

III B.Tech I Semester Regular Examinations, November 2006
OPERATING SYSTEMS AND SYSTEMS PROGRAMMING
(Electronics & Computer 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 [4]
(c) List the various mechanisms in the evolution of operating system, giving only the merits and demerits of each. [8]
2. (a) Explain the terms-convoy effect, ageing.
(b) Compare the process management in traditional UNIX from that in UNIX SVR4. [8+8]
3. Explain the problem of critical section (CSP) through illustrative example. [16]
4. (a) What are the various ways of managing deadlocks? [6]
(b) Explain how deadlocks are *detected* and *recovered*. [10]
5. Both Paging and Segmentation concepts have some disadvantages. How the concept of combined systems helpful in eliminating these disadvantages. [16]
6. (a) Explain the terms w.r.t a disk system-*seek* and *latency* operations.
(b) Explain the implementation of Symbolic link in Acyclic graph file-directory structure. [8+8]
7. (a) Name the various data structures and databases used in the 2-pass assembler.
(b) Explain the purpose of data structures and databases in detail. [6+10]
8. (a) State the functions a loader. [4]
(b) Write about *absolute* linking loader. [12]

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1. (a) Compare and contrast the features of UNIX OS with Windows 2000 [12]
(b) Explain the term-Multitasking. [4]
2. With Gantt-chart illustration compare the CPU scheduling in RR from preemptive SJF counterpart. [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) Draw the hardware diagrams (ONLY) of Segmentation and Paging. [10]
(b) Discuss alternatives for segment table implementation. [6]
6. Giving merits and demerits, explain the three-disk file allocation methods. [16]
7. What is meant by assembling? Explain the various elements of assembly language programming through a simple assembly program. [16]
8. (a) Explain the terms- macro and macro processor.
(b) List and brief the advanced macro features. [8+8]

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1. (a) State whether the concepts, multiprogramming and timesharing, are realizable without the other. Justify [8]
(b) Brief the features of Windows 2000 OS. [8]
2. (a) Explain the term-context switching. [6]
(b) Write about the *multi – queue(with feedback)* CPU scheduling algorithm giving merits and demerits. [10]
3. (a) State the conditions to be satisfied by a CSP (Critical Section Problem) solution.
(b) Give the classification of CSP solutions with an example for each.
(c) Write any one 2-process solution to CSP. [6+4+6]
4. (a) What are the different methods for managing deadlocks? [6]
(b) Explain how deadlocks are *prevented*. [10]
5. (a) Compare and contrast the two memory management schemes-MFT and MVT.
(b) Give the necessary hardware support for the above concepts. [10+6]
6. (a) Compare the tape-based, and disk-based models for file systems. [6]
(b) What are the operations on directories. [4]
(c) Brief the physical directory implementation methods. [6]
7. Considering a simple assembly language program, explain the process of single-pass assembling. [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) State the criteria for evaluating CPU scheduling algorithms. Also state whether the criteria is to be optimized for minimal or maximal value.
(b) What is meant by 'convoy effect' in the context of FCFS scheduling algorithm. [10+6]
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. (a) What are the various ways of treating deadlocks? [6]
(b) Explain how deadlocks are *avoided*. [10]
5. Write about a combined memory management scheme-segmented paging- giving an example, and hardware diagram. [16]
6. (a) Explain the terms w.r.t a disk system- seek and latency operations.
(b) Explain the implementation of Symbolic link in Acyclic graph file-directory structure. [8+8]
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]
