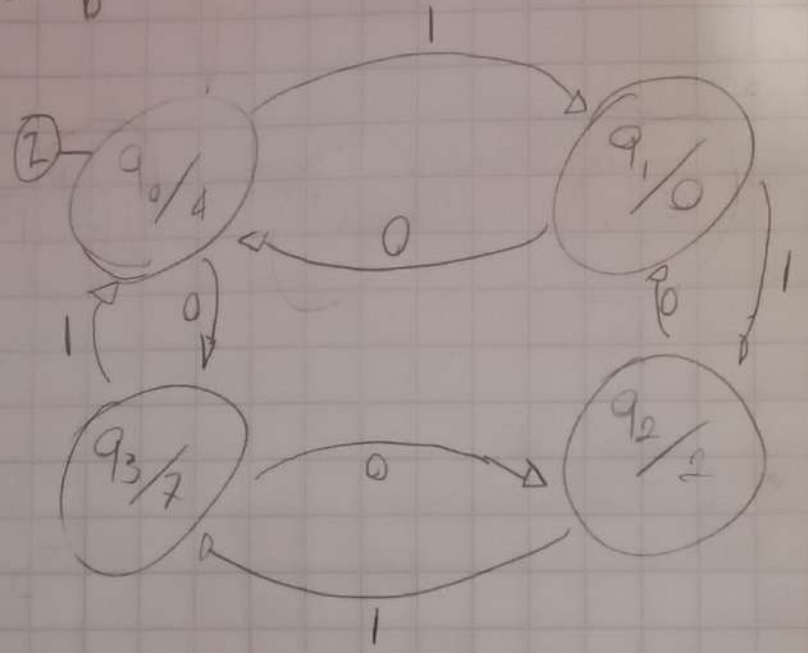
Examen DSD 2do Parcial

1- c, d
2- b
3- b, c, d
4- b
5- b

III)



Q	Q_+	L	Salida	D_1	D_0
0 0	0 1	1	1 0 0	0	1
0 1	1 0	1	0 0 0	1	0
1 0	1 1	1	0 1 0	1	1
1 1	0 0	1	1 1 1	0	0
0 0	1 1	0	1 1 1	1	1
1 1	1 0	0	0 1 0	1	0
1 0	0 1	0	0 0 0	0	1
0 1	0 0	0	1 0 0	0	0

D_1

Q_1Q_0 \ L	0	1
00	1	0
01	0	1
11	1	0
10	0	1

$D_1 = \bar{Q}_1 \bar{Q}_0 \bar{L} + \bar{Q}_1 Q_0 L + Q_1 Q_0 L + Q_1 \bar{Q}_0 L$

