Roll No- 17103011

Assignment-6

1. $P = \{Q, \Sigma, T, \delta, S, F\}$

$Q = \{S, P\}$

$\Sigma = \{x, y\}$

$T = \{x\}$

$F = \{P\}$

Transition relation δ is as follows

1. $((S, x, \epsilon), (S, x))$
2. $((S, x, x), (S, xx))$
3. $((S, y, x), (P, \epsilon))$
4. $((P, y, x), (P, \epsilon))$

2. $P = \{Q, \Sigma, T, \delta, S, F\}$

$Q = \{S, P\}$

$\Sigma = \{a, b, c\}$

$T = \{a, b\}$

$F = \{P\}$

$\delta =$

1. $((S, a, \epsilon), (S, a))$
2. $((S, b, \epsilon), (S, b))$
3. $((S, a, a), (S, aa))$
4. $((S, a, b), (S, ab))$
5. $((S, b, b), (S, bb))$
6. $((S, b, a), (S, ba))$
7. $((S, c, a), (P, a))$
8. $((S, c, b), (P, b))$
9. $((S, c, \epsilon), (P, \epsilon))$
10. $((P, a, a), (P, \epsilon))$
11. $((P, b, b), (P, \epsilon))$

3. $P = \{Q, \Sigma, T, \delta, S, F\}$

$Q = \{S, P, Q\}$, $\Sigma = \{x, y\}$, $T = \{x\}$, $F = \{Q\}$

$\delta \Rightarrow$ 1. $((\epsilon, x, \epsilon), (S, x))$

2. $((S, x, x), (S, xx))$

3. $((S, y, x), (P, x))$

4. $((P, y, x), (Q, \epsilon))$

5. $((Q, y, x), (P, x))$

4. $P = \{Q, \Sigma, T, \delta, S, F\}$

$Q = \{S, P\}$, $\Sigma = \{a, b\}$, $T = \{a, b\}$, $F = \{P\}$

$\delta \Rightarrow$ 1. $(S, a, \epsilon), (P, a)$

2. $(S, b, \epsilon), (P, b)$

3. $(P, a, a), (P, aa)$

4. $(P, b, b), (P, bb)$

5. $(P, a, b), (P, \epsilon)$

6. $(P, b, a), (P, \epsilon)$

5. $P = \{Q, \Sigma, T, \delta, S, F\}$

$Q = \{S, P, f\}$ $T = \{x, y\}$

$\Sigma = \{x, y\}$ $F = \{f\}$

$\delta \Rightarrow$ 1. $((S, x, \epsilon), (P, x))$

2. $((S, y, \epsilon), (P, y))$

3. $((P, x, x), (P, xx))$

4. $((P, y, y), (P, yy))$

5. $((P, x, y), (P, \epsilon))$

6. $((P, y, x), (P, \epsilon))$

7. $((P, \epsilon, \epsilon), (f, \epsilon))$