MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

UNIVERSITY ORDINARY EXAMINATION

2020/2021 ACADEMIC YEAR

FIRST YEAR **SECOND** SEMESTER EXAMINATION FOR, BACHELOR OF SCIENCE IN SOFTWARE ENGINEERING, BACHELOR OF EDUCATION MATHS COMPUTING, BACHELOR OF SCIENCE IN CS, BA DEVELOPMENT WITH IT, BACHELOR OF CT, BSC MATHS AND COMPUTER SCIENCE, BSC IT AND BBIT.

SIT 102 – COMPUTER OPERATING SYSTEMS

DURATION: 2 HOURS

DATE: 14/4/2021

TIME: 8.30-10.30AM

Instructions to candidates:

1. Answer question One 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 (30 MARKS)

a) Outline four functions of operating system (4 marks)
b) With aid of a diagram, differentiate monolithic and layered structure of operating system (6 marks)
c) Describe the following types of operating system
    i. Traditional OS/ batch systems (single user) (2 marks)
    ii. Multiprocessor operating system (multiprocessing OS) (2 marks)
    iii. Distributed operating system (2 marks)
d) Explain three reasons for process termination (3 marks)
e) With aid of a diagram, explain the five-state process model (5 marks)
f) State two objectives of memory management in operating systems (2 marks)
g) Differentiate between human and machine readable I/O devices (4 marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

a) Distinguish the following terminologies as used in operating system (6 marks)
    i. Race condition and critical section
    ii. Deadlock and mutual exclusion
    iii. Pre-emptible resource and non-pre-emptible resource
b) Scheduling is exercised at three distinct levels - High level, medium level and low-level. Describe the three levels of scheduling (6 marks)
c) Differentiate between Round Robin and First -come First-Served algorithms (4 marks)
d) Paul was advised to enable I/O buffering in his computer. Explain two conditions that have informed his friend's advice (4 marks)

QUESTION THREE (20 MARKS)

a) Describe three objectives of processing scheduling (6 marks)
b) With an aid of example, explain three goals of I/O software (6 marks)
c) Describe the components of access time (4 marks)
d) Distinguish between fixed partition and dynamic partition memory allocation technique (4 marks)

QUESTION FOUR (20 MARKS)

a) Describe three main functions of an operating system as regards the file management (6 marks)
b) Explain four attributes of a file (4 marks)
c) Describe direct memory access stating where it is applied and why (4 marks)
d) Explain three objectives of I/O device management (6 marks)