | T | T |

|  |  |  |  |
| --- | --- | --- | --- |
| A /\ ~ B | | | |
| Step:1 | | Step:2 | Result |
| A | B | ~ B | A /\ ~ B |
| T | T | F | F |
| T | F | T | T |
| F | T | F | F |
| F | F | T | F |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| (A /\ ~ B) \/ ~A | | | | | | | | | |
| Step:1 | | | | Step:2 | | Step:3 | | | Result |
| A | | B | | ~ B | | (A /\ ~ B) | | ~A | (A /\ ~ B) \/ ~A |
| T | | T | | F | | F | | F | F |
| T | | F | | T | | T | | F | T |
| F | | T | | F | | F | | T | T |
| F | | F | | T | | F | | T | T |
| (A /\ B) \/ (A /\ ~B) | | | | | | | | | |
| Step:1 | | | Step:2 | | Step:3 | | | | Result |
| A | B | | ~B | | A /\ B | | A /\ ~B | | (A /\ B) \/ (A /\ ~B) |
| T | T | | F | | T | | F | | T |
| T | F | | T | | F | | T | | T |
| F | T | | F | | F | | F | | F |
| F | F | | T | | F | | F | | F |