



**MURANG'A UNIVERSITY OF TECHNOLOGY**  
**SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

UNIVERSITY ORDINARY EXAMINATION

2017/2018 ACADEMIC YEAR

**FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF  
BACHELOR OF SCIENCE IN MATHEMATICS AND COMPUTER SCIENCE**

**BACHELOR OF EDUCATION**

**BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

**BACHELOR OF SCIENCE IN SOFTWARE ENGINEERING**

**BACHELOR OF BUSINESS AND INFORMATION TECHNOLOGY**

**BACHELOR OF SCIENCE IN COMPUTER SCIENCE**

**BACHELOR OF SCIENCE IN COMPUTER TECHNOLOGY**

SIT 102 – OPERATING SYSTEMS

DURATION: 2 HOURS

DATE: 27<sup>TH</sup> APRIL, 2018

TIME: 9.00 – 11.00 A.M.

**Instructions to Candidates:**

1. Answer **Question 1** and **Any Other Two** questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

## **SECTION A – ANSWER ALL QUESTIONS IN THIS SECTION**

### **QUESTION ONE**

- (a) Describe the five types of operating systems (5 marks)
- (b) Describe the basic functions of a general purpose operating system (5 marks)
- (c) Define the following terms as used in operating systems
  - i. Deadlock
  - ii. Process
  - iii. Thread
  - iv. Interrupt
  - v. Scheduling (10 marks)
- (d) Kernel I/O subsystems is responsible to provide many services related to I/O. describe the service provided by kernel I/O subsystems. (10 marks)

## **SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION**

### **QUESTION TWO**

- (a) Describe four conditions required for a deadlock to occur and four strategies for dealing with deadlock (8 marks)
- (b) File Access mechanism refers to the manner in which records of a file may be accessed. Discuss six ways to access files. (12 marks)

### **QUESTION THREE**

- (a) A process scheduler different process to be assigned to the CPU based on particular scheduling algorithms. Discuss five scheduling algorithms (10 marks)
- (b) An operating system provides service to both user and to the programs. Discuss five common services provided by an operating systems (10 marks)

### **QUESTION FOUR**

- (a) Discuss the following operating systems security issues citing at least two examples of each (10 marks)
  - i. Authentication
  - ii. One time passwords
  - iii. Program threats

iv. Systems threats

- (b) Discuss the three types of addresses used in program before and after memory is allocated (6 marks)
- (c) Discuss the four architecture of Linux systems layers (4 marks)