



THE TECHNICAL UNIVERISTY OF MOMBASA

# Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY  
DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY  
(DICT)

**ECS 2103: OPERATING SYSTEMS**

END OF SEMESTER EXAMINATION

**SERIES: AUGUST 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) Describe the structure of an operating system. (4 marks)
- b) Define the following terms:  
(i) Process  
(ii) Scheduler  
(iii) Job  
(iv) Interrupt  
(v) Caching (10 marks)
- c) Describe the functions of operating systems (6 marks)

### Question Two

- a) Explain the following categories of files:  
(i) Master file  
(ii) Transaction file  
(iii) Reference file (6 marks)
- b) Describe the different ways of recovering from deadlock (6 marks)
- c) Using an illustration, describe the different process states. (4 marks)
- d) Explain how a basic interrupt mechanism works. (4 marks)

### Question Three

- a) State the purpose of scheduling. (2 marks)
- b) Briefly explain the following memory management techniques:  
(i) Paging  
(ii) Swapping  
(iii) Overlay  
(iv) Segmentation (8 marks)
- c) Describe the following strategies of selecting a free memory hole:  
(i) First – fit  
(ii) Best – fit  
(iii) Worst – fit (6 marks)
- d) Explain the setbacks of compaction (4 marks)

### Question Four

- a) Explain how spooling works (4 marks)
- b) Describe the round robin scheduling algorithm and state its advantages. (6 marks)
- c) Describe **FIVE** factors that affect the choice of file organization. (10 marks)

### **Question Five**

- a) Using an illustration, explain how a deadlock occurs. **(4 marks)**
- b) Explain the different ways of preventing the occurrence of a deadlock. **(8 marks)**
- c) Differentiate between the following:
- (i) Pre-emptive scheduler and non pre-emptive scheduler
  - (ii) Long-term scheduler and short term scheduler **(6 marks)**
- d) Explain the term “device controller” **(2 marks)**