Printed page: 2. Subject Code: ACSE0304

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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute)

Affiliated to Dr. A.P. J. Abdul Kalam Technical University, Uttar Pradesh, Lucknow

Course- B.Tech **Branch- CSE**

Semester- 3rd **Third Sessional Examination** **Year- (2021 - 2022)**

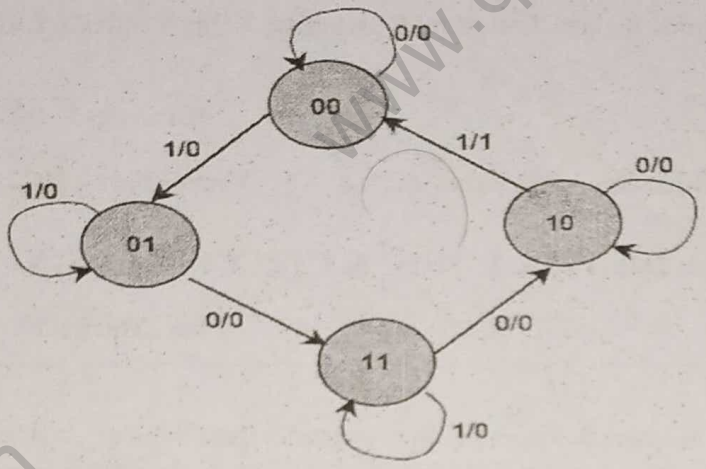
Subject Name: DIGITAL LOGIC & CIRCUIT DESIGN

Time: 1.15Hours **[SET- B]** **Max. Marks:30**

General Instructions:

- This Question paper consists of 2pages & 5 questions.It comprises of three Sections, A, B, and C
- Section A -Question No- 1 is objective type questions carrying 1 mark each, Question No- 2 is very short answer type carrying 2 mark each. You are expected to answer them as directed.
- Section B - Question No-3 is Short answer type questions carrying 5 marks each. Attempt any two out of three questions given.
- Section C -Question No. 4 &5are Long answer type (within unit choice) questions carrying 6marks each. Attempt any one part *a* or *b*.

		SECTION – A	[08Marks]	
1.	All questions are compulsory		(4×1=4)	
	a.	How many flip-flops are required to construct a decade counter? (a) 4 (b) 8 (c) 5 (d) 10	(1)	CO3
	b.	If present state of JK flip flop is 0 and next state is 1 then input of JK flip flop will be_____ (a) 0 1 (b) 0 0 (c) 1 X (d) 1 0	(1)	CO3
	c.	In a 3-bit asynchronous up counter, the initial content is_____ (a) 000 (b) 001 (c) 100 (d) 111	(1)	CO3
	d.	The number of clock pulse required to store 4 bit data in a PIPO shift register is _____ (a) 4 (b) 1 (c) 3 (d) none of these	(1)	CO3
2.	All questions are compulsory		(2×2=4)	
	a.	What is the difference between Register and counters?	(2)	CO3
	b.	Distinguish between Latch and Flip Flop with example	(2)	CO3

		SECTION – B	**[10Marks]**	
3.		**Answer any two of the following-**	**(2×5=10)**	
	a.	What do you mean by Race around Condition ? How it will be avoided?	**(5)**	**CO3**
	b.	Draw the basic logic diagram of JK flip flop using NAND gate and find the truth table, characteristic table and excitation table of JK flip flop.	**(5)**	**CO3**
	c.	Write the state table for the given state diagram 	**(5)**	**CO4**
		SECTION – C	**[12Marks]**	
4		**Answer any one of the following-**	**(1×6=6)**	
	a.	Design a MOD-6 Asynchronous counter with suitable diagrams	**(6)**	**CO3**
	b.	For the clocked T- flip flop write the sate table, draw the state diagram and write the state equation	**(6)**	**CO4**
5.		**Answer any one of the following-**	**(1×6=6)**	
	a.	Write the steps for Flip flop conversion and convert JK flip flop to T flip flip flop.	**(6)**	**CO3**
	b.	Write the short notes on (i) Ring Counter (ii) Johnson Counter	**(6)**	**CO3**