Registration No. :

Total number of printed pages – 2

B. Tech

PECS 5403

Seventh Semester (Special) Examination – 2013

REAL TIME SYSTEMS

BRANCH : EC, ETC, IEE

QUESTION CODE : D 436

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory and any five from the rest.

The figures in the right-hand margin indicate marks.

1. Answer the following questions :   2×10

    (a) What is real time System ?

    (b) What is the difference between a performance constraint and a behavioral constraint in a real-time system ?

    (c) What is a "fail-safe" state ?

    (d) Give an example of an extremely safe but unreliable system ?

    (e) Describe an open system ?

    (f) Explain the differences between a system call and a function call.

    (g) How does an open system compare with a close system ?

    (h) What are the drawbacks in using Unix kernel for developing real time applications ?

    (i) List the different types of timing constraints that can occur in a real-time system.

    (j) What is the difference between synchronous and asynchronous I/O ?

2. (a) Discuss about a basic model of a real time system.   5

    (b) Write characteristics of Real-Time Systems.   5

3. (a) Write about Sporadic Task with its characteristics. 5

   (b) Write Table-Driven Scheduling with example. 5

4. (a) Write about Priority Ceiling Protocol (PCP) ? 5

   (b) It is difficult to achieve software fault tolerance as compared to hardware fault tolerance. Why ? 5

5. (a) Discuss about Centralized clock synchronization. 5

   (b) Discuss Utilization Balancing Algorithm. 5

6. (a) What are the shortcomings of Windows NT for developing a hard real-time application ? 5

   (b) List the important features that are required to be supported by a RTOS. 5

7. (a) Traditional 2PL protocol is not suitable for use in real-time databases. Why ? 5

   (b) Discuss which category of concurrency protocol is best suited under what circumstances ? 5

8. Write short notes on any **two** of the following : 5×2

   (a) Rate monotonic algorithm (RMA)

   (b) Handling task dependencies

   (c) Buddy Algorithm

   (d) POSIX-RT.