THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN COMPUTER STUDIES

HDIP 10A

EIT 3110: DATA COMMUNICATION

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: FEBRUARY/MARCH 2012
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

Question 1

a) Define Multiplexing as applied in data communication (2 marks)

b) Explain any **TWO** features of the following transmission modes
    (i)   Simplex
    (ii)   Half duplex
    (iii)   Full duplex (3 marks)

c) State any **SIX** reasons that led to the development of data communication standards (3 marks)

d) State any **FOUR** key considerations that one needs to consider when selecting a transmission medium (4 marks)

e) Outline **FOUR** components that make up an optical fibre communication link (4 marks)

f) Define channel coding (2 marks)

g) Explain the following terminologies as applied in data communication (4 marks)
    (i)   Signaling
    (ii)   Encoding
    (iii)   Modulation
    (iv)   Signaling element (4 marks)

h) State any **SIX** advantages of installing computer networks (3 marks)

i) Outline any **TWO** ways of classifying computer networks (2 marks)

SECTION B (Answer any two questions)

Question 2

a) Give **SIX** reasons for errors in data communication (3 marks)

b) Describe the following terms as used in data communication (6 marks)
    (i)   Propagation delay
    (ii)   Jitter
    (iii)   White noise

c) Distinguish between forward Error Control (FEC) and Backward Error Control (BEC) (6 marks)

d) Describe with the aid of a sketch how analog data is converted into digital using PCM (5 marks)

Question 3

a) State **TWO** types of computer network topology (2 marks)

b) (i)   Outline any **FOUR** advantages of bus topology

(ii) Outline any **FOUR** disadvantages of bus topology (4 marks)

(iii) Outline any **FOUR** advantages of ring topology (4 marks)

(iv) Outline any **FOUR** disadvantages of ring topology (4 marks)

c) Name any **SIX** computer network devices (3 marks)

d) (i) Describe the importance of a bridge in a network
(ii) Define mesh networking (4marks)

e) Describe the main advantage of mesh networking (3 marks)

Question 4

a) Describe the function of the following OSI reference model layers
(i) Data link
(ii) Network
(iii) Transport (6 marks)

b) State any **THREE** reasons why IP Internet Protocol is said to be unreliable (3 marks)
c) Outline any **SIX** properties specified by most data communication protocols (3 marks)
d) Describe any **FOUR** transmission medium impairment (8 marks)

Question 5

a) State any **TEN** advantages of optical fibre (5 marks)

b) Describe briefly any **FOUR** optical fibre power losses (4 marks)