CROSS RIVER UNIVERSITY OF TECHNOLOGY CALABAR
DEPARTMENT OF COMPUTER SCIENCE
SECOND SEMESTER EXAMINATION FOR 2015/2016 SESSION
COURSE CODE: CSC 2203 COURSE TITLE: OPERATING SYSTEM

Instruction: Answer all Question One and Any Other Three TIME: 1:30Mins

1A. Given the information below tabulate and give the output of the following scheduling algorithm

1. First Come-First Serve Scheduling
2. Shortest Job First Scheduling
3. Priority Scheduling

B. What do you understand by Race Condition

C. Explain the following terms: Deadlock, Semaphore, Spooling and Bare machine

D. Classify operating system according to the extent of services it can provide

2A. List 4 conditions or circumstances a CPU scheduling decision may take place

B. What is a kernel? Give it advantages you know

C. List 3 major activities of an operating system in regards to memory management

3A. What is Parallelism in operating system?

B. Explain the action of Concurrency using Traffic control light

C. What do you understand by distributed system in Networking?

4A. With an aid of a diagram explain Process States, what transitions are valid between states and describe an event that might cause such a transition.

B. What are the 5 major activities of an operating system in regards to process management?

C. List 5 criteria that are used for comparing CPU scheduling algorithms

5A. Explain how the producer-consumer problem is relevant to operating system I/O

B. Assuming the operating system detects the system is deadlocked, what can the operating system do to recover from deadlock?

C. Differentiate between deadlock and starvation

6A. Draw a labeled process control block

B. What do you understand by buffering?

C. What is a process? What are attributes of a process?

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SECOND SEMESTER EXAMINATION FOR 2016/2017 SESSION

COURSE CODE: CSC 2203
COURSE TITLE: OPERATING SYSTEM
INSTRUCTION: ANSWER 5 QUESTIONS ONLY
TIME: **2:00HOURS**

QUESTION 1

a. What is the relationship between operating systems and computer hardware?
b. How Buffering can improve the performance of a Computer system?
c. What are the primary differences between Network Operating System and Distributed Operating System?
d. What inconveniences that a user can face while interacting with a computer system, which is without an operating system.

QUESTION 2

a. Operating Systems process
b. What is the difference between a Job and Process?
c. What are the advantages of multiprogramming? And what are the advantages of Multiprocessing or Parallel System?

QUESTION 3

a. What are the differences between Batch Processing System and Real Time Processing System?
b. What are the differences between Real Time System and Timesharing System?
c. Operating Systems Process Scheduling

QUESTION 4

a. What is a process scheduler? State the characteristics of a good process scheduler? OR what is scheduling? What criteria affect the scheduler's performance?
b. Explain time slicing. How its duration affects the overall working of the system.
c. What are the different principles which must be considered while selection of a scheduling algorithm?

QUESTION 5

a. Find out which algorithm among FCFS, SJF and Round Robin with quantum 10, would give the minimum average for a given workload.
b. Explain pseudo parallelism? Describe the process model that makes parallelism easier to deal with.
c. What are the differences between paging and segmentation?

QUESTION 6

a. Explain various allocation algorithms
b. When does a page fault occur? Explain various page replacement strategies/algorithms
c. Explain semaphores and write a short note on it.

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INSTRUCTION: ANSWER FOUR QUESTIONS ONLY (question one is compulsory)
COURSE CODE: CSC 2203
COURSE TITLE: OPERATING SYSTEM II

QUESTION ONE (25 marks)

a. Bring out a detailed discussion on the following:

Dispatch latency, Indefinite Blocking, Distributed systems, Mutual exclusion, interrupts, multiprogramming, multitasking, concurrency, CPU bound process, I/O bound process and buffering.

b. Original versions of Apple's mobile iOS operating system provided no means of concurrent processing. Discuss three major complications that concurrent processing ads to an operating system.
c. What are the algorithms available for Deadlock avoidance? Discuss two.

QUESTION TWO (15 marks)

a. Suppose that a system is in an unsafe state. Show that it is possible for the processes to complete their execution without entering a deadlocked State.
b. Explain why interrupt and dispatch latency times must be bounded in a hard real-time system.
c. Bring out a detailed discussion on distributed operating system and contiguous memory allocation.

QUESTION THREE (15 marks)

a. Which of the following scheduling algorithms could result in starvation? Discuss briefly why,
i. First-come, first served
ii. Shortest job first
iii. Round robin
iv. Priority
b. Discuss in details, paging and segmentation in operating system.
c. What are the conditions that must hold for Deadlock Prevention?

QUESTION FOUR (15 marks)

a. When a process creates a new process using the fork operation, which of the following states is shared between the parent process and the child process? State why?

i. Stack
ii. Heap
iii. Shared memory segments

b. Discuss in detail the methods involved in the detection and recovery of deadlock
c. What is kernel in operating system?

QUESTION FIVE (15 marks)

a. What are the benefits and the disadvantages of each of the following? Consider both the system level and the programmer level.

i. Synchronous and asynchronous communication
ii. Automatic and explicit buffering
iii. Send by copy and send by reference
iv. Fixed-seized and variable-seize messages

b. What is the differences between Livelock and Deadlock in operating system? Give illustration where necessary
c. When is a system said to be in a deadlock? Explain with the aid of a diagram.

QUESTION SIX (15 marks)

a. What are the options for breaking a Deadlock?
b. Discuss in detail the various system calls.
c. Discuss in detail the following:

i. First Come, First Served Scheduling
ii. Shortest job First Scheduling
iii. Priority Scheduling