

**B TECH**  
**(SEM VIII) THEORY EXAMINATION 2018-19**  
**REAL TIME SYSTEM**

Time: 3 Hours

Total Marks: 100

**Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

- 1. Attempt all questions in brief. 2 x 10 = 20**
- a. Distinguish traffic shaping and policing.
  - b. What is real time system? How it is different from general purpose Operating system.
  - c. Classify RTS, based on time constraints.
  - d. What is meant by QoS routing?
  - e. What is jittered?
  - f. List various real time system development methodologies.
  - g. What is critical section?
  - h. What is difference between hard real time and soft real time system?
  - i. Define Target OS.
  - j. Write any four key features of RTOS.

**SECTION B**

- 2. Attempt any three of the following: 10x3=30**
- a. Explain the scheduling of Flexible computation in detail with suitable example.
  - b. Explain the difference between clock-driven, event-driven and hybrid scheduler for real time task.
  - c. What is periodic task model? Explain execution time and phase periodic tasks.
  - d. Explain the notation and various assumptions for periodic driven Scheduling. Also explain the various fixed priority scheduling algorithm?
  - e. What is a DDC? What are the advantages of DDC over analog control? Discuss PID control algorithm.

**SECTION C**

- 3. Attempt any one part of the following: 10x1=10**
- a. What is timing constraint? Explain types of timing constraints in detail.
  - b. What is the difference between synchronous and asynchronous I/O? Which one is better suited for use in real-time application?
- 4. Attempt any one part of the following:**
- a. Explain the main techniques available to achieve hardware fault tolerance.
  - b. Explain basic priority ceiling protocol and priority inheritance protocol in detail?

**5. Attempt any *one* part of the following:**

- a. Define real time system. Explain the different classification of RTS with examples.
- b. What are the drawbacks in using Unix kernel for developing real time applications?

**6. Attempt any *one* part of the following:**

- a. What do you understand by the term “priority inversion” in the context of real time task scheduling? When several tasks share a set of critical resources, is it possible to avoid priority inversion altogether by using a suitable task scheduling algorithm? Explain your answer.
- b. Differentiate between a performance constraint and a behavioral constraint in real-time system.

**7. Attempt any *one* part of the following:**

- a. Why is it necessary to synchronize the clocks in a distributed real time system? Discuss the relative advantages and disadvantages of the centralized and distributed clock synchronization schemes.
- b. What is task management? List the function of task management. With a neat diagram, discuss different tasks.

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