

B. Tech.
(SEM. VIII) EVEN SEMESTER THEORY EXAMINATION 2017-18
REAL TIME SYSTEM

Time: 3 Hours

Total Marks: 100

Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

- 1. Attempt all questions in brief. 2 x 10 = 20**
- a. Difference between hard and soft Real time systems?
 - b. How to overcome the blocking of lower priority by higher priority task?
 - c. Define Byzantine failures?
 - d. How to map perfect clock and actual clock for real time system?
 - e. What is the drawback of AED algorithm?
 - f. What is MISS and HIT?
 - g. What are the Issues in Real time computing?
 - h. Write short notes about Task scheduling.
 - i. What is CAN?
 - j. List the timing specifications for good real time language.

SECTION B

- 2. Attempt any three of the following: 10 x 3 = 30**
- a. What are the characteristics of 'Real Time System'? Also explain the timing constraints of real time system.
 - b. Explain periodic task and aperiodic task with suitable example. What are the differences between fixed priority and dynamic priority scheduling approach? Explain which one is more suitable for periodic tasks.
 - c. When DM algorithm fails RM always fails and when DM finds a feasible schedule then sometimes RMA fails. Explain this with example?
 - d. Discuss the real time characteristics of aircraft monitoring system in terms of embeddedness, concurrency and reliability.
 - e. What are the contentions based protocols? Describe the virtual time carrier sense multiple access (VTCSMA) algorithm.

SECTION C

3. **Attempt any *one* part of the following:** **10 x 1 = 10**
- (a) Explain why predictability is an important requirement of a real time system. Discuss different techniques to enforce this requirement.
 - (b) What is real time system? Explain its various components with a suitable block diagram.
4. **Attempt any *one* part of the following:** **10 x 1 = 10**
- (a) What is deferrable server? Explain the time demand analysis method.
 - (b) Explain the terms schedulers and uniprocessor scheduling.
5. **Attempt any *one* part of the following:** **10 x 1 = 10**
- (a) Why the term avoidance blocking is given to priority ceiling protocol? How do you compute the blocking time? Explain with example.
 - (b) Discuss basic features and governing rules of Preemption Ceiling Protocol and mention its relative merits over Priority ceiling protocol.
6. **Attempt any *one* part of the following:** **10 x 1 = 10**
- (a) Draw the real-time communication model. Identify at least two factors which contribute to delay jitter in real-time communication and explain how they cause jitter ?
 - (b) What do you mean by Temporal Distance Constraints? Explain Scheduling of Tasks with Temporal Distance Constraints.
7. **Attempt any *one* part of the following:** **10 x 1 = 10**
- (a) Explain the time services that a Real-Time Operating System (RTOS) is expected to support. Also, briefly highlight how timer services are implemented in a real-time operating system.
 - (b) Discuss the different issues involved for the network architecture for real time communication.