D_0

Q_1Q_0 \ L	0	1
00	1	1
01		
11		
10	1	1

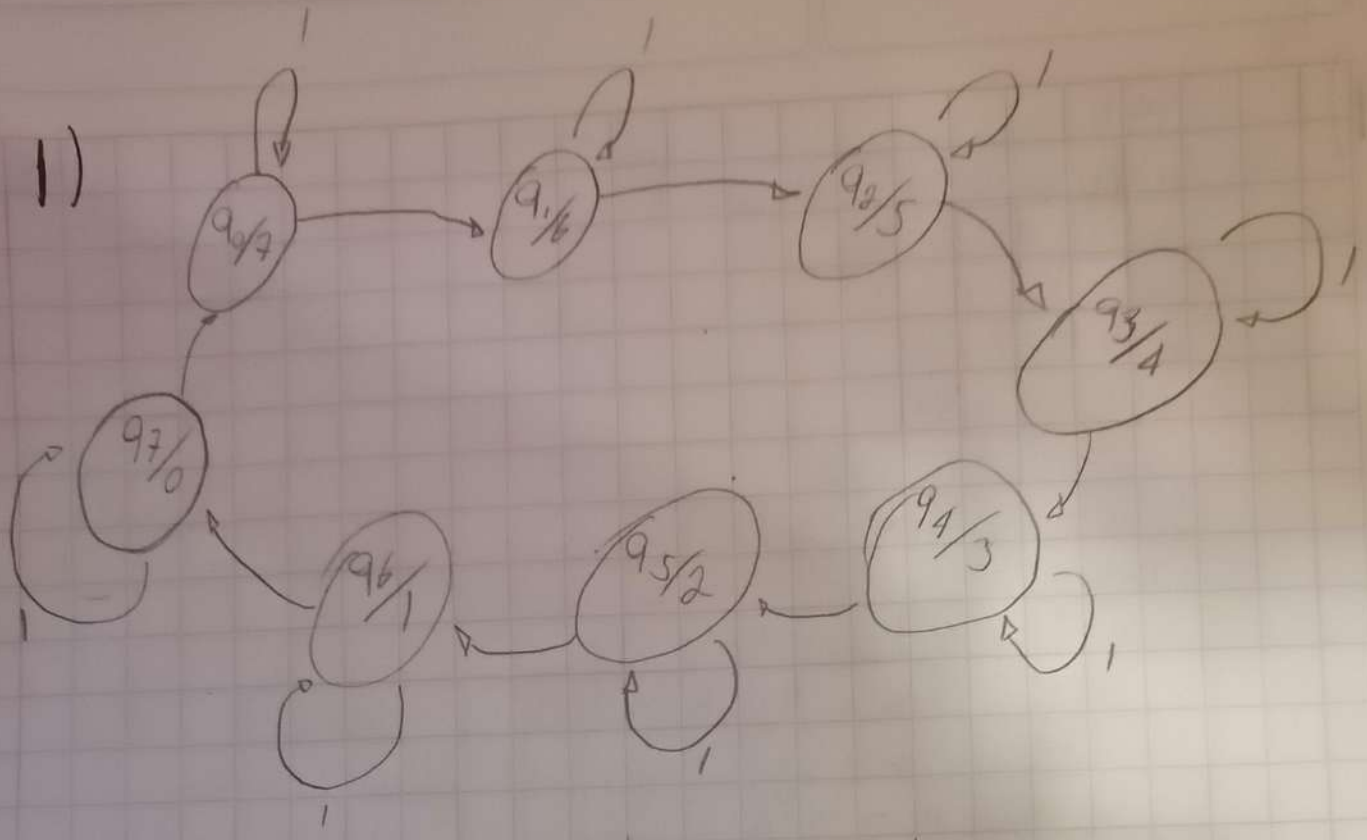
$D_0 = \bar{Q}_0$

11)

```
Process (CLK, CLr)
  begin
    if (CLr = '1') then
      Salida <= "100"
    elsif (rising-edge (CLK)) then
      case Salida is
        when "100" =>
          if (L = '1') then
            Salida <= "000"
          else
            Salida <= "111"
          end if;
        when "000" =>
          if (L = '1') then
            Salida <= "010"
          else
            Salida <= "100";
          end if;
        when "010" =>
          if (L = '1') then
            Salida <= "111";
          else
            Salida <= "000";
          end if;
        when "111" =>
          if (L = '1') then
            Salida <= "100";
          else
            Salida <= "010";
        When others => Salida <= "---"
      End case;
    End if;
  End Process
```

* También se pudieron haber utilizado las ecuaciones obtenidas previamente para Q

1)



Q			Q_+			E	T_2	T_1	T_0
0	0	0	0	0	1	0			
0	0	1	0	1	0	0			
0	1	0	0	1	1	0			
0	1	1	1	0	0	0			
1	0	0	1	0	1	0			
1	0	1	1	1	0	0			
1	1	0	1	1	1	0			
1	1	1	0	0	0	0			
0	0	0	0	0	0	1			
0	0	1	0	0	1	1			
0	1	0	0	1	0	1			
0	1	1	0	1	1	1			
1	0	0	1	0	0	1			
1	0	1	1	0	1	1			
1	1	0	1	1	0	1			
1	1	1	1	1	1	1			

