

MANIPAL INSTITUTE OF TECHNOLOGY MANIPAL A Constituent Institution of Manipal University

SEVENTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.) END SEMESTER EXAMINATIONS, DEC- 2017

SUBJECT: REAL TIME EMBEDDED SYSTEMS [ICE 4003]

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ALL the questions.
- Missing data may be suitably assumed.
- 1A. Explain the ideal top down design process with block diagram and describe how it enhances the productivity.
- 1B. Using the revenue model, compute the percentage revenue loss if D = 5 and W = 10.
 If the company whose product entered the market on time earned a total revenue of \$25 million, how much revenue a company will generate that entered the market after 5 months?
- 2 **1C.** Define time to market and NRE cost. 5 2A. Describe Flash memory and Erasable Programmable ROM with necessary figures. 3 Describe the software development process in case of an embedded system with **2B.** block diagram. List the tools used for testing and debugging. 2 **2C.** Explain Time sliced Round Robin Scheduling. 5 **3A**. With block diagram explain assembly level language to machine language conversion process. What are the advantages and limitations of assembly level language based development? 3 **3B**. Explain any two program models with relevant examples. 2 **3C.** What are the main requirements of POSIX RT? 4 **4A.** Explain the host target approach in Real Time Systems. 4 **4B**. Three processes with process IDs P1, P2, P3 with estimated completion time 10, 5, 7 milliseconds respectively, enters the ready queue together. Calculate the waiting time and Turn Around Time (TAT) for each process and the average waiting time and

average Turn Around Time in Shortest Job First (SJF) Scheduling algorithm.

4C.	Define throughput and Turn Around Time.	2
5A.	Explain IEEE 802.5 protocol.	5
5B.	Briefly explain token bus architecture for real time communication in LAN.	3
5C.	With relevant figures explain global priority based scheduling.	2
