Roll: 1905105 Name: Shahnian Raj

## Problem-3

$F = \pi\ (1, 2, 3, 8, 12, 13, 14, 15)$

| A | B | C | D | S | |
|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 1 | $I_0$ |
| 0 | 0 | 0 | 1 | 0 | |
| 0 | 0 | 1 | 0 | 0 | |
| 0 | 0 | 1 | 1 | 0 | |
| 0 | 1 | 0 | 0 | 1 | $I_1$ |
| 0 | 1 | 0 | 1 | 1 | |
| 0 | 1 | 1 | 0 | 1 | |
| 0 | 1 | 1 | 1 | 1 | |
| 1 | 0 | 0 | 0 | 0 | $I_2$ |
| 1 | 0 | 0 | 1 | 1 | |
| 1 | 0 | 1 | 0 | 1 | |
| 1 | 0 | 1 | 1 | 1 | |
| 1 | 1 | 0 | 0 | 0 | $I_3$ |
| 1 | 1 | 0 | 1 | 0 | |
| 1 | 1 | 1 | 0 | 0 | |
| 1 | 1 | 1 | 1 | 0 | |

## Equation:

$$S = (A+B+C+D')(A+B+C'+D)(A+B+C'+D')$$
$$(A'+B+C+D)(A'+B'+C+D)(A'+B'+C+D')$$
$$(A'+B'+C'+D)(A'+B'+C'+D')$$

For, A = 0 & B = 0

| A \ B | 0 | 1 |
|---|---|---|
| 0 | 1 | 0 |
| 1 | 0 | 0 |

$$T_0 = C'D' = \overline{C+D}$$

For A = 0 & B = 1

| A \ B | 0 | 1 |
|---|---|---|
| 0 | 1 | 1 |
| 1 | 1 | 1 |

$$T_1 = 1$$

For, A = 1 & B = 0

| A \ B | 0 | 1 |
|---|---|---|
| 0 | 0 | 1 |
| 1 | 1 | 1 |

$$T_2 = C + D$$

For A = 1 & B = 1

| A \ B | 0 | 1 |
|---|---|---|
| 0 | 0 | 0 |
| 1 | 0 | 0 |

$$T_3 = 0$$

# Diagram: