

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

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]