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

<u>**Instructions to Candidates:**</u>
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
<u>**SECTION A (COMPULSORY)**</u>

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)**

<u>**SECTION B (Answer Any Two Questions)**</u>

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 technicians. **(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)**