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S.E. (Information Technology) (I Semester) EXAMINATION, 2019

DIGITAL ELECTRONICS AND LOGIC DESIGN

(2015 PATTERN)

Time : Two Hours

Maximum Marks : 50

N.B. :— (i) Answer Q. Nos. 1 or 2, 3 or 4, 5 or 6, 7 or 8.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Assume suitable data, if necessary.

1. (a) Convert the following octal number into its equivalent Binary
Decimal and Hexadecimal 357.3₈. [6]

(b) Design and draw four bit Excess-3 adder using IC 7483.[6]

Or

2. (a) What is Logic Family ? Explain the terms : [6]

(i) Fan out

(ii) Propagation Delay.

(b) Design Full Adder using IC 74153. [6]

3. (a) Compare combinational circuits with sequential circuits. Convert
JK Flip-Flop into SR flip-flop. [6]

(b) Draw 3-bit Ring and Twisted ring counter. Draw state diagram
for 3-bit Ring and Twisted ring counter assuming initial state
as 001. [7]

Or

4. (a) Design 3-bit Synchronous up counter with JK flip-flops. [6]

(b) Design a sequence generator to generate the following sequence
10101 using JK flip-flop. [7]

P.T.O.

5. (a) Explain the difference between CPLD and FPGA. [6]
(b) Draw ASM chart for 2-bit binary down counter having one
enable line such that : E = 1 (Counting enabled), E = 0 (Counting
disabled). [6]

Or

6. (a) Implement the following function using PLA : [6]
 $F_1(A, B, C) = \sum m(0, 2, 5, 6)$ $F_2(A, B, C) = \sum m(1, 4, 5, 6)$.
(b) Design and implement 3-bit gray to binary code converter using
PAL. [6]

7. (a) State and explain any three data types supported by VHDL.[6]
(b) Explain the process statement in behavior model of VHDL with
respect to syntax, sensitivity list and declarative part. [7]

Or

8. (a) What is Structural Modeling ? Implement full Adder using
Structural Modeling. [6]

(b) What is VHDL ? Explain entity-architecture declaration for
2-bit NAND and OR gate. [7]

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