

MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

Unit Name PRINCIPLES OF OPERATING SYSTEM

Unit Code EIT 2109/2103

DIT\DICT

END OF SEMESTER EXAMINATION

Total 70 Marks

Time 2 Hours

Instructions: Answer Question One (Compulsory) and any other two questions.

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
- b) What are the four major activities of the operating system in regards to process management 4 marks
- c) Give 3 setbacks to compaction 3marks
- d) Differentiate between the following terms
- i. System file and program file

- ii. Cache and buffer
 - iii. Short term and longterm scheduler
 - iv. Overlay and segmentation in memory management 8marks
- e) State and explain process states 3marks
- f) 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

- g) Give the difference between premtive and non preemptive scheduling 4marks

QUESTION 2

- 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 3marks
 - 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 3

- a) State 6 types of operating systems and explain how they differ
6marks

- 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 4marks

QUESTION 4

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

QUESTION 5

- 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

