MANICALAND STATE UNIVERSITY OF APPLIED SCIENCES

FACULTY OF ENGINEERING, SCIENCE AND TECHNOLOGY

DEPARTMENT: COMPUTER SCIENCE AND INFORMATION SYSTEMS

MODULE: OPERATING SYSTEMS

CODE: BCOS 123

SESSIONAL EXAMINATIONS
DECEMBER 2023

DURATION: 3 HOURS

EXAMINER: MR A.C MUZENDA

INSTRUCTIONS
1. Answer **any four** questions.
2. Start a new question on a fresh page
3. Total marks 100

QUESTION 1

a.   List and explain any five functions of an operating system   [15]

b.   Briefly explain the role of a system call in an operating system. You must use practical examples of system calls found in Operating Systems.   [10]

Total Marks [25]

QUESTION 2

a. Explain the following process operations:

    i.   Process Creation.   [8]
    ii.   Process Termination   [7]

b. Outline and explain the benefits of threading in operating systems.   [10]

Total Marks [25]

QUESTION 3

a. Discuss the similarities and differences between the long-term and short-term scheduler.[10]

b. Compare and contrast pre-emptive and non-preemptive scheduling using at least two scheduling algorithms.   [15]

Total Marks [25]

QUESTION 4

    a.   Explain the importance and limitations of the following in the management of deadlocks in operating systems:
       i.   Resource Allocation Graph.
       ii. Bankers Algorithm   [15]

    b.   Explain the four conditions necessary for a deadlock.   .   [10]

Total Marks [25]

QUESTION 5

a. A file is 150MB in size and the free memory holes are A(130MB), B(310MB), C(200MB). In which hole will the file be stored if the following memory allocation algorithms were used:

    i.   Worst fit.
    ii.   Best Fit.
    iii.   First Fit.

Explain your answer and also state the best algorithm to use in this scenario.   [12]

d.   Discuss the advantages and disadvantages of using command driven operating systems in highly security organisations.   [13]

Total Marks [25]

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