

**W1-2-60-1-6**

## JOMO KENYATTA UNIVERSITY

**OF AGRICULTURE AND TECHNOLOGY**

# University Examinations 2016/2017

**YEAR ONE SEMESTER TWO/ YEAR ONE SEMESTER ONE EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY/BACHELOR OF BUSINESS INFORMATION TECHNOLOGY**

**ICS 2202/BBT 2103: COMPUTER OPERATING SYSTEM**

**DATE: APRIL 2017 TIME: 2 HOURS**

**INSTRUCTIONS: ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS**

**QUESTION ONE (30 MARKS)**

a) Explain the following terms;

i) Loader

ii) Operand

iii) Multi programming

iv) Page

v) Processer status word (PSW) Register (10 marks)

b) Describe the following types of operating systems;

i) Batch operating system

ii) Time sharing operating system (6 marks)

c) Outline any two advantages and any two disadvantages of the operating systems in question 1(b) above (8 marks)

d) Discuss the classification of input-output software (6 marks)

**QUESTION TWO (20 MARKS)**

a) The main functions of an operating system are program execution, 1/0 operations, file system management, error detection, etc. Briefly, outline any five activities that are carried out by an operating system during;

i) Program Execution

ii) File system management (10 marks)

b) Explain the term thread (2 marks)

c) Distinguish between user level and Kernel level threads (8 marks)

**QUESTION THREE (20 MARKS)**

a) Distinguish between a job and a process (4 marks)

b) Outline any six benefits of multi programming (6 marks)

c) Describe the functions of the following components of a computer system;

i) Numerical processing unit

ii) Protection unit

iii) Cache

iv) Input-output interface

v) External computer system Bus (10 marks)

**QUESTION FOUR (20 MARKS)**

a) Explain the following terms;

i) Swapping

ii) Process life cycle

iii) System call (6 marks)

b) Security is a feature of an operating system to be able to protect itself and other resources of a computer system. Briefly;

i) Outline the resources of a computer system and their functions (5 marks)

ii) Describe the five main security requirements of the resources of a computer system (5 marks)

c) Compare and contrast between proprietary and open source computer operating systems (4 marks)

**QUESTION FIVE (20 MARKS)**

a) Using a labeled diagram, describe the micro Kernel structure of an operating system (8 marks)

b) Discuss the conditions that are necessary to create deadlocks in concurrent operating system environment (4 marks)

c) Explain the term inter-process communication (2 marks)

d) Discuss the requirements for inter-process communication (6 marks)