



TECHNICAL UNIVERSITY OF MOMBASA

INSTITUTE OF COMPUTING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN INFORMATION COMMUNICATION AND TECHNOLOGY

ECT 2105: PRINCIPLES OF OPERATING SYSTEM

END OF SEMESTER EXAMINATION

SERIES: AUGUST2019

TIME: 2HOURS

DATE: Pick DateAug2019

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attemptquestion ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

- a) Explain the difference among the following [2marks]
- i. Directory file
 - ii. Special file
- b) State and explain four memory allocation techniques [8marks]
- c) Explain the four conditions required for deadlock to occur [8marks]
- d) List two events that may take a process to a ready state. [2marks]

Question TWO

- a) Assume we have the process arrival time chart given below. Assume that the quantum is set to 5 time units

Process	Arrival time	Execution time
P1	0	16
P2	1	10
P3	6	4
P4	8	6
P5	8	10

Draw a Gantt chart to illustrate how these processes would be scheduled using

- i. Round Robin (RR) [5marks]
- ii. First-come first-Served (FCS) scheduling [5marks]
- iii. Calculate the average waiting time for each scheduling algorithm [10marks]

Question THREE

- a. State four differences between paging and segmentation [4marks]
- b. Explain the concept of direct memory transfer [4marks]
- c. Explain the concept of virtual memory [4marks]
- d. Explain three Categories of I/O Devices [6marks]
- e. State two device controllers and their functions [2marks]

Question FOUR

- a) Differentiate between internal fragmentation and external fragmentation [4marks]
- b) Differentiate between preemptive scheduling and non-preemptive scheduling [4marks]
- c) Differentiate between clock hardware and clock software [4marks]
- d) Describe different approaches that can be used to avoid deadlock [8marks]

Question FIVE

a) Explain the following mechanisms that Operating systems uses to allocate disk space to files.

[6marks]

i. Contiguous Allocation

ii. Linked Allocation

iii. Indexed Allocation

b) Explain the following scheduling algorithms

[4marks]

c) Shortest job first

d) Priority scheduling

e) Explain four types of operating system

[4marks]

f) Explain the following allocation algorithms.

[6marks]

i. First Fit

ii. Best fit

iii. Worst fit