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MCA -11/MSc.IT-11/MIT(CS)-104

Operating System/Introduction to Operating System

Master of Computer Application/Master of Science in Information technology/
Master of Science (Cyber Security)
(MCA/PGDCA/M.Sc. IT -11/12/16/MSCCS-18)
First Semester, Examination, 2019

Time : 3 Hours **Maximum Marks : 80**

Note : This paper is of Eighty (80) marks containing three(03) sections A,B & C. Attempt the questions contained in these sections according to the detailed instruction given therein.

Section –A

(Long Answer Type Questions)

Note : Section 'A' contains four(04) long-answer-type questions of Nineteen(19) marks each. Learners are required to answer any two(02) quesitons only.

(2 x 19 =38)

1. (a) Explain distributed operating system. Explain how protection is provided for the hardware resources by the operating system. (10 Marks)
   (b) What is a file pointer ? Briefly explain the various operations of a file. (5 Marks)
   (c) Explain layered file system. (4 Marks)

2. What is critical section problem and explain two process solutions and multiple process solutions?

3. Answer the following
   (a) Explain Master Slave Model. (6 Marks)
   (b) Explain processor scheduling in case of multiprocessor system. (6 Marks)
   (c) What is the difference between loosely coupled and a tightly couple system. Give example. (7 Marks)
4. Explain the FCFS algorithm and the SJF algorithm. Compare the average waiting time of both the algorithms.

Section – B

(Short Answer Type Questions)

Note : Section 'B' contains eight(08) short-answer type questions of eight(08) marks each. Learners are required to answer any Four(04) questions only. (4 x 8 = 32)

1. What is digital signature. Explain in details.
2. Explain in detail about the basic concepts of segmentation.
3. Explain describe how the disk space from deleted files can be reused.
4. Explain Following
   a. What is device driver. (4 Marks)
   b. Explain the basic function of device independent I/O software. (4 Marks)
5. What is virtual memory? Define the terms – Virtual Address, Virtual address space Addresspnce and red address.
6. Explain the banker's algorithm for deadlock avoidance.
7. Describe the access matrix model for protection purpose.

8. What is address binding ? Explain the concept of dynamic relocation of addresses.

Section –C

(Objective – Type Questions)

Note : Section 'C' contains ten (10) objective-type questions of one(01) mark each. All the questions of this section are compulsory**.** (10 x 1 =10)

1. Round robin scheduling falls under the category of
   (a) Non preemptive scheduling
   (b) Preemptive scheduling
   (c) All the mentioned
   (d) None of the mentioned
2. Orders are processed in the sequence they arrive if _____ rule sequences the jobs.
   (a) Earliest due date
   (b) Slack time remaining
   (c) First come, first served
   (d) Critical ratio
3. The following three conditions must be satisfied to solve the critical section problem:
   (a) Mutual Exclusion
   (b) Progress
   (c) Bounded Waiting
   (d) All of the mentioned
4. The processes that are residing in main memory and are ready and waiting to execute are kept on a list called
   (a) Job queue
   (b) Ready queue
   (c) Execution queue
   (d) Process queue

5. Time quantum is defined in
    (a) Shortest job scheduling algorithm
    (b) Round robin scheduling algorithm
    (c) Priority scheduling algorithm
    (d) Multilevel queue scheduling algorithm
6. Semaphore is a/an _____ to solve the critical section problem.
    (a) Hardware for a system
    (b) Special program for a system
    (c) Integer variable
    (d) None of the mentioned
7. In UNIX, each process is identified by its
    (a) Process control block
    (b) Device queue
    (c) Process identifier
    (d) None of the mentioned
8. The number of processes completed per unit time is known as _____
    (a) Output
    (b) Throughput
    (c) Efficiency
    (d) Capacity
9. The process control block is :
    (a) Process type variable
    (b) Data structure
    (c) A secondary storage section
    (d) A block in memory
10. If a process fails, most operating system write the error information to a _____
    (a) Log file
    (b) Another running process
    (c) New file
    (d) None of the mentioned

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