ANNAI VIOLET ARTS AND SCIENCE COLLEGE
DEPARTMENT OF COMPUTER SCIENCE

CONTINUOUS INTERNAL ASSESSMENT - I
Subject : OPERATING SYSTEM

Class : III B.Sc Cs **Date : 30/8/2022-FN**
Max.Marks: 50 **Sub. Code:**

PART-A(5x2=10marks)
Answer any FIVE questions:

1. What is system calls?
2. Define Operating system.?
3. Differentiate between process and thread?
4. Define CPU scheduling?
5. What do you mean by synchronisation hardware?
6. What are the benifits of multithreaded programming?
7. What is meant by context switch?

PART-B (2x5=10marks)
ANSWER any TWO questions:

8. Explain semaphores.
9. Write a note on process states in detail with a neat diagram.
10. Explain in detail about FCFS with an example.

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PART-C(3X10=30marks)
Answer ALL questions:

11. Discuss in detail about different process scheduling algorithm.
12. Describe in detail about classical problems of synchronization.
13. Write a detail note on (a) Operation-system structure.
(b) Types of operating system.

Prepared by
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CONTINUOUS INTERNAL ASSESSMENT - I
Subject : OPERATING SYSTEM
(Scheme of Evaluation)

Class : III B.Sc Cs
Sub. Code: -

PART-A(5x2=10marks)

Answer any FIVE questions:

1. What is system calls?
A system call is a way for programs to interact with the operating system. A computer program makes a system call when it makes a request to the operating system's kernel. .....(2)

2. Define Operating system.?
An operating system (OS) is the program that, after being initially loaded into the computer by a boot program, manages all of the other application programs in a computer.....(2)

3. Differentiate between process and thread?
A process is a program under execution i.e an active program. A thread is a lightweight process that can be managed independently by a scheduler. Processes require more time for context switching as they are more heavy. Threads require less time for context switching as they are lighter than processes....(2)

4. Define CPU scheduling?
CPU Scheduling is a process that allows one process to use the CPU while another process is delayed (in standby) due to unavailability of any resources such as I / O etc, thus making full use of the CPU. .....(2)

5.What are the various components of Synchronisation hardware?
Hardware Synchronization
Definition of the test and set() instruction.
Mutual-exclusion implementation with test and set().....(1)
Definition of the compare and swap() instruction.
Mutual-exclusion implementation with the compare and swap() instruction.
Bounded-waiting mutual exclusion with test and set().....(1)

6. What are the benifits of multithreaded programming?
Improved throughput. ...
Simultaneous and fully symmetric use of multiple processors for computation and I/O.
Superior application responsiveness. ...
Improved server responsiveness. .....(2)

7. What is meant by context switch?
Context Switching involves storing the context or state of a process so that it can be reloaded when required and execution can be resumed from the same point....(2)

PART-B (2x5=10marks)
ANSWER any TWO questions:

8. Explain semaphores.

Semaphores are integer variables that are used to solve the critical section problem by using two atomic operations, wait and signal that are used for process synchronization. The wait operation decrements the value of its argument S, if it is positive. .....(3)
If S is negative or zero, then no operation is performed.....(2)

9. Write a note on process states in detail with a neat diagram.

Running − In this state the instructions are being executed. ----(1)
Waiting − The process is in waiting state until an event occurs like I/O operation completion or receiving a signal..... (1)
Ready − The process is waiting to be assigned to a processor.....(1) Terminated − the process has finished execution.....(2)

10. Explain in detail about FCFS with an example.

First Come First Serve (FCFS) is an operating system scheduling algorithm that automatically executes queued requests and processes in order of their arrival. It is the easiest and simplest CPU scheduling algorithm. In this type of algorithm, processes which requests the CPU first get the CPU allocation first. This is managed with a FIFO queue. The full form of FCFS is First Come First Serve.-----(5)

PART-C(3X10=30marks)
Answer ALL questions:

11. Discuss in detail about different process scheduling algorithm.

Operating System Scheduling algorithms
First-Come, First-Served (FCFS) Scheduling.or
Shortest-Job-Next (SJN) Scheduling.------(5)
Priority Scheduling.
Shortest Remaining Time.or
Round Robin(RR) Scheduling.------(5)

12. Describe in detail about classical problems of synchronization.

The classical problems of synchronization are as follows:
Bound-Buffer problem.-----(3)
Dining Philosophers problem.-----(4)
Readers and writers problem.------(3)

13. Write a detail note on (a) Operation-system structure.

- Monolithic Systems. The operating system (OS) is written as a collection of procedures, each of which can call any of the other ones, whenever it needs to.
- Layered Systems. This system has 6 layers as shown in the table given below. ...
- Virtual Machines. ...
- Exokernels. ...----------(5)

- Client-Server Mode

(b) Types of operating system.

- Batch operating system. The users of a batch operating system do not interact with the computer directly. Each user...
- Time-sharing operating systems. Time-sharing is a technique which enables many people, located at various terminals, to...
- Distributed operating System. Distributed systems use multiple central processors to serve multiple...----------(5)

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