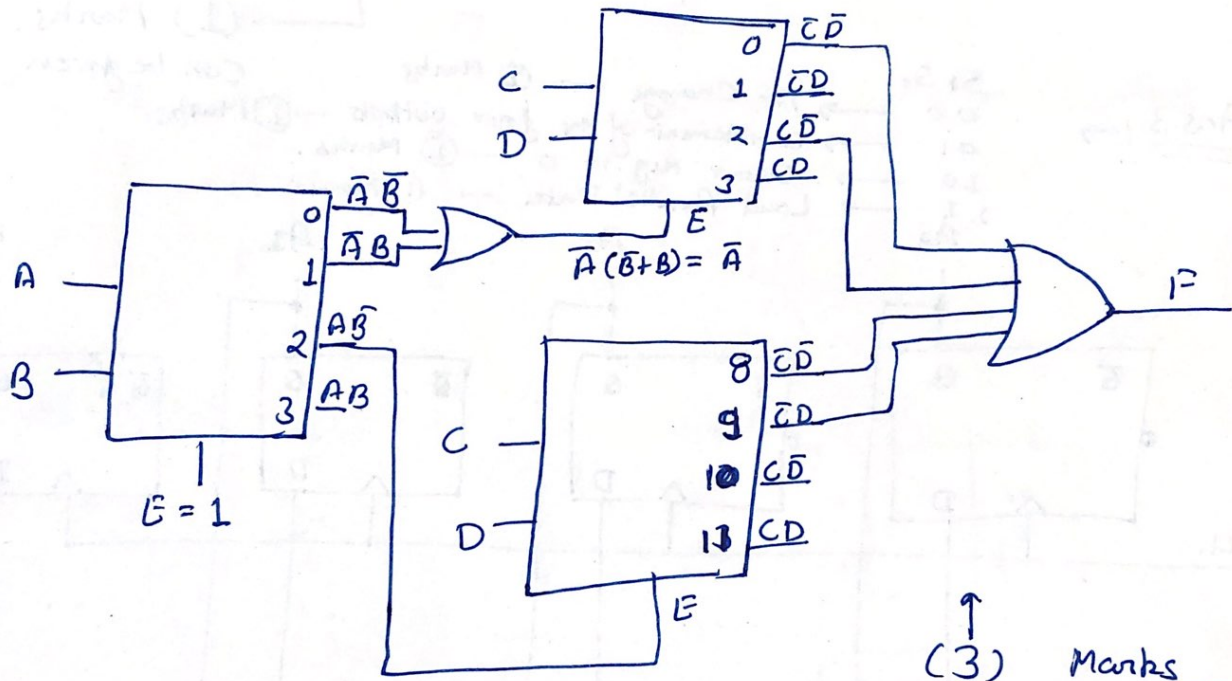


## Solution T 2

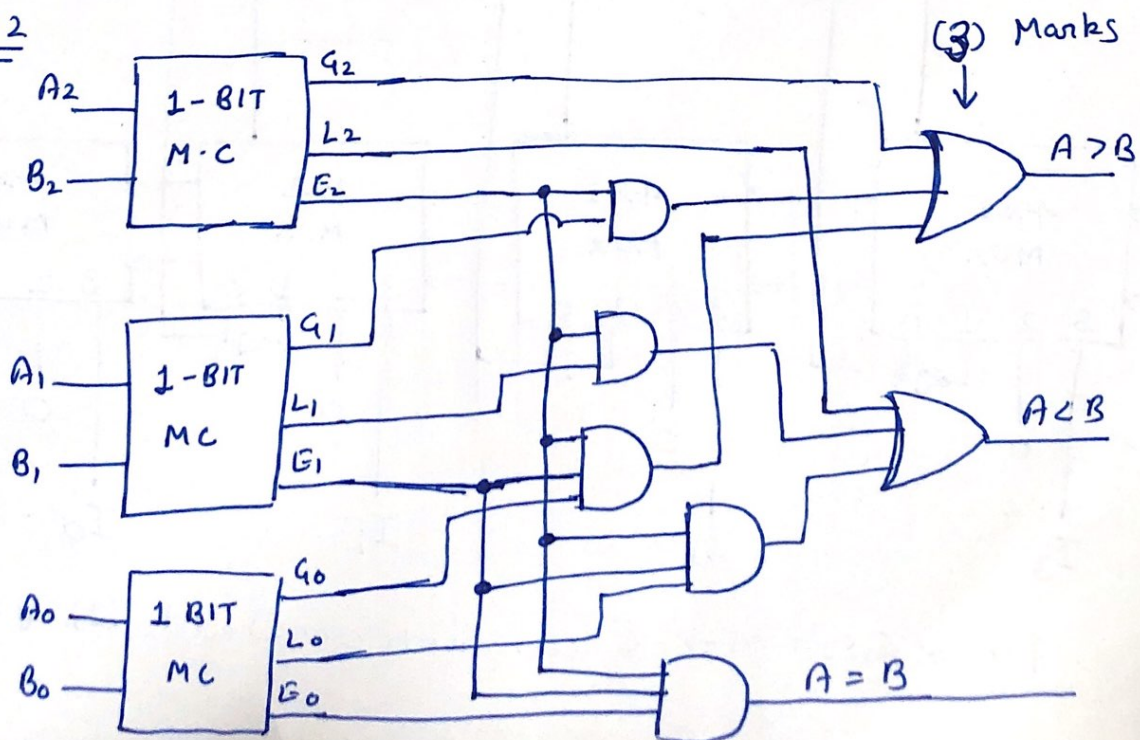
Ans 1  $\rightarrow F(A, B, C, D) = \sum m(1, 2, 5, 6, 8, 9)$

