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Sub Code: NCS-082
Roll No.

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.

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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.

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