



# **MURANGA UNIVERSITY COLLEGE**

(A constituent College of Jomo Kenyatta University of Agriculture & Technology)

**MAIN CAMPUS**

**ORDINARY UNIVERSITY EXAMINATIONS**

**2015/2016 ACADEMIC YEAR**

**FIRST YEAR FIRST SEMESTER SUPPLEMENTARY**

**FOR THE DEGREE**

**OF**

**BACHELOR OF BUSINESS INFORMATION TECHNOLOGY**

**COURSE CODE: HBT2102**

**COURSE TITLE: COMPUTER OPERATING SYSTEMS**

**DATE: 2015**

**TIME: Two Hours**

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## **INSTRUCTIONS TO CANDIDATES**

Answer Question ONE (1) and **any** other TWO Questions

MRUC observes ZERO tolerance to examination irregularities

This Paper Consists of 2 Printed Pages. Please Turn Over. ►

**QUESTION ONE [30 marks] -Compulsory**

ai) Describe the functions of an operating system to a computer system. 6 marks

ii) Describe fully the meaning of a process state by outlining the properties of a process state. 5 marks

b) Use the table below to answer the questions that follow.

Process	Arrival time	Processing time
A	0.0	4
B	2.0	1
C	3.0	4
D	4.0	2

I) Draw a process execution timing chart of the system which is using the Shortest Remaining Time scheduling algorithm. 2 marks

II) From the chart and the table above, Calculate;

- i. The turnaround time for each process 4 marks
- ii. Average turnaround time 1 mark
- iii. Wait time 4 marks
- iv. Average wait time 1 mark
- v. The throughput of the system. 2 marks

III) From the table above, draw the process execution timing charts of the system using the following scheduling algorithms.

- i) Round Robin with quantum 1 and with quantum 2. 4 marks
- ii) First Come First Served. 2 marks

## QUESTION TWO

- ai) Define the concept of scheduling in operating system. 2 marks
- ii) Outline five objectives of scheduling in operating systems. 10 marks
- b) Describe four objectives of incorporating operating system in a computer system. 8 marks

### Question 3

- a) Describe three similarities and three differences between threads and processes in operating systems. 6 marks
- b) Outline four Functions of an Operating Systems 8 marks
- c) Describe Segmentation with paging Memory allocation scheme in a computer system. 6 marks

### Question 4

- a) With an example, define semaphore in operating system 4 marks
- b) Name the main services provided by an operating systems 6 marks
- c) Describe the concept of Round Robin Scheduling 6 marks
- d) Describe strategies for solving memory allocation problem 4 marks