

Total No. of Questions : 8]

SEAT No. :

P3839

[4760] - 292

[Total No. of Pages :2

**M.E. (E & TC) (VLSI & Embedded System)
ADVANCED DIGITAL SYSTEM DESIGN
(2008 Pattern) (Semester - II) (Elective - III) (504191)**

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answer any three questions from each sections.*
- 2) *Answers to the two sections should be written in separate answer books.*
- 3) *Assume Suitable data, if necessary.*
- 4) *Figures to the right indicates full marks.*
- 5) *Use of scientific Calculator is allowed.*

SECTION - I

- Q1)** a) Design a sequential circuit that computes the product of two four bit numbers. **[10]**
- b) Describe the design of RISC and CISC processor. **[8]**
- Q2)** a) Draw and explain ASM chart for shift and add multiplier. **[8]**
- b) For digital system, explain the following: **[8]**
- i) Reliability and reliability function
 - ii) Failure rate & MTBF
- Q3)** a) What is control unit? Explain any one method of control unit implementation with necessary code, specifications & block schematic? **[8]**
- b) Implement the switching function. $f = x_1x_2 + x_1x_3$ **[8]**
- i) Which hazard exists in the circuit.
 - ii) Derive the hazard free circuit for the above switching function.

P.T.O.

Q4) Write short notes on:(Any four). **[16]**

- a) Static and Dynamic Hazards
- b) Fault tree analysis
- c) Switch Debouncing
- d) Address and data path architecture of CPU
- e) ATM packet Generator

SECTION - II

Q5) a) What is SRAM cell? Design 2×2 array of SRAM cell and explain its operation. **[10]**

b) Explain an interfacing diagram of 486 bus with microprocessor? **[8]**

Q6) a) What is system reliability? How it is calculated for digital system? **[8]**

b) How BIST scheme is implemented for sequential circuit? **[8]**

Q7) a) Write a short note on Boundary scan. **[8]**

b) Model 1k×8 dual port RAM using VHDL. **[8]**

Q8) Write a short note on: (Any four) **[16]**

- a) ATM switch
- b) System Integrity
- c) Scan path Technique
- d) ASM & FSM
- e) IEEE 486 Bus.

