



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION & COMMUNICATION TECHNOLOGY

(DIT11M/DIT2K11M/DICT11M/DICT2K11M)

EIT 2109: PRINCIPLES OF OPERATING SYSTEM

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: FEBRUARY/MARCH 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions in **TWO** sections **A & B**

Answer question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

SECTION A (COMPULSORY)

Question 1

a) Explain the following schedulers

- i) Short term scheduler
- ii) Intermediate level
- iii) First in First out (FIFO)
- iv) Round Robin
- v) Priority scheduling

(10 marks)

b) Calculate the waiting time for process 4 and 2 below using SJF algorithm

(5 marks)

| process | Burst time | Arrival time |
|---------|------------|--------------|
| 1 | 12 | 0 |
| 2 | 6 | 1 |
| 3 | 7 | 2 |
| 4 | 2 | 3 |

c) Get the average waiting time of the processes shown below using SJF algorithm with preemption

(5

marks)

| Process | Burst Time | Arrival Time |
|---------|------------|--------------|
| 1 | 11 | 0 |
| 2 | 13 | 1 |
| 3 | 7 | 2 |
| 4 | 8 | 3 |
| 5 | 2 | 4 |

d) State **FIVE** factors considered when purchasing an operating system

(5 marks)

e) Explain **FIVE** functions of an operating system

(5marks)

SECTION B (Answer any two questions)

QUESTION 2

a) Discuss the following memory management techniques

- i) Paging
- ii) Segmentation
- iii) Swapping
- iv) Overlay
- v) Partitioned Allocations

(20 Marks)

QUESTION 3

a) Give the function of the IRQ and how interrupts are handled

(6marks)

- b Discuss **TWO** memory recovery techniques (4marks)
- c Outline the steps to perform the following Windows operations
- i) Disk Defragmentation (2 Marks)
 - ii) Check available Disk space (2 Marks)
 - iii) Change the system time and Date (2 Marks)
 - iv) Sending the computer to sleep mode (2 Marks)
 - v) Cancel Print jobs (2 Marks)

QUESTION 4

- a Schedule the jobs below using round robin algorithm with a time quantum of 4 seconds and calculate the average waiting time (10 marks)

| Process | Burst Time | Arrival Time |
|---------|------------|--------------|
| 1 | 20 | 0 |
| 2 | 9 | 1 |
| 3 | 3 | 2 |
| 4 | 15 | 3 |

- b Explain the layered structure and monolithic structures of an operating system (10marks)

QUESTION 5

- a Define deadlock and Explain **FOUR** conditions that lead to deadlock (9 marks)
- b Explain **THRE** deadlock preventive measures (4marks)
- c Define virtual memory and discuss how the following strategies are used to implement it
- i overlay
 - ii segmentation
 - iii paging (7 marks)