

[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**

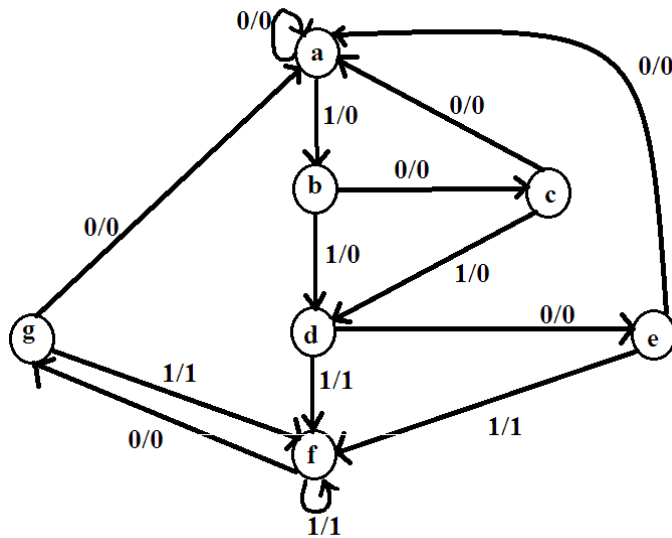
b Design a mod-6 synchronous counter. **04**

**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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