Code No: **RT42054B** **R13** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

EMBEDDED & REAL TIME SYSTEMS

(Computer Science and Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A ***(22 Marks)***

1. a) Give the classification of an embedded system. [4]
   b) What is the Significance of Program Status Word? [4]
   c) What is task control block? [3]
   d) Explain the concept of shared memory. [4]
   e) Define Priority ceiling. [3]
   f) Draw the block diagram of ARM based microcontroller. [4]

PART–B ***(3x16 = 48 Marks)***

2. a) Explain the different on-board communication interfaces in brief. [8]
   b) Explain the role of Watchdog Timer in embedded system. [8]

3. a) Explain the memory organization for lower 128 bytes of internal RAM for standard 8051 architecture. [8]
   b) What is non-operational quality attribute? Explain the important non-operational quality attributes to be considered in any embedded system design. [8]

4. a) Explain the various activities involved in the creation of process and threads. [8]
   b) Explain the different types of non-preemptive scheduling algorithms. State the merits and de-merits of each. [8]

5. a) With an example, explain the use of mail boxes and pipes. [8]
   b) What are Message Queues? Explain how Message Queues are used for communication among processes. [8]

6. a) What is semaphore? Explain the different types of semaphores. Where is it used? [8]
   b) Briefly discuss about producer-consumer problem with suitable coding. [8]

7. a) What is the difference between a simulator and an emulator? [8]
   b) Explain the different phases of embedded product development life cycle. [8]