



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

DIPLOMA IN INFORMATION TECHNOLOGY

(DICT J12EV/DIT J12EV)

ECT 2105: PRINCIPLES OF OPERATING SYSTEM

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions in **TWO** sections **A & B**

Answer question **ONE (COMPULSORY)** and any other **TWO** questions
Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

SECTION A (COMPULSORY)

Question One (20 marks)

- a) Describe the structure of the operating system. (4 marks)
- b) Define the following terms: (5 marks)
- i) Process
 - ii) Scheduler
 - iii) Job
 - iv) Interrupts
 - v) Caching
- c) State and describe the function of operating system. (5 marks)
- d) Give the **THREE** major ways operating system can be categorized, for each classification. Give examples. (6 marks)

SECTION B (Answer Any Two Questions)

Question Two (20 marks)

- a) State the advantages of multiprogramming concept over monoprogramming concept. (2 marks)
- b) Describe how the basic interrupt mechanisms works. (4 marks)
- c) Describe the following categories of data files. (3 marks)
- i) Master files
 - ii) Transaction files
 - iii) Reference files
- d) Using an illustration, describe the different process states. (5 marks)
- e) Describe **THREE** different ways of recovering from deadlock. (6 marks)

Question Three (20 marks)

- a) Differentiate the following:
- i) Long term scheduler and short term scheduler (2 marks)
 - ii) Preemptive scheduler and non-preemptive scheduler. (2 marks)
- b) Define spooling and describe how it works. (3 marks)
- c) Describe the round robin scheduling algorithm and state its advantage. (3 marks)
- d) Describe the **FIVE** factors that affect the choice of file organization. (10 marks)

Question Four (20 marks)

- a) State the purpose of scheduling. (2 marks)
- b) Briefly describe the following memory management techniques. (8 marks)
- i) Paging
 - ii) Swapping
 - iii) Overlay
 - iv) Segmentation
- c) Differentiate between fixed partition and variable partition. (2 marks)

- d) Describe the following strategies of selecting a free memory hole. **(3 marks)**
- i) First-fit
 - ii) Best fit
 - iii) Worst fit
- e) Define a virtual memory. **(2 marks)**
- f) State the setbacks of compaction. **(3 marks)**

Question Five (20 marks)

- a) Using an illustration, describe how deadlock occur. **(2 marks)**
- b) Give the disadvantages of coalescing. **(2 marks)**
- c) Define device controller. **(2 marks)**
- d) Using an illustration differentiate between coalescing and compaction. **(6 marks)**
- e) Discuss the different ways of preventing the occurrence of deadlock. **(8 marks)**