Sub Code: RCAE43

Paper Id: 214511 Roll No: | | | | | | | | | | | | | |

MCA
(SEM V) THEORY EXAMINATION 2019-20
REAL TIME SYSTEMS

Time: 3 Hours ***Total Marks: 70***

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

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

(a)	What do you mean by a real-time system?
(b)	Differentiate between embedded system and real-time system.
(c)	Distinguish traffic shaping and policing.
(d)	What is meant by QoS routing?
(e)	
(f)	What are application areas where real time systems are useful.
(g)	Define soft real time system with an example.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

(a)	What is the difference between a performance constraint and a behavioural constraint in real-time system?
(b)	Can we consider EDF as a dynamic priority scheduling algorithm for real-time tasks?
(c)	Why are algorithms which can satisfactorily schedule real-time task on multiprocessors not satisfactory to schedule real-time tasks on distributed systems?
(d)	What are the drawbacks in using kernel for developing real-time applications?
(e)	How does dynamically changing the priority levels of tasks property affect real-time systems?

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a)	What are the distinguishing characteristics of periodic, aperiodic, and sporadic real-time tasks?
(b)	What is it required to synchronize the clocks in a distributed real-time system? Compare the advantages and disadvantages of centralized and the distributed clock synchronization.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a)	What is the difference between synchronous and asynchronous I/O? Which one is better suited for use in real-time applications?
(b)	Explain the following: i) Functional parameter of a job ii) Fixed, jittered and sporadic release time

5. Attempt any *one* part of the following: 7 x 1 = 7

(a)	What are the frames and major cycles in cyclic schedules? What are the different frame size constraints?
(b)	What are the different methods to improve the average response time of aperiodic jobs? Explain.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Explain the following in detail: (i) Polling server (ii) Deferrable server
(b)	Explain the priority exchange algorithm

7. Attempt any *one* part of the following: 7 x 1 = 7

(a)	What is critical section? Explain mutual exclusion.
(b)	What do you mean by resource conflicts and blocking? Explain.

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