

II B.Tech II Semester Supplementary Examinations,  
November/December 2005  
**OPERATING SYSTEMS AND SYSTEMS PROGRAMMING**  
(Computer Science & Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
All Questions carry equal marks

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1. (a) Distinguish the term multiprocessing from multiprogramming. [8]  
(b) Explain the importance of timesharing w.r.t. the above terms. [8]
2. (a) Stating the optimization criteria, explain the criteria for CPU scheduling algorithms. [6]  
(b) With Gantt-chart illustration, write about Round Robin (RR) CPU scheduling algorithm. [10]
3. (a) What is meant by mutual exclusion? Explain. [6]  
(b) Discuss about implementation of semaphore concept. [10]
4. (a) What are the various ways of managing deadlocks? [6]  
(b) Explain how deadlocks are *detected* and *recovered* [10]
5. (a) Explain the partitioning-based memory management schemes. [10+6]  
(b) Compare the memory management in Windows 2000 with that of Linux.
6. Compare and contrast the file-directory implementation techniques-Acyclic Graph Structured, and General-Graph Structured. [16]
7. (a) What is meant by a 2-pass assembler? [4+12]  
(b) Explain the various data structures used in the 2-pass assembling in detail.
8. (a) State the functions a loader. [4]  
(b) Write about *absolute* linking loader. [12]

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1. (a) Distinguish the on-line and off-line operating system concepts. [8]  
(b) Distinguish the buffering and spooling concepts. [8]
2. (a) What does it mean by preemptive CPU scheduling algorithms? [4]  
(b) Explain the CPU scheduling mechanism in priority scheduling algorithms. [5]
3. Compare and contrast the concurrency specification constructs- fork-join and concurrent statement, with examples. [16]
4. (a) Write the algorithm for detecting deadlocks. Brief the recovery methods. [12]  
(b) Analyze the above algorithm for its computational complexity. [4]
5. (a) Explain the logical memory concept used in Segmentation [6]  
(b) With a neat hardware diagram, explain the Segmentation concept [10]
6. (a) Write about tree-structured file-directory structure. [10]  
(b) Explain the (disk) free-space management techniques. [6]
7. Explain the design of a single pass assembler in detail, giving format of all the data structures used. [16]
8. (a) Explain the concept of Loading. [6]  
(b) Brief the concept of Linking [6]  
(c) Write about relocation briefly. [4]

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1. (a) Giving neat sketches compare the various OS environments. [12]  
(b) Explain the term Multitasking. [4]
2. (a) Explain the criteria for evaluation of CPU scheduling algorithms. [6+10]  
(b) Write about the FCFS CPU scheduling algorithm giving merits and demerits.
3. Compare and contrast the concurrency specification constructs- fork-join and concurrent statement, with examples. [16]
4. (a) Mention and brief the different deadlocks handling approaches. [8+8]  
(b) Explain how deadlocks are prevented with suitable examples
5. (a) Explain the concept of virtual memory. [4]  
(b) With a neat sketch, explain demand paging concept. [12]
6. (a) Explain the typical operations performed on a file and a directory. [6]  
(b) Write about Acyclic Graph-Structured file-directory structure. [10]
7. Explain the design of a *two*-pass assembler in detail, giving format of all the data structures used. [16]
8. (a) What is meant by a macro and macro processor? [8+8]  
(b) Distinguish the terminology: Macro definition, Macro call, Macro expansion.

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1. Giving important phases, explain the time history of OS concepts in detail [16]
2. With Gantt-chart illustration, compare the CPU scheduling in non-preemptive SJF from preemptive counterpart. [16]
3. (a) List the specification means of concurrent programs. [2]  
(b) Write about any one in detail with illustrative examples, giving advantages and disadvantages. [14]
4. State the various deadlock handling methods. Which method is preferable w.r.t following resources. Justify [4x4]
  - (a) Memory accommodation
  - (b) Processor allocation
  - (c) I/O resources allocation
  - (d) File or object access
5. (a) Explain the logical memory concept used in Segmentation [6]  
(b) With a neat hardware diagram, explain the Segmentation concept [10]
6. (a) List and compare the various free-space management techniques. [8+8]  
(b) Discuss the implementation of garbage collection mechanism
7. (a) Name the various data structures and databases used in the 2-pass assembler.  
(b) Draw the flowchart (only) for either pass of the 2-pass assembling. [6+10]
8. (a) What is meant by a macro and macro processor? [8+8]  
(b) Distinguish the terminology: Macro definition, Macro call, Macro expansion.

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