



**ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO  
STATE**

**FACULTY OF ENGINEERING  
DEPARTMENT OF INFORMATION AND COMMUNICATION  
TECHNOLOGY**

**FIRST SEMESTER EXAMINATION, 2019/2020 ACADEMIC SESSION**

**COURSE TITLE: OPERATING SYSTEM**

**COURSE CODE: ECT 323**

**EXAMINATION DATE: FEBRUARY, 2020**

**COURSE LECTURER: ENGR. T. T. ADEYEMO**

**TIME ALLOWED: 2 HOURS 30 MINS**

**INSTRUCTIONS:**

1. ANSWER FIVE QUESTIONS ONLY
2. SEVERE PENALTIES APPLY FOR MISCONDUCT, CHEATING, POSSESSION OF UNAUTHORIZED MATERIALS DURING EXAM.
3. YOU ARE **NOT** ALLOWED TO BORROW ANY WRITING MATERIALS DURING THE EXAMINATION.

**HOD's SIGNATURE**

### Question 1

- a. Linux is an open source UNIX-like operating system. List and discuss some of its basic features. [3 Marks]
- b. Elucidate on the difference between program threats and system threats and discuss at least three (3) well-known example of each threat. [6 Marks]
- c. Discuss the three ways an operating systems can identify/authenticate users. [3 Marks]

### Question 2

- a. Discuss the approaches that a system CPU use to pass information to and from an I/O device.[6 Marks]
- b. Write short notes on the following: [4 Marks]
  - i. Polling i/o
  - ii. Interrupt i/o
  - iii. Interrupt handlers
  - iv. Device Drivers
- c. Briefly elucidate on the main difference between multi-programmed batch and timesharing operating systems. [2 Marks]

### Question 3

- a. Explain the term “File concept” and mention six (6) important file concepts you know. [4 Marks]
- b. The operating system can provide system calls to some file operations. Mention the basic file operations of an operating system. [6 Marks]
- c. Differentiate between sequential and direct/random access method. [2 Marks]

### Question 4

- a. Thrashing in an operating system results in severe performance problems. Discuss two causes of thrashing and how you can recover from it. [6 Marks]
- b. Mention at least six (6) file types along with their extension. [6 Marks]

### Question 5

- a. Consider the following sequence of addresses – 123, 215, 600, 1234, 76, 96. If page size is 100, then the reference string is 1,2,6,12,0,0. Discussing the below listed algorithms, calculate the fault rate of the reference string.
  - i. First In First Out (FIFO) algorithm [3 Marks]
  - ii. Optimal Page algorithm [3Marks]
  - iii. Least Recently Used (LRU) algorithm [ 3 Marks]
  - iv. b. List the basic properties of a virtual memory [3 Marks]

### Question 6

- a. Discuss the differences between demand segmentation and demand paging. [3 Marks]
- b. Discuss the combine concept of “Segmentation with Paging” in an operating system. [3 Marks]
- c. In a tabular form, differentiate between a process and a thread. [3 Marks]
- d. An Operating System (OS) is an interface between a computer user and computer hardware. Discuss briefly How an Operating System Works. [3 Marks]

### Question 7

- a. Consider the following processes with their respective CPU time.

Process	CPU time
P1	3
P2	5
P3	2

Using the following scheduling algorithms;

- i. First Come First Serve
- ii. Shortest Job Next
- iii. Round Robin Scheduling Algorithm

Find the waiting time for each process, average waiting time and average turnaround time. Using your answer, suggest the best scheduling algorithm among the abovementioned algorithms. [7 Marks]

b. A deadlock situation can arise if the four Coffman conditions hold simultaneously in a system. Discuss the four Coffman conditions. [5 Marks]