

II B.Tech II Semester Supplementary Examinations, Apr/May 2008
OPERATING SYSTEMS AND SYSTEMS PROGRAMMING
(Computer Science & Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) State the components of a computing system. [2]
(b) Justify the naming of operating system as control program. [6]
(c) List the various mechanisms in the evolution of operating system, giving only the merits and demerits of each. [8]
2. Write about multi-queue CPU scheduling algorithms with and without feedback. [16]
3. (a) Write about monitor (CSP solution) concept. [6]
(b) Write the solution to dining-philosophers problem using monitors concept. [10]
4. (a) State and brief the conditions for a deadlock formation. [8+8]
(b) Write and trace the Safety module (of Bankers' Algorithm)
5. (a) Explain the partitioning-based memory management schemes.
(b) Compare the memory management in Windows 2000 with that of Linux. [10+6]
6. (a) Write about tree-structured file-directory structure. [10]
(b) Explain the (disk) free-space management techniques. [6]
7. (a) What is meant by a 2-pass assembler?
(b) Explain the various data structures used in the 2-pass assembling in detail. [4+12]
8. (a) State the functions a loader. [4]
(b) Write about *absolute* linking loader. [12]

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1. (a) Write about different types of operating system environments. [10]
(b) "I/O instructions (operations) are privileged"-Justify. [6]
2. (a) What does it mean by preemptive CPU scheduling algorithms? [4]
(b) Explain the CPU scheduling mechanism in priority scheduling algorithms. [12]
3. (a) Distinguish a thread from a process. [6]
(b) Write in detail about symmetric multiprocessing. [10]
4. (a) What is a deadlock? [6]
(b) State and compare the various deadlock handling methods. [6]
(c) What is a resource allocation graph? [4]
5. (a) Compare the memory management approaches in UNIX and Solaris. [10]
(b) What is meant by *Relocation*? [6]
6. (a) What is meant by compaction? [6]
(b) List and distinguish the types of fragmentations. [4]
(c) Discuss the implementation of symbolic link. [6]
7. What is meant by assembling? Explain the various elements of assembly language programming through a simple assembly program. [16]
8. (a) What is meant by a macro and macro processor?
(b) Distinguish the terminology: Macro definition, Macro call, Macro expansion. [8+8]

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1. (a) Giving the various components explain how a real-time OS is different from conventional OS. [10]
(b) What is meant by a distributed operating system? [6]
2. (a) Explain how multiprogramming helps improve CPU utilization. [6]
(b) Differentiate -process and program. [4]
(c) Draw the diagram for process control block. [6]
3. (a) Write about monitor (CSP solution) concept. [6]
(b) Write the solution to dining-philosophers problem using monitors concept. [10]
4. (a)) Write the Bankers' algorithm. [10]
(b) Illustrate the above algorithm by taking a typical snapshot of a system. [6]
5. (a) Draw the hardware diagrams (ONLY) of Paging and Segmentation. [10]
(b) Discuss alternatives for *page table* implementation. [6]
6. (a) Write about tree-structured file-directory structure. [10]
(b) Explain the (disk) free-space management techniques. [6]
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+8]
8. (a) What is meant by a macro and macro processor?
(b) Distinguish the terminology: Macro definition, Macro call, Macro expansion. [8+8]

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1. (a) Write about hardware protection in multi-user environment. [9]
(b) Brief the characteristics of real-time OS. [7]
2. (a) Explain the methods for evaluation of CPU scheduling algorithms. [8]
(b) Explain how *simulation* method is more effective than other methods. [8]
3. Explain the problem of critical section (CSP) through illustrative example. [16]
4. (a) What are the different methods for managing deadlocks? [6]
(b) Explain how deadlocks are *prevented*. [10]
5. Write about paging, a memory management scheme, giving example, hardware diagram, and page table implementation. [16]
6. (a) Explain the concepts: File sharing and Record blocking. [12]
(b) Brief the file management in UNIX. [4]
7. Considering a simple assembly language program, explain the process of 2-pass assembling. [16]
8. (a) What is meant by a macro and macro processor?
(b) Distinguish the terminology: Macro definition, Macro call, Macro expansion. [8+8]
