



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2010/2011
INSTITUTIONAL BASED PROGRAMME (IBP) – AUGUST SESSION
EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE
SCT 209: DATA COMMUNICATION TECHNOLOGIES

DATE: Thursday 30th December, 2010

TIME: 8.00 a.m. – 10.00 a.m.

Instructions: Answer question **ONE** and other **TWO** questions.

Question one (30 marks)

- (a) Define the following term:
- (i) Data Communication
 - (ii) Modem
 - (iii) Full duplex
 - (iv) Multiplexing
 - (v) Network Interface Card
- (5 marks)**
- (b) Explain the following Backbone components:
- (i) Network cable
 - (ii) Hardware devices
- (4 marks)**
- (c) Give four reasons that explain why Networks need security.
- (8 marks)**
- (d) With aid of suitable diagrams explain the topology of the wireless Ethernet.
- (6 marks)**
- (e) With aid of a suitable diagram explain the basic architecture of the circuit-switched networks.
- (7 marks)**

Question Two (15 marks)

- (a) While there are an infinite number of ways in which network designers can build backbone networks, there are really only four fundamental architectures that can be combined in different ways. With aid of simple suitable diagrams explain the four fundamental architectures.
- (12 marks)**

- (b) Fiber-Distributed Data Interface (FDDI) is one of the technologies used in Backbone networks. Briefly discuss the **topology** and **media access control** of the FDDI technologies.

(8 marks)

Question Three (15 marks)

- (a) With aid of a suitable diagram explain the basic architecture of the Packet-switched networks. (5 marks)
- (b) Briefly explain the following types of packet-switching services:
- (i) X.25
 - (ii) Asynchronous Transfer Mode (ATM)
 - (iii) Frame relay
 - (iv) Switched multimegabit data services
 - (v) Ethernet/IP packet network

(15marks)

Question Four (15 marks)

- (a) Based on the Internet model, using a suitable diagram explain how data is transmitted from the sender to the receiver. (10 marks)
- (b) Explain the media access control method used in by the traditional Ethernet to access the transmission circuit. (2 marks)
- (c) The effective data rate depends on four basic factors. State and explain these four basic factors. (8 marks)

Question Five (20 marks)

Assume that you have been appointed the IT security officer for your organization and you have been asked to conduct the risk assessment procedures for network existing within the organization. Outline in details how you will carry the task.