

#### MANICALAND STATE UNIVERSITY OF APPLIED SCIENCES

FACULTY OF APPLIED SCIENCES AND TECHNOLOGY

**DEPARTMENT OF INFORMATION SYSTEMS**

**OPERATING SYSTEMS**

**CODE: BSCIS126**

### SESSIONAL EXAMINATIONS

**MAY/JUNE 2019**

**DURATION: 2 HOURS**

**EXAMINER: Mr. C. KURANGA**

## INSTRUCTIONS

1. *Answer* ***any four*** *questions*
2. *Each question carries 25 marks*
3. *Total marks 100*

**Question 1**

1. Define Operating Systems and explore its role. [6]
2. Differentiate:
3. Networked OS and distributed OS; and [4]
4. Web based and embedded computing. [4]
5. Explain different services of Operating Systems. [5]
6. Distinguish among the following terminologies:

i) Multiprogramming systems;

ii) Multitasking systems; and

iii) Multiprocessor systems. [6]

**Question 2**

* 1. With aid of process state diagram, describe a process. [5]
  2. Explain a PCB, highlighting its use and contents. [6]
  3. Explore a long-term, short-term and medium-term schedulers. [6]
  4. Discuss common ways of establishing relationship between user and kernel thread. [8]

**Question 3**

1. Explain why a deadlock state is more critical than starvation. [4]
2. Describe resource allocation graph with a deadlock. [6]
3. Discuss how to solve the deadlock to find safe or unsafe state. [8]
4. Explain different methods to recover deadlocks. [7]

**Question 4**

1. With the of a diagram, discuss the steps involved in handling a page fault. [5]
2. Discuss a monolithic architecture, outlining its advantages and disadvantages. [8]
3. Explore process creation and termination. [6]
4. Explain thrashing and outline its causes. [6]

**Question 5**

1. Explain:
   * + 1. File types; [2]
       2. File operation; and [2]
       3. File attributes. [2]
2. Examine the file system mounting operation. [7]
3. Explore three methods for allocating disk space. [6]
4. Describe how free disk space is managed. [6]

**Question 6**

1. Explain the access matrix structure employed in protection domain. [7]
2. Explore the protection goals and principles. [10]
3. Differentiate between a mechanism and a policy. [8]

**END OF PAPER**