

III B.Tech. I Semester Regular Examinations, November -2005

**COMPUTER OPERATING SYSTEMS
(Electronics & Control Engineering)**

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. With the help of neat block diagram, describe the computer components with an example [16]
2. (a) Define the following
 - i. Process
 - ii. Program
 - iii. Process control block
 - iv. Process Scheduling(b) Explain the process State Transition diagram with examples. [8+8]
3. What are the requirements for mutual exclusion? Explain them in detail. [8+8]
4. What is deadlock avoidance? Explain process initiation denial and resource allocation denial in detail with example. [4+4+4+4]
5. (a) Discuss the process of Linking using illustrations
(b) Write about Linkage Editor.
(c) Write the steps involved in Load Time Dynamic Linking
(d) Write in brief about run time dynamic linking [4+4+4+4]
6. (a) What are the criteria based on which scheduling policies are evaluated.
(b) Describe round robin and feedback scheduling policies. [8+8]
7. (a) Explain file system software architecture
(b) Explain the functions of a file management system with a diagram [8+8]
8. Write short notes on
 - (a) Viruses
 - (b) Worms
 - (c) Logic bomb
 - (d) Trap door [4+4+4+4]

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1. Differentiate the following
 - (a) DMA Vs Interrupt driven I/O
 - (b) Programmed I/O Vs Memory Mapped I/O [8+8]
2.
 - (a) What is meant by process preemption?
 - (b) What is swapping and what is its purpose?
 - (c) What is the difference between process switching and context switching?
 - (d) What is the difference between an interrupt and a trap.. [4+4+4+4]
3. What are the requirements for mutual exclusion? Explain them in detail. [8+8]
4. What are the principles of deadlock? And explain in detail the two categories of resources. [8+8]
5.
 - (a) Another placement algorithm for dynamic partitioning is referred to as worst fit. In this case, the largest free block of memory is used for bringing in a process. Discuss the pros and cons of this method compared to first-fit and best fit.
 - (b) What is the average length of the search for worst-fit. [12+4]
6. What is the I/O buffering? Explain different types of buffers. [4+12]
7.
 - (a) What are preallocation, dynamic allocation, portion size w.r.t secondary storage management?
 - (b) Describe various file allocation methods. [8+8]
8. Write short notes on
 - (a) Viruses
 - (b) Worms
 - (c) Logic bomb
 - (d) Trap door [4+4+4+4]

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1. Describe the Structure of UNIX OS. Explain the importance of UNIX. [8+8]
2. Discuss the attributes of the process. Describe the typical elements of process control Block. [6+10]
3. What are the requirements for mutual exclusion? Explain them in detail. [8+8]
4. Consider the following snapshot of a system. There are no current outstanding queued unsatisfied requests available.

available			
r1	r2	r3	r4
2	1	0	0

	Current allocation				Macimum demand				Still needs			
Process	r1	r2	r3	r4	r1	r2	r3	r4	r1	r2	r3	r4
p1	0	0	1	2	0	0	1	2				
p2	2	0	0	0	2	7	5	0				
p3	0	0	3	4	6	6	5	6				
p4	2	3	5	4	4	3	5	6				
p5	0	3	3	2	0	6	5	2				

- (a) Compute what each process still might request and display in the columns labeled 'still needs'
 - (b) Is this system currently in a safe or unsafe mode? Why?
 - (c) Is this system currently deadlocked? Why or why not?
 - (d) Which process, if any, are may become deadlocked?
 - (e) If a request from p3 arrives for (0,1,0,0), can that request be safely granted immediately? In what state would immediately granting that whole request leave the system? Which process, if any, are may become deadlocked if this whole request is granted immediately? [2+2+3+3+6]
5. (a) Explain the operation of paging and translation look-aside buffer using a neat sketch
 - (b) Explain the address translation in a paging system using a neat sketch.
 - (c) Explain using illustrations typical memory management formats [6+5+5]
 6. (a) What are the criteria based on which scheduling policies are evaluated.

- (b) Describe round robbin and feedback scheduling policies. [8+8]
7. (a) Explain file system software architecture.
(b) What are the important criteria in choosing a file organization
(c) Explain the file and sequential file organization. [6+5+5]
8. (a) What are the security requirements of a computer and network?
(b) Explain different types of threats.
(c) Explain the computer system assets. [5+5+6]

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1. What are the important properties of I/O organization? Explain the I/O communication techniques with an example. [5+6+5]
2. Discuss the attributes of the process. Describe the typical elements of process control Block. [6+10]
3. What are the requirements for mutual exclusion? Explain them in detail. [8+8]
4. What is deadlock avoidance? Explain process initiation denial and resource allocation denial in detail with example. [4+4+4+4]
5. (a) Another placement algorithm for dynamic partitioning is referred to as worst fit. In this case, the largest free block of memory is used for bringing in a process. Discuss the pros and cons of this method compared to first-fit and best fit.
(b) What is the average length of the search for worst-fit. [12+4]
6. (a) What are the criteria based on which scheduling policies are evaluated.
(b) Describe round robbin and feedback scheduling policies. [8+8]
7. (a) Explain file system software architecture.
(b) What are the important criteria in choosing a file organization
(c) Explain the file and sequential file organization. [6+5+5]
8. Write notes on
(a) intrusion detection
(b) password protection [8+8]
