CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

RESIT/SPECIAL EXAMINATION

EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE

COSC 0120: OPERATING SYSTEMS

STREAMS: DIPLOMA COMP SCIENCE Y1S2 **TIME: 2 HOURS**

DAY/DATE: THURSDAY 04/11/2021 **8.30 A.M – 10.30 A.M.**

INSTRUCTIONS:

- Answer all in question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, no reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.

SECTION A: ANSWER ALL QUESTION IN THIS SECTION

Question one (30 marks)

1. Define the Following Terms:

   i. Operating System [2 marks]

   ii. Paging [2 marks]

   iii. Fragmentation in Memory [2 marks]

2. Explain the Process Life Cycle of A Program [5 marks]

3. List Any Four Important Functions of a standard Operating System in PCs [4 marks]

4. List and Explain Three advantages of multiprogramming [6 marks]

5. What is the Difference between a Job and a Process? [2 marks]

6. List and Explain Any TWO well-known programme Threats to modern Operating Systems? [4 marks]

7. List Any THREE File Access Mechanisms you know [3 marks]

SECTION B (ANSWER ANY TWO QUESTIONS ONLY)

Question TWO (20 marks)

a. Give THREE reasons why Ubuntu is considered to be safe and not affected by viruses compared to Window Operating Systems [6 marks]

b. LIST and Describe the THREE Primary components of LINUX Operating System [6 marks]

c. What is the Banker's algorithm? Demonstrate how the Banker's algorithm solves deadlocks? [8 marks]

QUESTION THREE (20 marks)

a. Provide FOUR situations/scenarios where, an OS decides an entire programme does not need to be fully loaded to main memory [8 marks]

b. List FOUR ATTRIBUTES of A PROCESS and THREAD [6 marks]

c. Draw a diagram that shows the **MANY-TO-MANY** threading model where 5 user level threads are multiplexing with 5 kernel level threads [6 marks]

QUESTION FOUR (20 marks)

a. State and explain FIVE the differences between paging and segmentation [10 marks]

b. Explain the following allocation algorithms [10 marks]

i.First Fit

ii. Best fit

iii. Worst fit

iv. Buddy's system

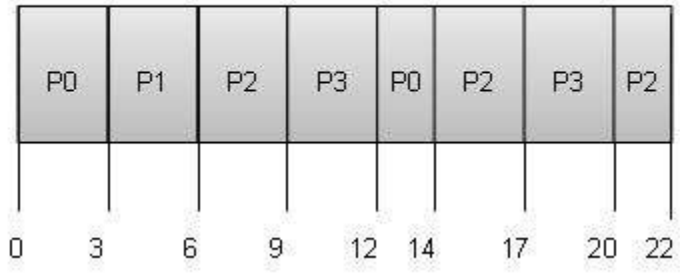
v. Next fit

QUESTION FIVE (20 marks)

a. The following are a list of jobs to be scheduled, using Round Robin scheduling, calculate the Wait time of each process and average wait time [10 marks]

NB:

Quantum = 3



b. List five differences between the Network Operating System and Distributed Operating System [10 marks]
