



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

*Faculty of Engineering & Technology*

**DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY**

UNIVERSITY EXAMINATION FOR BACHELOR OF TECHNOLOGY IN INFORMATION  
TECHNOLOGY

**BTIT/MAY2011/S-EV (VIII, SEM I)**

**EIT 4303: DATA COMMUNICATIONS**

END OF SEMESTER EXAMINATION

**SERIES: APRIL 2012**

**TIME: 2 HOURS**

## **Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*

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

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

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

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## **SECTION A (COMPULSORY)**

### **Question One (30 Marks)**

- a) Define data encryption (2 marks)
- b) Distinguish between DHCP and HTTP (4 marks)
- c) Find the classes of the following IP address (3 marks)
- d) (i) Define network model also known as network layers  
(ii) Explain **TWO** popular data communication network models (5 marks)
- e) (i) Define Domain Name System (DNS)  
(ii) Explain any **TWO** uses of DNS (5 marks)
- f) Compare and contrast Digital Subscriber Line DSL and Cable (4 marks)
- g) Describe briefly TCP over MPLS (2 marks)
- h) Outline any **FOUR** types of MODEMS (2 marks)
- i) Explain why GSM is a popular mobile phone technology (2 marks)

## **SECTION B (Attempt any TWO sections)**

### Question Two (20 marks)

A new company wishes to have reached its staff members and some selected clients that are doing business with the organization. They have a metropolitan area of coverage but have offices in two areas of the metropolis. They have asked you to advice on the best wireless telecommunication model that they can put in place to satisfy their needs.

- (i) Describe **TWO** possible IEEE wireless telecommunication standards that you would recommend and the reasons for the selection.
- (ii) Describe other issue that you would highlight to the management of the organization (20 marks)

### Question Three (20 marks)

- a) Explain any **FOUR** routing protocols (8 marks)
- b) Describe any **THREE** protocols of the following TCP/IP layers
  - (i) Transport
  - (ii) Network (12 marks)

### Question Four (20 marks)

- a) Describe Virtual private network (3 marks)
- b) Explain briefly digital signature scheme algorithms (3 marks)
- c) Explain **THREE** key authentication factors (6 marks)
- d) Explain the following switching techniques
  - (i) Packet switching
  - (ii) Circuit switching (8 marks)

### Question Five (20 marks)

A new company plans to offer multimedia services including Voce over IP (VoIP) to sparsely distributed clients. They plan to use Optical fibre, air and electrical cables to communicate with their clients. **Required:**

- a) Describe the best data multiplexing methods that the company can use for each transmission media. (9 marks)
- b) (i) Define Quality of Service (QoS)  
(ii) Explain **FIVE** QoS performance and quality issue that you can advice on (11 marks)