higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

LOGIC SYSTEMS N5

6 APRIL 2018

This marking guideline consists of 5 pages.

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QUESTION 1

A	B	C	J_A	K_A	J_B	K_B	J_C	K_C	
0	0	0	0	Ø	0	Ø	1	Ø	
0	0	1	0	Ø	1	Ø	Ø	0	
0	1	1	1	Ø	Ø	0	Ø	0	Λ
1	1	1	Ø	0	Ø	0	Ø	1	
1	1	0	Ø	0	Ø	1	0	Ø	
1	0	0	Ø	1	0	Ø	0	Ø	
0	1	0	0	Ø	Ø	1	0	Ø	Λ
1	0	1	Ø	1	0	Ø	Ø	1	

$Q_n \rightarrow Q_n + 1$	J	K
0 → 0	0	Ø
0 → 1	1	Ø
1 → 0	Ø	1
1 → 1	Ø	0

	00	01	11	10	
0	0	0	Ø	Ø	Λ
1	0	1	Ø	Ø	

$J_A = BC$ Λ

	00	01	11	10	
0	Ø	Ø	0	1	Λ
1	Ø	Ø	0	1	

$K_A = /B$ Λ

	00	01	11	10	
0	0	Ø	Ø	0	Λ
1	1	Ø	Ø	0	

$J_B = /AC$ Λ

	00	01	11	10	
0	Ø	1	1	Ø	Λ
1	Ø	0	0	Ø	

$K_B = /C$ Λ

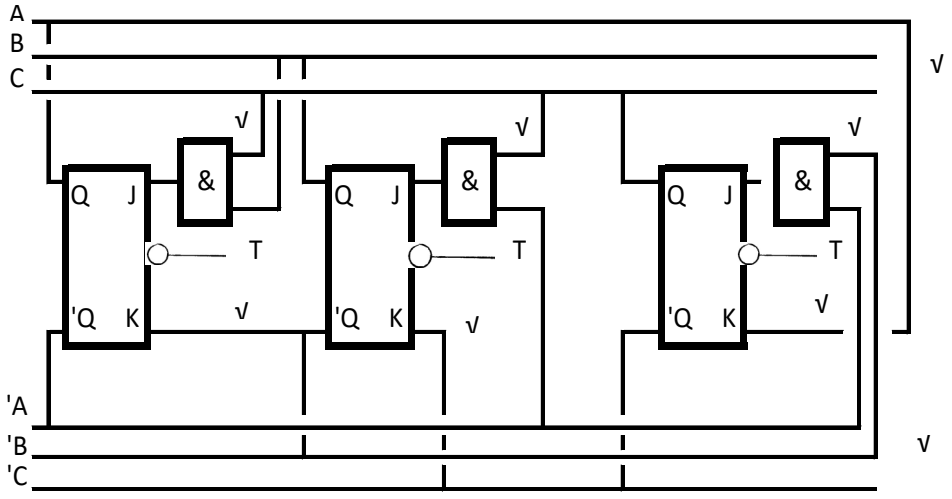
	00	01	11	10	
0	1	0	0	0	Λ
1	Ø	Ø	Ø	Ø	

$J_C = /A/B$ Λ

	00	01	11	10	
0	Ø	Ø	Ø	Ø	Λ
1	0	0	1	1	

$K_C = A$ Λ

(7)

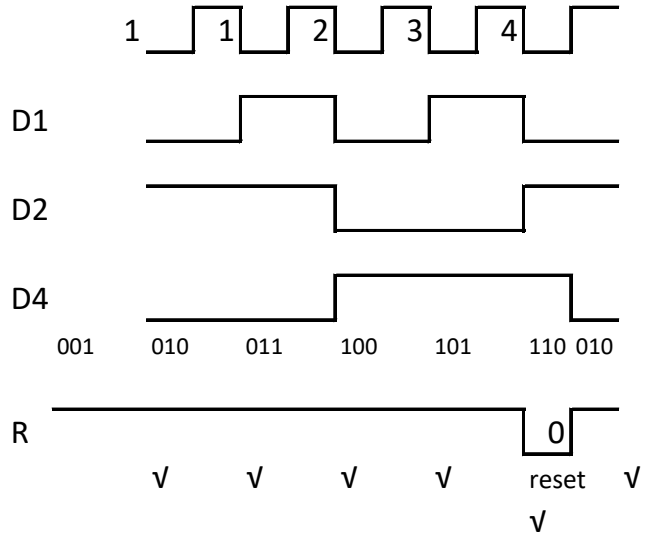


(8)

