MEVD-202

M.E./M.Tech. (Second Semester)

EXAMINATION, June 2012

(Grading/Non-Grading)

REAL TIME OPERATING SYSTEM

Time: Three Hours

Maximum Marks: GS:70

Note: Attempt any five questions.

1. (a) Discuss the problems faced in the design and implementation of an operating system.
   (b) How are static and dynamic linking handled in memory management? Explain it with an example.

2. (a) Discuss briefly the various issues involved in Implementing Interprocess Communication (IPC) in message passing systems.
   (b) What characteristics should be considered when describing the nature of an operating system? Using the characteristics listed above, describe the nature of the different types of operating system, clearly show the difference between them.

3. (a) Explain memory requirements in foreground/background and multitasking kernel.
   (b) What are common methods of obtaining exclusive access to shared resources? Explain with suitable example and diagram.

4. (a) Discuss interrupt and interrupt timings of foreground/background, non-pre-emptive and pre-emptive kernel.
   (b) If EDF can be shown to meet deadlines and potentially has 100% CPU resources utilization then why is it not typically the hard real time policy of choice? What are the drawbacks to using EDF compared to RM/DM? In an overload situation, how will EDF fail?

5. (a) Discuss the general architecture of RTOS with the help of diagram. Also discuss the broad categories of kernel.
   (b) Elaborate the different methods of scheduling in multiprocessor and distributed systems.

6. (a) What are the various performance metrics of real time operating system? Explain them.
   (b) Define porting of COS II. Discuss general requirements of processor to port COS II along with hardware/software architecture.

7. (a) Briefly describe the role of UNIX as a real time operating system. Explain process management of UNIX.
   (b) Explain briefly the following:
      i. Host target approach
      ii. Fully pre-emptable kernel

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8. Write short notes on any four of the following:

  a) Vx Works
  b) Task Management
  c) Priority Inversion Problem
  d) PSOS
  e) VRTX

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