Reduced function =  $\bar{A}\bar{C}\bar{D} + \bar{A}C\bar{D} + A\bar{B}\bar{C}$



(3) Marks

Ans 2



(3) Marks

We know that

$$\text{For } A > B \Rightarrow A_2 \bar{B}_2 + (A_2 \odot B_2) A_1 \bar{B}_1 + (A_2 \odot B_2) (A_1 \odot B_1) A_0 \bar{B}_0$$

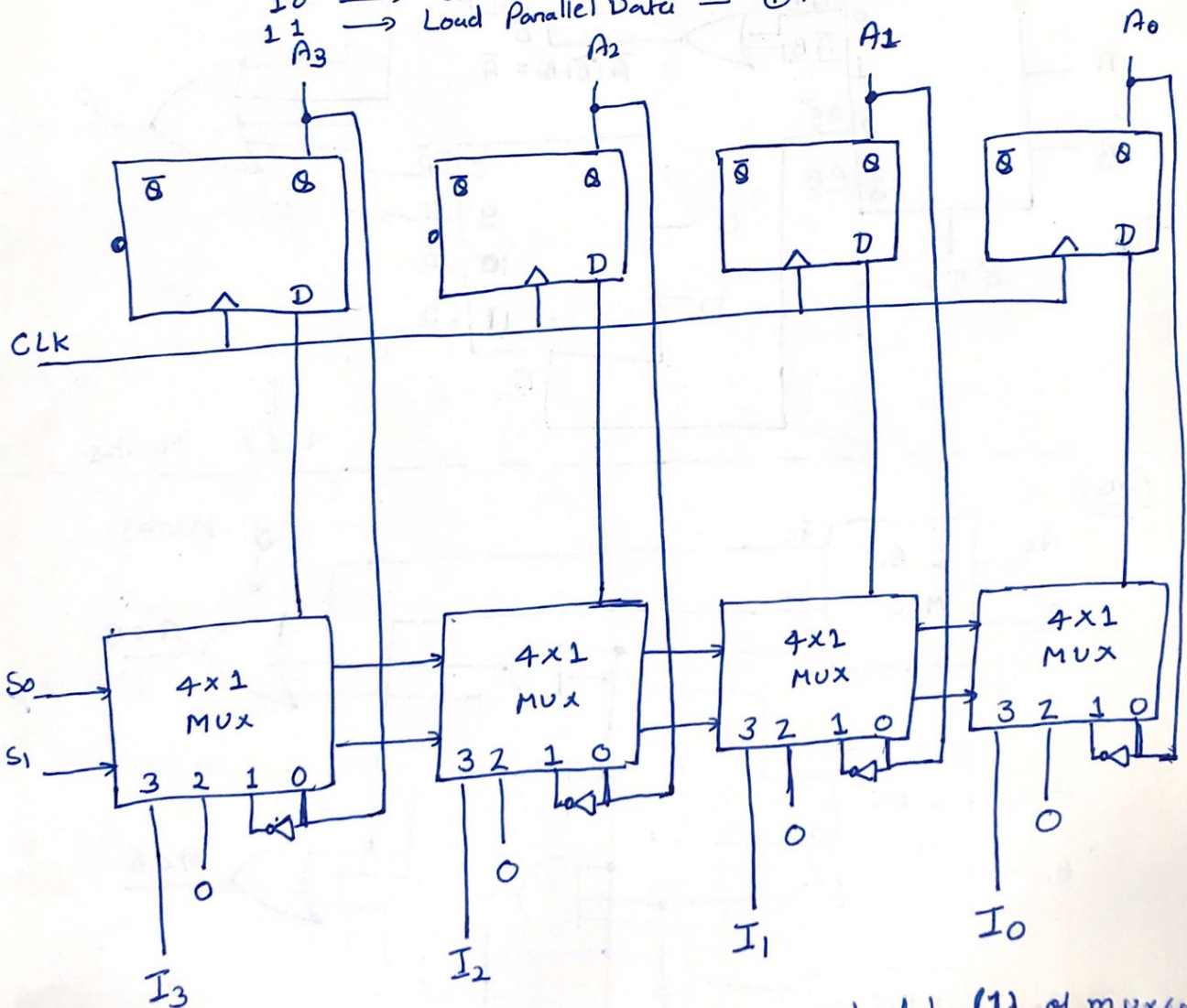
$$A < B \Rightarrow \bar{A}_2 B_2 + (A_2 \odot B_2) \bar{A}_1 B_1 + (A_2 \odot B_2) (A_1 \odot B_1) \bar{A}_0 B_0$$

$$A = B \Rightarrow (A_2 \odot B_2) (A_1 \odot B_1) (A_0 \odot B_0)$$

(1) Marks.  
can be given

Ans 3 :->

- $S_0 S_1$  → No Change — ① Marks  
 $00$  → Complement of the four outputs — ① Marks  
 $01$  → Clear Reg to 0 — ① Marks  
 $10$  → Load Parallel Data — ① Marks  
 $11$



