

OPERATING SYSTEMS

This exam tests introductory-level knowledge of operating systems. Topics include: what operating systems are; what they do; how they do it; how their performance can be evaluated; how they compare with each other. Familiarity with computers and programming experience with at least one computer language is *strongly recommended*. 3 s.h. COS-352-TE

This is a two-hour examination in which you must answer 85 multiple-choice questions (worth 1 point each). A passing score is **51** out of 85 points.

Here are the topics covered and their approximate importance on the test:

- I. OPERATING SYSTEMS THEORY (75%)
 - A. History
 - B. Memory management: early systems, recent systems
 - C. Processor management
 - D. Process management
 - E. Concurrent processes
 - F. Device management
 - G. File management
 - H. Network concepts
 - I. Network functions
 - J. System management

- II. OPERATING SYSTEMS (25%)
 - A. Windows 2000
 - B. UNIX-Linux
 - C. OS/390

Textbooks: The following texts were being used in similar college courses when this test was developed, but you are not limited to them. Most college-level texts in this subject will prepare you for this test. Whatever texts you obtain, make sure to compare the topic outline shown above to your texts, to ensure that all topics are covered. We recommend you review more than one text.

Flynn, Ida M. and Ann McHoes. *Understanding Operating Systems*. Current edition.
Pacific Grove, CA: Brooks/Cole

Davis, William S and T. M. Rajkumar. *Operating Systems: A Systematic View*. Current edition.
Reading, MA: Addison-Wesley

Tanenbaum, Andrew S. *Modern Operating Systems*. Current edition.
Upper Saddle River, NJ: Prentice-Hall

SAMPLE QUESTIONS

1. A static partitioned memory management system has a total of six partitions. If one is allocated to the operating system, this will allow a total of
 - a. five user jobs
 - b. six user jobs
 - c. thirty-two user jobs
 - d. thirty-six user jobs
 - e. sixty-four user jobs
2. Given memory partitions of 100K, 500K, 200K, 300K and 600K (in order) and processes of 212K, 417K, 112K, and 426K (in order), using the first-fit algorithm in which partition would the process requiring 426K be placed?
 - a. 100K
 - b. 500K
 - c. 200K
 - d. 300K
 - e. 600K
3. A page fault means that we referenced a page
 - a. outside the memory boundaries
 - b. with an incorrect I/O request
 - c. that was not in secondary storage
 - d. that was not in main memory
4. Which of the following information bits used by the various page replacement policies indicates if the page has been called lately?
 - a. Locality bit
 - b. Status bit
 - c. Referenced bit
 - d. Modified bit
5. If Round Robin is used with a time quantum of 1 second, the turnaround time for Job 2 will be

Job Number	CPU Time
1	1 hour
2	1 second
3	1 second

- a. 1 second
- b. 2 seconds
- c. 1 hour
- d. 1 hour, 1 second

6. The simplest way to break a deadlock is to
 - a. preempt a resource
 - b. rollback
 - c. kill one of the processes
 - d. lock one of the processes

7. Process cooperation in a Readers-and-Writers problem requires that the
 - a. Writers always call two procedures
 - b. Writers perform a Test-and-Set
 - c. Readers always call two procedures
 - d. Readers perform a Test-and-Set

8. On a disk with 8 records per track, where the records are numbered from 0 to 7, and where the file is stored starting at track 0, record 14 is found on track
 - a. 0
 - b. 1
 - c. 2

9. Given a record size of 120 and block size of 1200, what is the blocking factor?
 - a. 10
 - b. 15
 - c. 20
 - d. 25

10. Which of the following topologies consists of multiple CPUs connected by a single communication line running the length of the network?
 - a. Tree
 - b. Ring
 - c. Star
 - d. Bus

11. Which environment considers memory, process, and device and file management from a global viewpoint?
 - a. Distributed Operating System (DO/S)
 - b. Network Operating System (NOS)
 - c. Multiprogramming Operating System (MOS)
 - d. None of the above

12. The point where multiprogramming is self defeating because the total time spent on a job is equal to the total time that would have been spent on it in a monoprogrammed environment is called
- a. swapping
 - b. thrashing
 - c. delaying
13. A portion of the Windows 2000 operating system that is NOT portable is
- a. processor management
 - b. user interface
 - c. device management
 - d. Virtual Memory Manager
14. For multiprogramming systems, most UNIX operating systems use
- a. swapping
 - b. demand paging
 - c. either (a) or (b)
 - d. neither (a) nor (b)
15. On repetitive jobs, rather than coding the same Multiple Virtual Storage/Job Control Language (MVS/JCL) statements over and over, a programmer can define a
- a. cataloged procedure
 - b. batch file
 - c. shell script
 - d. job stream

ANSWERS TO SAMPLE QUESTIONS

1. **a** 2. **e** 3. **d** 4. **c** 5. **b** 6. **c** 7. **c** 8. **b**
9. **a** 10. **d** 11. **a** 12. **b** 13. **d** 14. **c** 15. **a**