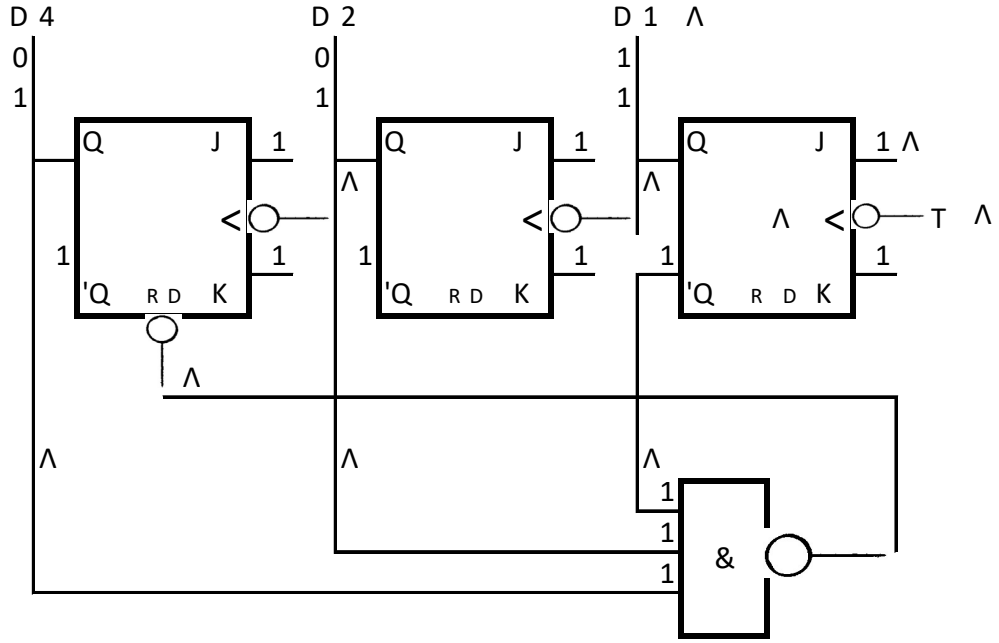
(8)
[15]

QUESTION 2

	D4	D2	D1	T	
	0	1	0	0	T
	0	1	1	1	√
	1	0	0	2	√
	1	0	1	3	√
Reset	1	1	0	4	√
	0	1	0		



(10)



Λ= 1/2 mark 10 * 1/2 = 5 marks

(5)
[15]

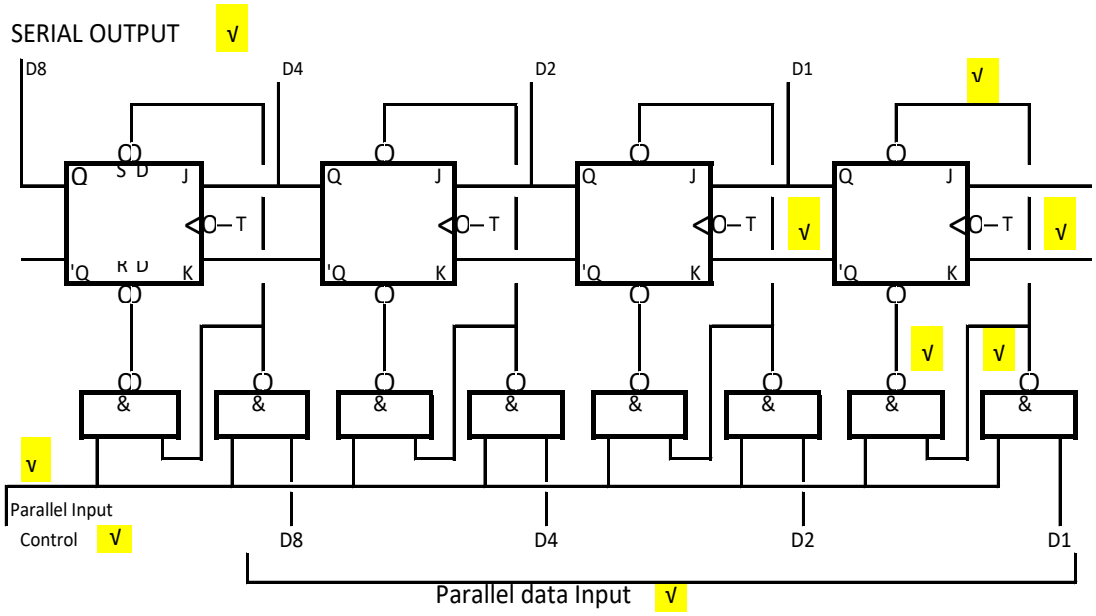
QUESTION 3

3.1 True
3.2 True
3.3 True
3.4 False
3.5 False
3.6 True
3.7 False
3.8 True
3.9 False
3.10 False
3.11 True
3.12 True
3.13 True

(13 × 1) **[13]**

QUESTION 4

4.1



(9) (9)

4.2 Synchronous (1)

4.3 Four (1)

4.4 One (1)
[12]

QUESTION 5

5.1	K
5.2	M
5.3	O
5.4	N
5.5	I
5.6	J
5.7	L
5.8	F
5.9	C
5.10	G
5.11	A
5.12	H
5.13	E
5.14	B
5.15	D

(15 × 1) **[15]**

QUESTION 6

6.1	A, B, C	(Any 2 × 1)	(2)
6.2	B, C		(2)
6.3	A, D, E, F, G,		(5)
6.4	C		(1)
6.5	A, B		(2)
6.6	E, F		(2)
6.7	C		(1)
			[15]

QUESTION 7

7.1	D, H		(2)
7.2	D, F, H		(3)
7.3	A, B, C, E, G		(5)
7.4	B, C, F, G	(Any 3 × 1)	(3)
7.5	C		(1)
7.6	G		(1)
			[15]

TOTAL: 100

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