



THE TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION
TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
(DICT M12/S-EV/S-FT)

ECT 2105: PRINCIPLES OF OPERATING SYSTEMS

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: FEBRUARY 2013

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions

Answer question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

Question One (Compulsory)

- a) Using an illustration, describe the structure of operating system. **(4 marks)**
- b) State and explain **THREE** different ways of recovering from deadlock. **(6 marks)**
- c) Briefly describe the following memory management techniques. **(8 marks)**
 - (i) Paging
 - (ii) Swapping
 - (iii) Overlay
 - (iv) Segmentation
- d) State the advantage of multi-programming concept over monoprogramming concept. **(2 marks)**

Question Two

- a) State the functions of operating system. **(5 marks)**
- b) State and describe the categories of data files. **(6 marks)**
- c) Using an illustration, differentiate between coalescing and compaction. **(6 marks)**
- d) State and describe strategies of selecting a free memory hole. **(3 marks)**

Question Three

- a) State the functions of a memory manager. **(4 marks)**
- b) Differentiate the following:
 - (i) Long term scheduler and short term scheduler
 - (ii) Preemptive scheduler and non preemptive scheduler.
- c) State and describe the **FIVE** factors that affect the choice of file organization. **(10 marks)**
- d) Define virtual memory. **(2 marks)**

Question Four

- a) Give the disadvantages of coalescing. **(2 marks)**
- b) State the advantages and disadvantages of fixed partition. **(4 marks)**
- c) Why would first come first served scheduling algorithm not be preferred to shortest job first scheduling algorithm. **(2 marks)**
- d) Briefly describe the multiprogramming concept and how it can be implemented. **(6 marks)**
- e) Differentiate between pages and frames. **(2 marks)**
- f) State and describe the conditions of deadlock. **(4 marks)**

Question Five

- a) Describe the **THREE** different ways into which files can be organized. **(6 marks)**
- b) What is the significance of managing processes? **(2 marks)**
- c) Describe the different ways of preventing the conditions for deadlock. **(8 marks)**
- d) Differentiate between fixed partition and variable partition. **(4 marks)**