For →  $S_1 S_0 = 01$  →  $\bar{Q}$  can also be connected to (1) of muxes



Ans 4

SR Flip Flop to T-Flip Flop

T	Q(t)	Q(t+1)	S	R
0	0	0	0	X
0	1	1	X	0
1	0	1	1	0
1	1	0	0	1

———— (1) Mark

K-Maps

For S:

T \ Q(t)	0	1
0	0	X
1	①	0

$$S = T \overline{Q(t)}$$

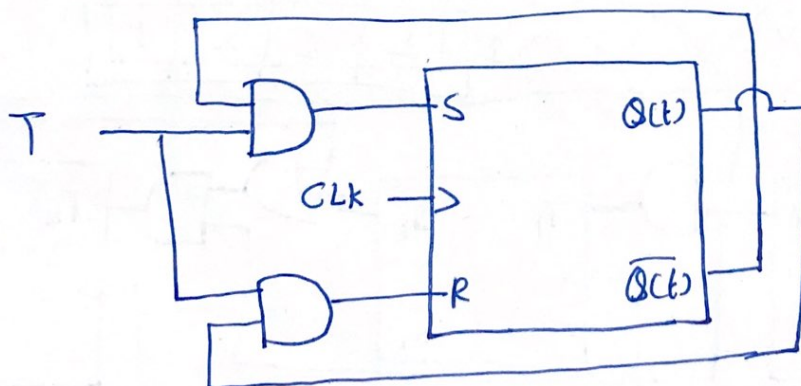
For R:

T \ Q(t)	0	1
0	X	0
1	0	①

$$R = T Q(t)$$

(1) Mark

Ckt Diagram



(1) Mark

Ans 5

✓ (1) Mark

$Q_2$	$Q_1$	$Q_0$	$Q_2^+$	$Q_1^+$	$Q_0^+$	$T_2$	$T_1$	$T_0$
0	0	0	0	0	1	0	0	1
0	0	1	0	1	0	0	1	1
0	1	0	0	1	1	0	0	1
0	1	1	1	0	0	1	1	1
1	0	0	1	0	1	0	0	1
1	0	1	0	0	0	1	0	1
<del>1</del>	<del>1</del>	<del>0</del>	<del>1</del>	<del>1</del>	<del>1</del>			
<del>1</del>	<del>1</del>	<del>1</del>	<del>0</del>	<del>0</del>	<del>0</del>			

K-Maps:-

For  $T_2$ :-

$$T_2 = Q_1 Q_0 + Q_2 Q_0$$

$$= Q_0 (Q_1 + Q_2)$$

For  $T_1$ :-

$$T_1 = \overline{Q_2} Q_0$$

For  $T_0$ :-

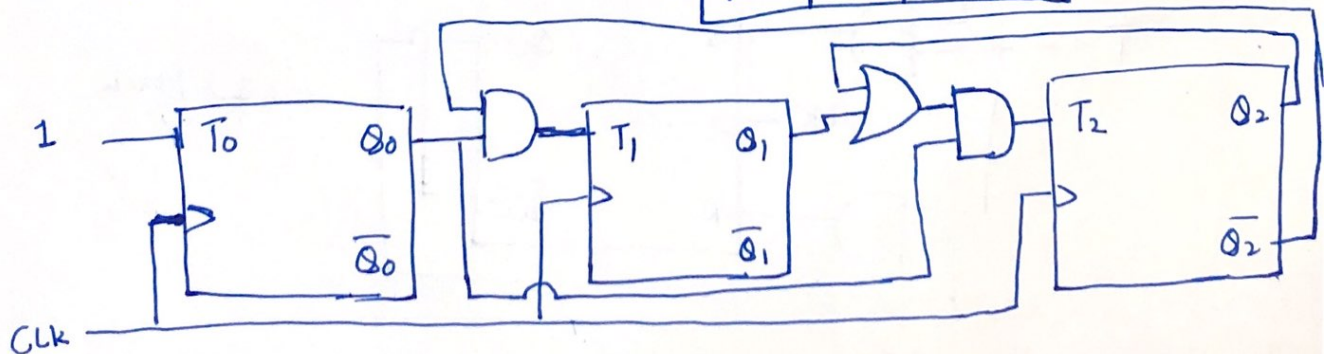
$$T_0 = 1$$

$Q_0$	$Q_1, Q_2$	00	01	11	10
0				X	
1		1	X		1

$Q_0$	$Q_1, Q_2$	00	01	11	10
0				X	
1		1	1	X	

$Q_0$	$Q_1, Q_2$	00	01	11	10
0		1	1	X	1
1		1	1	X	1

(1) Mark



(2) Marks.



Ans 61-

