[Total No. of Questions: 12]

S.E. (E&TC/ Electronics)

DIGITAL ELECTRONICS

(204185) (2012 Course)

Time : 2 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12 .***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***
5) ***Use of logarithmic tables, slide rule and electronic non programmable calculator is allowed.***

Q1 a. Explain following characteristics of digital ICs

1. Noise margin
2. Fan in & Fan out **02**

b Simplify and implement following expression using K-map.

$Y=\sum m\ (1,5,6,7,11,12,13,15)$ **04**

OR

Q2 a Draw CMOS circuit for NOR gate. **02**

Design and implement following function using 4:1 multiplexer
$F=\sum m(1,3,4,5)$ **04**

Q3 a Draw and explain TTL to CMOS interface. **04**

b What do you mean by multiplexure tree? Explain. **02**

OR

Q4 a Give comparisons between TTL, ECL and CMOS logic families. **04**

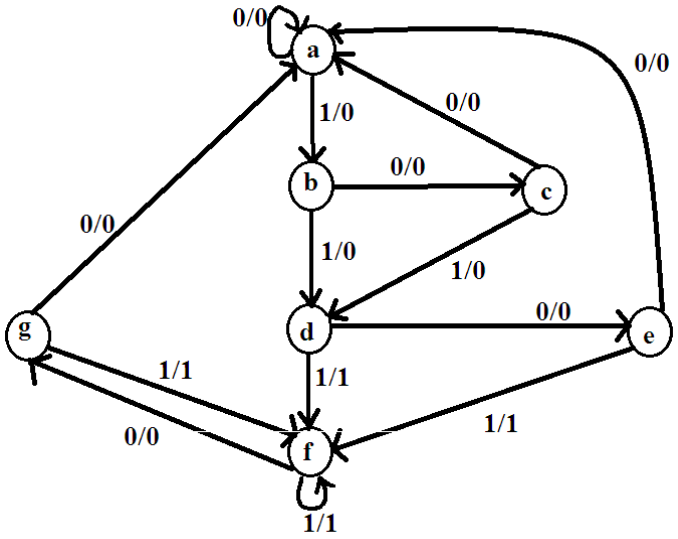
	b	What do you mean by priority encoder?	**02**
Q5	a	Draw and explain SR Flip Flop using NAND gates.	**02**
	b	Convert D to T flipflop	**04**

OR

Q6	a	What is clock skew and clock jittering in synchronous circuits?	**02**
	b	Design a mod-6 synchronous counter.	**04**
Q7	a	Compare Mealy machine with Moore machines.	**02**
	b	Design a sequence detector to detect the sequence 110, using JK flip-flops. Use Mealy Machine	**04**

OR

Q8 Reduce following state diagram



06

Q9	a	Draw and explain CPLD with it's block diagram.	**06**
	b	Design seven-segment decoder using PLA.	**07**

OR

Q10	a	Differentiate between static and dynamic RAM?	**04**
	b	Compare between different types of PLDs.	**03**

	c	Implement following function using PLA $F_1 (A, B, C) = \sum M (0, 2, 5, 7)$ $F_2 (A, B, C) = \sum M (2, 3, 4, 5)$	**06**
Q11	a	Differentiate between signals and variables.	**04**
	b	What is a structural type of modeling? Explain with an example	**04**
	c	Write VHDL code for 3:8 decoder using case statement	**05**

OR

Q12	a	Explain architecture with different modeling styles.	**06**
	b	Explain the difference between concurrent and sequential statements.	**04**
	c	Explain loop statement with example.	**03**

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