



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT COMPUTER SCIENCE & INFORMATION TECHNOLOGY

CERTIFICATE IN COMPUTER MAINTENANCE & NETWORK TECHNOLOGY
CMNT 2K 11M

ECT 1112: DATA COMMUNICATIONS

END OF SEMESTER EXAMINATIONS

SERIES: DECEMBER 2011

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 (30 MARKS)

- a) Define the following terms:
- i) Data communications (2 marks)
 - ii) Modem (2 marks)
 - iii) Carrier signals (2 marks)
- b)
- (i) Distinguish between parallel and serial transmission (Tabulate) (4 marks)
 - (ii) Name the **three** modes of communications (3 marks)
 - (iii) Give **one** application of each of the communication modes named in (ii) (3 marks)
- c)
- (i) Draw diagrams to distinguish between synchronous and asynchronous serial transmission (4 marks)
 - (ii) Give **two** features of each of the serial transmission illustrated in (c)(i) (4 marks)
- d)
- (i) Draw a block diagram to illustrate demodulation process (4 marks)
 - (ii) Give **two** disadvantages of external modem (2 marks)

SECTION B (ANSWER ANY TWO QUESTIONS)

QUESTION 2 (15 MARKS)

- a) Briefly explain the following modulation processes
- i) Amplitude modulation (AM) (1 marks)
 - ii) Frequency Modulation (FM) (1 marks)
 - iii) Phase Modulation (PM) (1 marks)
- b) Draw diagrams to illustrate the modulation processes listed in (a) (12 marks)

QUESTION THREE (15 MARKS)

- a) Briefly describe the following multiplexing categories
- i) Frequency Division Multiplexing (FDM) (2 marks)
 - ii) Time Division Multiplexing (TDM) (2marks)
- b) Draw diagrams to illustrate the differences between synchronous and Statistical multiplexing methods (11 marks)

QUESTION FOUR (15 MARKS)

- a) Explain in details the areas of application of multiplexing in the communication industry. (10 marks)
- b) List down **five** characteristics of multiplexing (5 marks)

QUESTION FIVE (15 MARKS)

- a) Name **two** switching methods used in data communications (2 marks)
- b) List **six** characteristics of each of the following methods named in (a) (6 marks)
- c) With the aid of a diagram explain the operation of a four channel FDM system (7 marks)