27/12/11 SE CMPN IV CREV OS

Con. 6914-11. **MP-4336**

(3 Hours) **[Total Marks : 100**

N. B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions from remaining **six** questions.
(3) **Figures** to the **right** indicate **full** marks.
(4) Assume **suitable** data if **required**.

1. (a) What is Operating System ? Explain different functions and objectives of operating system. **10**
   (b) Differetiate between Monolithic kernel and microkernel. **5**
   (c) Explain different system calls of operating system. **5**

2. (a) What is Thread ? Explain different types of threads in detail, compare process and thread. **10**
   (b) What is mutual exclusion ? Give software approaches for mutual exclusion. **10**

3. (a) What is Process Management ? Explain various states of process with neat diagram. Also explain all process state transitions. **10**
   (b) Five processes are assumed to have arrived in order P_1, P_2, P_3, P_4, P_5 all at time 0. The burst time and priority is given for each process :— **10**
      (i) Draw Gantt charts using FCFS, STF and priority scheduling. (Smaller number implies higher priority).
      (ii) What is waiting time and turn around time for each process ?
      (iii) Which of the above scheduling algorithms results in minimal average waiting time ?

Process	Burst Time	Priority
P_1	10	3
P_2	1	1
P_3	2	3
P_4	1	4
P_5	5	2

4. (a) What is deadlock ? How to handle deadlock ? 10
   (b) Explain different disk scheduling algorithms with example. 10

5. (a) Calculate the hit and miss using various page replacement methods. (LRU, OPTIMAL, FIFO) for following page frames sequence, (Page frame size 3). 10
   4, 7, 3, 0, 1, 7, 3, 8, 5, 4, 5, 3, 4, 7.
   (b) Explain Unix file system in detail. 10

6. (a) What is Virtual Memory ? Explain with neat digram translation of virtual address into physical address in segmentation. 10
   (b) Explain I/O buttering in detail. 10

7. Write short notes on (any **four**) :— 20
   (a) RAID
   (b) Semaphores
   (c) Producer-consumer Problem
   (d) RTOS-Real Time Operating System
   (e) Mointor.
