TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
(BSIT SEP 12/FT)

ICS 2202/EIT 4109: OPERATING SYSTEMS I

END OF SEMESTER EXAMINATION
SERIES: APRIL 2013
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions. Attempt question **ONE** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

Question One (Compulsory)

a) Define the following terms: **(4 marks)**
- **(i)** System call
- **(ii)** Coalescing
- **(iii)** IRQ
- **(iv)** System bus

b) Explain the differences in the degree to which the following scheduling algorithms discriminate in favor of short processes.
- **(i)** FCFS
- **(ii)** RR **(4 marks)**

c) What are the **FOUR** major activities of the operating system in regard to process management? **(4 marks)**

d) Diffentiate 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
(v) Memory management **(8 marks)**

e) State and explain any **THREE** process states. **(3 marks)**

f) Get the average waiting time of the processes below using SJF algorithm with pre-emption **(6 marks)**

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 preemptive and non preemptive scheduling. **(4 marks)**

Question Two

a) Explain **FIVE** functions of an operating system **(5 marks)**

b) Discuss the following structure of an operating system
(i) Layered structure **(5 marks)**
(ii) The bigness **(3 marks)**
(iii) Virtual memory **(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

a) Define compaction. **(2 marks)**

b) State any **THREE** setbacks of compaction. **(3 marks)**

c) Explain the **THREE** strategies used to select a free memory hole. **(9 marks)**

d) Give **FOUR** factors that affect the choice of a file organization. **(4marks)**

e) Explain overlay as used in implementing virtual memory. **(2 marks)**

Question Four

a) Explain **FOUR** conditions that lead to deadlock **(8 marks)**

b) Give any **THREE** deadlock recovery measures. **(5 marks)**

c) State any **TWO** challenges of mono-programming. **(2 marks)**

d) Discuss how multiprogramming without swapping is achieved. **(5 marks)**

Question Five

a) Discuss the **THREE** strategies used to allocate memory to a process stating their problems and merits. **(6 marks)**

b) Discuss **THREE** page swapping strategies. **(6 marks)**

c) State and explain the components of an input/output port. **(8 marks)**