

IV B.Tech I Semester Regular Examinations, November 2005

OPERATING SYSTEMS

(Electronics & Communication Engineering)

Time: 3 hours

Max Marks: 80

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

1. (a) DMA access to main memory is given higher priority than processor access to main memory. Why? Explain with an example
(b) Explain the characteristics of Two level memories. [8+8]
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. (a) Write the program for mutual exclusion using semaphores.
(b) Explain about infinite buffer producer/consumer problem for concurrent processing which uses binary semaphores [8+8]
4. What are the principles of deadlock? And explain in detail the two categories of resources. [8+8]
5. (a) Discuss how thrashing can be detected by an Operating System? What can be done to alleviate this problem.
(b) What is the difference between simple paging and virtual memory paging.
(c) Why is the principle of locality crucial to the use of virtual memory?
(d) What is accomplished by page buffering? [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 in detail the four terms field, record, file and database with respect to files.
(b) List the objectives and the requirements for a file management system. [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. What is locality of reference? Explain the principles for the same. Also describe the method of Stack implementation. [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. Explain in detail the message addressing and message format with an example. [5+5+6]
4. What are the principles of deadlock? And explain in detail the two categories of resources. [8+8]
5. Write short notes on the following:
 - (a) Page Table structure
 - (b) Translation look-aside buffer.
 - (c) Segmentation
 - (d) Paging [16]
6. (a) Describe about various disk performance parameters?
(b) We noted that successive requests are likely to be from the same cylinder. what does this imply about the expected performance of the FCFS and SSTF disk scheduling algorithms. [8+8]
7. (a) Explain in detail the four terms field, record, file and database with respect to files.
(b) List the objectives and the requirements for a file management system. [8+8]
8. (a) How resources of a computer system protected?
(b) Explain user-oriented access control.
(c) Explain data-oriented access control. [5+6+5]

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1. Describe the design of the Cache Memory with consideration of its design issues. Also explain about the any two Replacement Algorithms. [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. (a) Three processes share 4 resource units that can be reserved and reused only one at a time. Each process needs a maximum of 2 units. Show that a deadlock cannot occur.
(b) N processes share M resource units that can be reserved and released only one at a time. The maximum need of each process does not exceed M and the sum of all maximum needs is less than $M + N$. show that a dead lock cannot occur. [8+8]
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. Write short notes on:
(a) Sequential file
(b) Indexed file
(c) Indexed sequential file
(d) Direct file. [4+4+4+4]
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 is locality of reference? Explain the principles for the same. Also describe the method of Stack implementation. [16]
2. Discuss the attributes of the process. Describe the typical elements of process control Block. [6+10]
3. Explain how the concurrent processes cooperate by sharing and by communication? [16]
4. (a) What are the conditions that must satisfy for deadlock occurrence and explain them.
(b) Is the deadlocks problem preventable? Justify your answer with example and diagram. [8+8]
5. (a) Discuss in detail the alternative page fetch policies
(b) What is the relationship between FIFO and Clock page replacement algorithm
(c) Define pre-cleaning. [5+6+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) 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]
