THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION TECHNOLOGY – DIT 2K 9J

ECS 2308: DATA COMMUNICATION III

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)

Q uestion1 (30 marks)

a) Explain the following terms

    i.   Multicast
    ii.   Unicast
    iii. Broadcast   **(6 Marks)**

b) What are the difference between X.25 and Frame Relay   **(6 Marks)**
c) What does the term medium access methods mean?   **(3 Marks)**
d) List the reason why Frame relay is a preferred protocol for Wide Area Network   **(3 marks)**
e) List **three** (3) functions of the data link layer   **(3 Marks)**
f) What is the difference between the following

    i.   Simplex transmission
    ii.   Half duplex transmission
    iii. Full duplex transmission   **(6 Marks)**

g) List three (3) features of wireless networks   **(3 Marks)**

SECTION B (ANSWER ANY TWO QUESTIONS)

Question 2 (15 marks)

a) Give **three** (3) situations where congestion can occur in a network   **(10 marks)**

b) What are the different techniques which have been developed for congestion avoidance? Explain
                                       (5 Marks)

Question 3

Answer the following questions in brief:
    i.   Explain the TCP/IP addressing mechanism.
    ii.   Explain the characteristics of wireless medium
    iii. What are the features of the MAC layer protocol.
    iv. Differentiate between analog and digital systems
    v.   Differentiate between Time Division Multiplexing**(TDM)** and Frequency Division
        Multiplexing **(FDM)**   **(15 Marks)**

Question 4

a) Explain the principle of Carrier Sense multiple Access/ Collision Detection   **(5 marks)**

b) With the aid of a well detailed diagram, explain how CSMA/CA and CSMA/CD differ and each
    one of them function as channel access Methods   **(10 Marks)**

Question 5

a) Write down and explain the major advantages of optical fiber as compared to twisted pair cables
                                         (6 Marks)

b) Explain the term Redundancy Array Independent Disks (RAID) and list differentiate between hardware and software RAID **(6 Marks)**

c) Differentiate between connection oriented and connectionless orient protocols **(3 Marks)**