



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

UNIVERSITY ORDINARY EXAMINATION

2018/2019 ACADEMIC YEAR

**FIRST YEAR SECOND SEMESTER EXAMINATION FOR, DIPLOMA IN
INFORMATION TECHNOLOGY**

SIT 052 – OPERATING SYSTEMS

DURATION: 2 HOURS

DATE:

TIME:

Instructions to candidates:

1. Answer question One and Any Other Two questions
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

- a) Define the following terms as used in operating system: (4 marks)
 - i. Shell
 - ii. Kernel
 - iii. Mutual exclusion
 - iv. Semaphore
- b) Explain the conditions necessary for deadlock occurrence (6 marks)
- c) Explain a circumstance where shortest job first scheduling algorithm could be applied in process management (2 marks)
- d) Outline four file management operations of the system (4 marks)
- e) Ruth intends to assign file attributes to a file in a database. Explain three attributes that she could assign to the file (6 marks)
- f) Describe two roles of device drivers in IO management (4 marks)
- g) Distinguish between short term scheduler and long term scheduler as applied in process management (4 marks)

SECTION B - ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

- a) Distinguish the following terminologies as used in operating systems (4 marks)
 - i. Race condition and critical section
 - ii. Preemptive and no preemptive resource
- b) Figure 1 shows a type of scheduling algorithm. Use it to answer the questions that follow

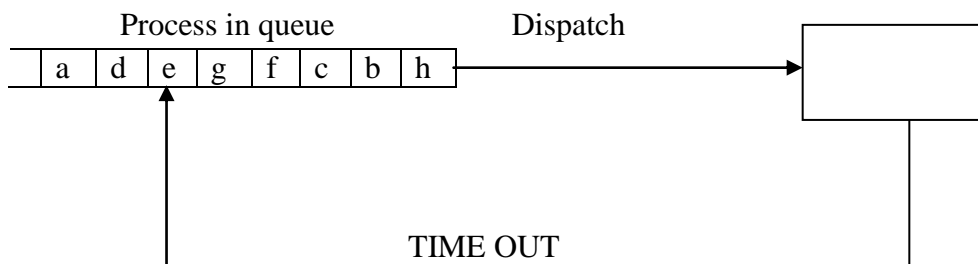


Figure 1

Given that the processes have equal time bursts;

- i. Identify the scheduling algorithm in Figure 1 (2 marks)
- ii. Explain the advantages of the scheduling algorithm identified in (i) (4 marks)
- c) Describe any three types of operating systems (6 marks)
- d) Explain two roles of operating system in memory management (4 marks)

QUESTION THREE (20 MARKS)

- a) Distinguish between command language and job language (4 marks)
- b) With an aid of a diagram, explain the five state process model (8 marks)
- c) Explain the concept of virtual memory in operating system (2 marks)
- d) Describe three memory placement policies (6 marks)

QUESTION FOUR (20 MARKS)

- a) Explain each of the following terms as applied in interprocess communication (4 marks)
 - i. Pipe
 - ii. Monitor
- b) The operating system applies different ways in order to improve disk performance. Explain three of the ways (6 marks)
- c) Discuss four scheduling algorithms used by operating system to manage processes (8 marks)
- d) Distinguish between internal and external fragmentation (2 marks)