Fourth Semester B.Tech. Degree Examination, May 2010
(2008 Scheme)
Branch : Computer Science
08.406 : OPERATING SYSTEMS (R)

Time : 3 Hours
Max. Marks : 100

PART – A

Answer all questions. Each question carries 4 marks.

1. Define the essential properties of multiprocessing OS.
2. What are the on-disk and in-memory structures used in file system design?
3. What is the use of system-wide open file table?
4. What is convoy effect in resource scheduling context?
5. Write short notes on demand paging.
6. What is the function of dispatcher?
7. Why are segmentation and paging schemes sometimes combined into one scheme?
8. What is the drawback of resource allocation graph algorithm in handling deadlocks?
9. Define I/O traffic controller and I/O scheduler.
10. What is the use of channel control units? (10x4=40 Marks)

P.T.O.
PART – B

Answer any one question from each Module.

Module – I

11. a) What are the methods available to protect the files against physical damage and improper access ?
   b) Write short notes on various file access methods.

OR

12. a) Describe the following memory allocation algorithms :
    i) First-fit
    ii) Best-fit
    iii) Worst-fit.
    b) Explain the contiguous allocation method of files. What are its advantages and disadvantages ?

Module – II

13. Consider the following set of process.

<table>
<thead>
<tr>
<th>Process</th>
<th>Arrival Time</th>
<th>Burst Time</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₁</td>
<td>0</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>P₂</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>P₃</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>P₄</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

(The highest priority is 1. The lowest is 5)

Draw the Gantt chart and compute the average turn-around time and average waiting time for FCFS, SJF, preemptive priority and round robin scheduling.
(Time slice = 2 ms).

OR
14. a) Explain the paging hardware with TLB in detail.

b) Consider the following reference string
   1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2
   What is the page fault rate for this reference string if we use a FIFO, LRU and optimal page replacement algorithms with four page frames?

   **Module – III**

15. a) What are the functions of device management?

b) Explain in detail about deadlock detection algorithm.

   OR

16. a) Discuss various disk scheduling algorithms with example.

b) Write short notes on access matrix.