



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI-ABUJA
FACULTY OF COMPUTING
DEPARTMENT OF COMPUTER SCIENCE
2025_1 EXAMINATION

COURSE CODE: CIT315

COURSE TITLE: OPERATING SYSTEMS

COURSE CREDIT: 3 UNITS

TIME ALLOWED: 2 HOURS 45 MINUTES

INSTRUCTION: ANSWER QUESTION (1) AND ANY OTHER THREE (3) QUESTIONS

Question 1

- (a): What are Semaphores? **(4 marks)**
- 1(aii): Identify and explain the two types of semaphores we have. **(6marks)**
- 1(aiii): Give two Advantages of Semaphores and Disadvantages. (Any two) **(4 marks)**
- 1(b): Briefly explain what a monitor is all about. **(5 marks)**
- 1(c): Define briefly the lost wakeup problem. **(6 marks)**

Question 2

- (a): A solution to the readers–writers problem must satisfy certain conditions name them. **(4 marks)**
- (bi): What do you understand by memory? **(4 marks)**
- (bii): Address binding of instructions and data to memory addresses can happen at three different stages. List them and explain any two. **(7 marks)**

Question 3

- (a): Define briefly memory cache lookup. **(5 marks)**
- (bi): List the three common mechanisms for cache lookup and explain anyone. **(7marks)**
- (bii): Define a cache? **(3marks)**

Question 4

- (a): Briefly define thrashing. **(5marks)**
- (b): What is a hybrid thread model? Describe the three methods of associating user and kernel-level threads. **(7marks)**
- (cii): What is the full meaning of the acronym **FIFO**? **(1marks)**
- (cii): Define a page fault? **(2marks)**

Question 5

- (a): What is a process? **(4marks)**
- (b) As a process executes, it changes state. The state of a process is defined in part by the current activity of that process. Each process may be in one of the following states, list the states: **(5marks)**
- (c): What is a process creation and principal events that can create a process? **(6marks)**

Question 6

- 6(a): Briefly explain the term interrupt. **(5marks)**
- 6(b): List some examples of the causes of interrupts. **(5marks)**
- 6(ci): Name the two types of interrupts we have **(2marks)**
- 6(cii): Why do we utilize interrupts? **(3marks)**