

BOWEN UNIVERSITY, IWO
COLLEGE OF COMPUTING AND COMMUNICATION STUDIES
COMPUTER SCIENCE PROGRAMME
B.Sc. DEGREE SECOND SEMESTER EXAMINATION 2022/2023 SESSION
COURSE CODE: CIT 322 COURSE TITLE: OPERATING SYSTEM II
COURSE CREDIT: 3 DATE: DURATION: 2½ HOURS
INSTRUCTION: Attempt Question One and any other three

Question One

Ademola was listening to a music on his phone, unexpectedly, his phone rang and the music stopped. He picked the call and it lasted for about five (5) minutes. Immediately he ended the call, the music resumed from where it stopped earlier.

- a. In your opinion, what Operating system concept describes the above scenario?(2marks)
- b. Define the concept mentioned above. (3marks)
- c. With necessary examples, explain the two (2) types of the concept mentioned above. (10marks)
- d. Explain the two (2) classifications of the concept according to Periodicity of Occurrence. (5marks)
- e. How does CPU respond to the concept? (5marks)

Question Two

- a. Differentiate between multiprogramming and multiprocessing.. (3marks)
- b. How would you describe a process? (2marks)
- c. You are to develop a new operating system and you have decided to adopt the process model for it. List and explain the various states the processes in the operating system can be. (10marks)
- d. List the pieces of information you would expect a process control block to contain. (6marks)
- e. What are the events that can trigger the creation of a process? (4marks)

Question Three

- a. Write short notes on the various ways a process can terminate. (8marks)
- b. When are process hierarchies formed in Unix operating system? (3marks)
- c. Explain what a thread is with an appropriate example. (4marks)
- d. List the conditions that can make a process scheduler schedule a process. (4marks)
- e. Explain the following in detail:
 - i. Non-preemptive scheduling algorithm. (3marks)
 - ii. Preemptive scheduling algorithm. (3marks)

Question Four

- a. What are the desirable goals expected to be achieved by scheduling algorithms irrespective of the category? (3marks)
- b. First-Come, First-Served is a type of scheduling algorithm in batch systems. List its advantages and disadvantages. (7marks)
- c. Consider a set of processes A, B, C, D and E whose run times are respectively 3, 3, 7, 1 and 9 minutes. Calculate the turnaround time of each process by:
 - i. scheduling the jobs in the present order. (7marks)
 - ii. scheduling the jobs using shortest job first. (7marks)
 - iii. By how many minutes is scheduling shortest job faster? (1mark)

Question Five

- a. Briefly explain the following and give an example each. (6marks)
i. Preemptable Resource ii. Nonpreemptable Resource
- b. (2marks)
i. What is deadlock?
ii. State and explain the conditions that must simultaneously hold for deadlock to occur. (12marks)
- c. Explain in detail, the concept of virtual memory. (5marks)

Question Six

- a. Write short notes on the different types of files handled by the operating system. (8marks)
- b. What function does a disk controller perform? (2marks)
- c. In a multiprocessor operating system where each CPU has its own operating system, what are the issues of concern? (6marks)
- d. What in your opinion is the drawback of Master-Slave Multiprocessors? (3marks)
- e. What are the operations you would expect an operating system developer to provide on a directory? (6marks)