



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION TECHNOLOGY

(DIT MOD I)

SEMESTER I EXAMINATIONS

APRIL/MAY 2010 SERIES

**INTRODUCTION TO COMPUTERS AND PRINCIPLES
OF OPERATING SYSTEMS**

TIME: 2 hours

INSTRUCTIONS TO CANDIDATES

Answer Question **ONE** in Section **A** and any other **TWO** questions in Section **B**.

Question ONE

- (a). Define the term computer. **[2 marks]**
- (b). Differentiate between desktop and server computers. **(3 Marks)**
- (c). Explain **TWO** preventive maintenance procedures that can be carried out to ensure safety of a computer **(4 Marks)**
- (d). With the aid of a diagrams, define the following types of LANs:
- (i). Star topology
 - (ii). Ring topology
 - (iii). Bus topology
- (9 Marks)**
- (e). Explain why a computer is a powerful tool. **(2 Marks)**
- (f). Explain the following terms:
- (i). Firmware
 - (ii). Booting
 - (iii). Spooling
 - (iv). Real-time system

(8 Marks)

SECTION B

Question TWO

- (a). Define the following terms:
- (i). System unit
 - (ii). Control Unit
 - (iii). Read Only Memory (ROM)
 - (iv). Random Access Memory (RAM)
- (8 Marks)**
- (b). Differentiate between Input and Output giving examples. **(5Marks)**
- (c). Sketch the directory structure represented by the following pathnames:
- C:\Africa\Kenya\Coast\Mombasa\population.doc
 - C:\Africa\Kenya\Central\Nyeri\population.doc
 - C:\Africa\Kenya\Rift Valley\Eldoret\population.doc

(3 Marks)

(d). State the function of the following keyboard keys.

- (i). Numeric keypad
- (ii). Function keys
- (iii). Toggle keys
- (iv). Arrow keys

(4 Marks)

Question THREE

The following series of processes with the given estimated run-times arrive in the ready queues in the times shown respectively.

Job	AT	Burst
A	0	4
B	2	5
C	8	5
D	10	8
E	11	10

- (a). Draw the time Gantt charts for Round Robin (Time quantum of 4), SJF and SRTN algorithms.
- (b). Compare the Average Waiting Time for the three algorithms and comment on your results. **(20 Marks)**

Question FOUR

- (a). Explain the main merit and demerit of the following memory management techniques:
 - (i). Fixed partition
 - (ii). Variable partition
 - (iii). Variable partition with compaction
 - (iv). Paging technique**(16 Marks)**
- (b). Outline **FOUR** characteristics which give rise to the wide variations in the nature of I/O devices. **[4 marks]**

Question FIVE

(a). The performance of the disk system on a computer is often the most significant factor in determining the overall speed of an application. Discuss how the following techniques are applied to improve on the disk system.

- (i). Blocking
- (ii). Disk Caching
- (iii). RAID disks

- (iv). File re-organization

(16 Marks)

(b). Explain the term 'Device Independence' and indicate the contribution made by device drivers in this respect.

(4 Marks)