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**MANIPAL INSTITUTE OF TECHNOLOGY**
**(A Constituent Institute of ManipalUniversity)**
**MANIPAL-576104**

KNOWLEDGE IS POWER

**V   SEMESTER B.E. (CSE)**
**MAKE UP EXAMINATION -January 2011**
**SUBJECT:   OPERATING SYSTEMS AND UNIX (CSE 307)**

**TIME: 3 HOUR**                                                  **MAX.MARKS: 50**

**Instruction to Candidates**
- **Answer any 5 full questions.**

1 a) Write down about advantages of VM and explain briefly about VM with neat diagram.                                                                      (4)

b) Compare these following.                                                        (2)
   i.    Process and Thread

  ii.    Preemptive and Non preemptive scheduling.

c)  What are the advantages of multithreaded programming?            (2)

d) What resources are used when a thread is created? How do they differ from those when a process is created?                                            (2)

2 a) Calculate the average turnaround time, average waiting time and draw the Gantt chart for the following snap shot  using preemptive priority algorithm.    (5)

| Process | Arrival Time | Burst Time | Priority |
|---------|--------------|------------|----------|
| P1 | 3 | 8 | 3 |
| P2 | 1 | 4 | 1 |
| P3 | 2 | 9 | 4 |
| P4 | 0 | 5 | 5 |

b) What are the requirements for providing solution to the critical section problem and explain briefly? (5)

3 a) Draw a resource-allocation graph for the following situation and check if the system is deadlock and explain.

Process $P_1$ is waiting for resource $R_1$ and using (holding) $R_2$

   $P_2$ is using $R_1$

   $P_3$ is using $R_1$ and waiting for $R_2$

   $P_4$ is using $R_2$ (4)

b) What is the difference between swapping and demand paging concept in memory management. (2)

c) Consider the following page reference stream:

 $R = 0,1,2,3,0,1,4,0,1,2,3,4$

Calculate the number of page faults when number of frames is equal to 3 and 4 using FIFO algorithm. What is the anomaly present in this situation?

(4)

4 a) Given memory partitions of 100KB, 500KB, 200KB, 300KB, 600KB (in order), how would each of the first fit, best fit and worst fit algorithms place processes of 212KB, 417KB,112KB and 426KB (in order). Which algorithm makes the most efficient use of memory? (4)

b) Write down short notes of the following

i.   Pre-paging (3)

ii.  Any three access methods in file systems (3)

5 a) What is the difference between low level formatting and logical formatting?

(2)

  b) What is the purpose of sector slipping concept?  Explain briefly?          (4)

  c) What are the necessary conditions for the deadlock to arise in a system?  (4)


6 a) Explain the following using examples and neat diagram.

  i.    Access matrix with copy rights                                          (3)

  ii.   Access matrix with owner rights.                                        (3)


  b)  What is role of grappling hook program in worm and explain?          (1.5)

  c)  Write briefly about components of Linux system.                      (2.5)


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