Con. 5829-09. S.E. (Comp) Sem IV (R)   SP-7814
(REVISED COURSE)
Operating System
(3 Hours)   [Total Marks : 100
31/12/09
2·30 to 5·30

N.B.:(1) Question No. **1** is **compulsory.**
    (2) Attempt any **four** questions out of remaining **six** questions.

1. (a) Explain features of Modern operating system.   5
   (b) What are requirements of mutual exclusion ? Explain Peterson's algorithm   5
      for mutual exclusion.
   (c) Explain effect of page type (too small or too large) on performance.   5
   (d) Differentiate between Monolithic Kernel and Micro Kernel.   5

2. (a) What is PCB ? Explain importance of PCB in multiprocesor environment.   10
   (b) What is deadlock ? Explain two approaches for deadlock avoidance.   10

3. (a) Explain ULTs and KLTs in detail.   10
   (b) Consider a system with total of 150 units of memory allocated to three processes   10
      as shown :

Process	Max	Hold
P_1	70	45
P_2	60	40
P_3	60	15

     Apply Banker's algorithm to determine whether it would be safe to grant each
     of following request. If yes, indicate sequence of termination that could be
     possible. If no show reduction of resulting allocation table.
      (i) A fourth process arrives with max need of 60 and initial need of 25
         units.
     (ii) A fourth process arrives with max need of 60 and initial need of 35
         units.

4. (a) What are characteristics of real time operating system and explain in detail   10
      real time scheduling.
   (b) Explain types of processor scheduling.   10

5. (a) State various page replacement policies and calculate hit for (LRU, FIFO, OPT)   10
      for page frame of following sequence where page frame size is three :
          0, 1, 2, 1, 4, 2, 3, 7, 2, 1, 3, 5, 1, 2, 5.
   (b) What are requirements of memory management ? Explain segmentation with   10
      example.

6. (a) What types of files in Unix ? Explain Unix file management.   10
   (b) Explain file allocation in detail.   10

7. Write short notes on the following :   20
    (a) Mobile OS
    (b) Monitor
    (c) I/O buffering
    (d) System calls.