

Reg. No.

END SEMESTER DEGREE EXAMINATION, APRIL/MAY - 2019

SUBJECT: EMBEDDED SYSTEM DESIGN [ICE 4002]

TIME: 3 HOURS

MAX. MARKS: 50

(3+3+4)

(3+3+4)

(2+3+5)

(2+4+4)

Instructions to candidates : Answer ALL questions and missing data may be suitably assumed.

- 1A Explain any two IC technologies.
- 1B Define time to prototype and time to market. Using the revenue model, compute the percentage revenue loss if D = 7 and W = 10. If the company whose product entered the market on time earned a total revenue of \$35 million, how much revenue did the company that entered the market 7 months late lose?
- 1C Design a single purpose processor that outputs Fibonacci numbers (i.e 1, 1, 2, 3,..... upto N places). Start with a function computing the desired result, obtain the state diagram and sketch a probable datapath.

2A Brief the different techniques for optimizing custom single purpose processors.

- 2B Sketch the State diagram templates. List the steps for constructing the datapath of a single purpose processor.
- 2C Explain the General Purpose Processor architecture with block diagram.
- 3A Explain the criteria for selecting a microprocessor.
- 3B Describe the software development process with block diagram.
- 3C With block diagram, explain direct and two way set associative cache mapping techniques.
- 4A Design 2K X 16 ROM using 1K X 8 ROMs.
- 4B What is preemptive scheduling? How are the processes scheduled using Rate Monotonic and Deadline Monotonic scheduling? Explain with examples.
- 4C Obtain the sequential program model from the state machine model of elevator controller given in the Fig. Q4C using language subset approach.
- 5A Describe the practical issues related to computer based control.
- 5B Explain the metrics and performance parameters for evaluating embedded control system design objectives.

(5+5)



Fig.Q4C
