

APJ Abdul Kalam Technological University  
Ernakulam II Cluster  
Second Semester M.Tech Degree Examination May 2017

**05EC 6006 EMBEDDED REAL TIME SYSTEMS**

Duration: 3 hrs.

Max. Marks: 60

1. a) What is a critical section of a code? What are the mechanisms for mutual exclusion? (6 Marks)
- b) With an example illustrate how  $\mu\text{C}/\text{OS-II}$  makes a highest priority task ready to run. (6 Marks)
  
2. a) What is the use of `OSTimeDly()` function and how it is implemented? (6 Marks)
- b) How does the function `OSTimeDlyHMSM()` work in  $\mu\text{C}/\text{OS-II}$ ? (6 Marks)
  
3. a) How the mailbox is used as a binary semaphore? (6 Marks)
- b) How the mailbox is used instead of `OSTimeDly()` function? (6 Marks)
- c) What is the data structure of event control block? How a highest priority task is found from wait list if an event occurs? (6 Marks)

**OR**

4. a) What are the elements associated with semaphores? What are the different types of semaphores? (5 Marks)
- b) How a queue is used as a counting semaphore? (5 Marks)
- c) How the mailbox is used instead of `OSTimeDly()` function. (8 Marks)
  
5. a) How the memory control block is used to release the use of a partition? (4 Marks)
- b) How can be create a memory partition using `OSMemCreate()`? (7 Marks)

- c) Write the steps to obtain and return a memory blocks using the functions *OSMemGet()* and *OSMemPut()*. (7 Marks)

**OR**

6. a) How can be create a memory partition using *OSMemCreate()*? (8 Marks)
- b) What is the data structure of memory control blocks? (5 Marks)
- c) With a suitable example show how the dynamic memory allocation feature can be used in  $\mu$ C/OS-II. (5 Marks)