



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY (DICT 2K 11M)

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOG (DICT 11M)

DIPLOMA IN INFORMATION TECHNOLOGY (DIT 11M, DIT 2K 11M)

EIT 2105/ EIT 2109: PRINCIPLES OF OPERATING SYSTEM

END OF SEMESTER EXAMINATIONS

SERIES: DECEMBER 2011

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(30 Marks)

a) Define the following terms

- i. System call
- ii. Coalescing
- iii. IRQ
- iv. System bus

4marks

b) Explain the differences in the degree to which the following scheduling algorithms discriminate in favour of short processes. **2marks**

FCFS

RR

c) What are the four major activities of the operating system in regards to process management

4 marks

d) Give 3 setbacks to compaction

3 marks

e) Differentiate between the following terms

- i. System file and program file
- ii. Cache and buffer
- iii. Short term and long term scheduler
- iv. Overlay and segmentation in memory management

8 marks

f) State and explain process states

3 marks

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

5marks

process	Burst time	Arrival time
1	11	0
2	23	1
3	3	2
4	8	3
5	1	4

h) Give the difference between premtive and non preemptive scheduling

4marks

SECTION B (ANSWER ANY TWO QUESTIONS)

Question two 20 marks

a) Explain 5 functions of an operating system

5marks

b) Explain the following structure of an operating system

- i. layered structure **5marks**
- ii. The big mess **3 marks**
- iii. virtual machine **2 marks**

c) Schedule the jobs below using round robin algorithm with a time quantum of 4 seconds and calculate the average waiting time **5 marks**

process	Burst time	Arrival time
1	20	0
2	7	1
3	12	2
4	3	3

Question three 20 marks

- a) State 6 types of operating systems and explain how they differ **6 marks**
- b) state and explain 3 types of file organization giving 2 advantages and 2 disadvantages of each **10 marks**
- c) give 4 factors affecting choice of file organization **4 marks**

Question four 20 marks

- a) Explain 4 conditions that lead to deadlock **8 marks**
- b) Give 3 deadlock recovery and 2 preventive measures **5 marks**
- c) Give 2 challenges of monoprogramming **2 marks**
- d) Discuss how multiprogramming without swapping is achieved **5 marks**

Question five 20 marks

- a) Discuss the 3 strategies used to allocate memory to a process their problems and merits **6marks**
- b) Discuss 3 page swapping strategies **6marks**
- c) State and explain the components of an i/o port **8marks**