University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja
FACULTY OF SCIENCE
DEPARTMENT OF COMPUTER SCIENCE

Course Code: CIT 752 ***Time:*** 2½ hrs
Course Title: Operating System Concept
***Course Credit Unit*:** 3
Instruction: Answer any five (5) questions. Each question carries 14 marks

1a) Briefly describe any four of the set of operating systems services functions that are helpful to the user. (12 marks)

b) Differentiate between preemptive scheduling and non-preemptive scheduling (2 marks)

2a) List four different types of system calls and their purposes. (10 marks)
b) Distinguish between a program and a process. (4 marks)

3a) Enumerate the set of OS functions that exists for ensuring the efficient operation of the system itself via resource sharing. (8 marks)
b) Briefly describe the two interfaces OS usually comes with. (6 marks)

4a) What do you understand by Memory management? (2 marks)
b) State and describe briefly any four objectives of memory management (12 marks)

5a) Consider the **The Dining Philosophers Problem** stated below:

> *"Five philosophers (the actual number is unimportant) sit around a table. In the middle of the table is a large bowl of spaghetti. Between each set of philosophers is a fork. That is, for five philosophers, there are five plates and five forks. Each philosopher sits around and thinks for a while and then talks for a while and then eats for a while. Since there are only five forks, each philosopher must reach for first fork and then the other. At any given moment, only one philosopher can hold a given fork, and a philosopher cannot pick up two forks simultaneously. In addition, once a philosopher has a fork, s/he holds onto it (after all, s/he is hungry) until s/he can get the other fork (s/he needs both forks to eat). Once a philosopher starts eating, the forks are not relinquished until the eating phase is over. When the eating phase concludes, which last fro a finite time, both forks are put back in their original position and the philosopher re-enters the thinking phase. Note that no two neighbouring philosophers can eat simultaneously. The problem occurs when all the philosophers grab a right or left fork at once. Each then has one fork and waits forever to obtain the other".*

Enumerate the requirements for deadlock and state how each is associated with the Dining Philosophers Problem? ***(10 marks)***

b) Briefly state the activities of memory management ***(4 marks)***

6a) Discuss Demand Paging. **(*10 marks)***

b) State advantages and disadvantages of demand paging ***(4 marks)***

7a) What is Partition Allocation? ***(2 marks)***

b) Write short notes common versions of partition allocation technique. ***(12 marks)***