T_2

Q_2Q_1 \ Q_0E	00	01	11	10
00				
01				1
11				1
10				

$T_2 = Q_1 Q_0 \bar{E}$

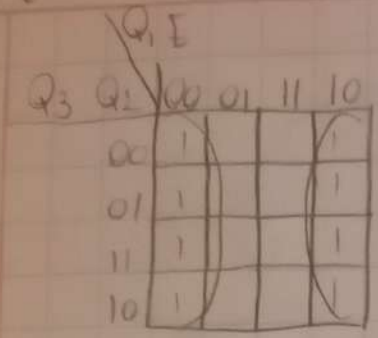
T_1

Q_2Q_1 \ Q_0E	00	01	11	10
00				1
01				1
11				1
10				1

$T_1 = Q_0 \bar{E}$

T_0

1)

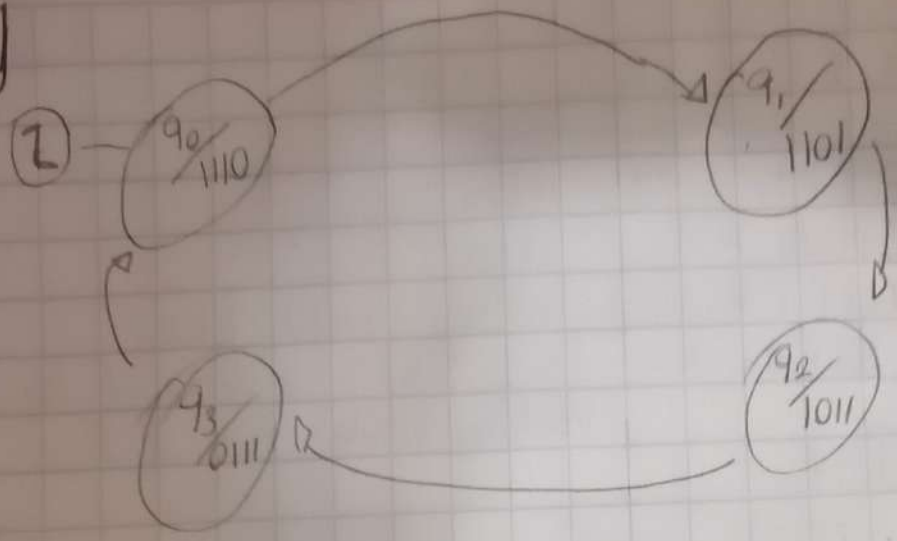


$T_0 = \bar{E}$

```
Process ((lk, (lr)
  begin
      if ((lr = '1') then
          q <= "111";
      elsif( rising_edge(clk)) then
       if( e = '1') then
          q <= q;
       else
          q <= q-1;
       end if;
      end if;
  End Process;
```

(* Necesita libreria de Operaciones aritmeticas

III)



Q				Q+			
1	1	1	0	1	1	0	1
1	1	0	1	1	0	1	1
1	0	1	1	0	1	1	1
0	1	1	1	1	1	1	0

D_3	D_2	D_1	D_0
1	1	0	1
1	0	1	1
0	1	1	1
1	1	1	0

$D_3 = Q_2$
$D_2 = Q_1$
$D_1 = Q_0$
$D_0 = Q_3$

D_3

Q_3Q_2 \ Q_1Q_0	00	01	11	10
00				
01			1	
11		1		1
10			0	

D_2

Q_3Q_2 \ Q_1Q_0	00	01	11	10
00				
01			1	
11		0		1
10			1	

D_1

Q_3Q_2 \ Q_1Q_0	00	01	11	10
00				
01			1	
11		1		0
10			1	

D_0

Q_3Q_2 \ Q_1Q_0	00	01	11	10
00				
01			0	
11		1		1
10			1	

111)

```
Process (Clk, Clr)
  begin
    if (Clr = '1') then
      Salida <= "1110";
    elsif (rising_edge(Clk)) then
      Salida <= to_stdlogicvector(to_bit(Vector(Salida) rol 1);
    end if;
end Process;
```

* Es necesaria el casteo antes de poder utilizar rol