THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT COMPUTER SCIENCE & INFORMATION TECHNOLOGY

BACHELOR OF TECHNOLOGY IN INFORMATION COMMUNICATION TECHNOLOGY
BTECHICT11M

BIT 4107: NTETWORKS ESSENTIALS

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 **TWO** printed pages

SECTION A (COMPULSORY)

Question 1 (30 marks)

(a) Describe any **TWO** advantages of serial transmission over parallel transmission over a long distance (2 marks)
(b) Describe any **THREE** advantages of using a network bridge (3 marks)
(c) Describe any **THREE** Automatic Repeat Request schemes (3 marks)
(d) Outline any **FOUR** TCP/IP layers (2 marks)
(e) Distinguish between circuit switching and packet switching (4 marks)
(f) Describe briefly any **FOUR** types of multiplexing in computer networks (4 marks)
(g) Describe briefly any **FOUR** routing techniques (4 marks)
(h) Distinguish between baseband and broadband with the aid of a diagram (4 marks)
(i) Distinguish between half duplex and full duplex transmission with the aid of a sketch (2 marks)
(j) Outline any **FOUR** computer network addresses employed in OSI reference model (2 marks)

SECTION B (ANSWER ANY TWO QUESTIONS)

Question 2 (20 marks)

(a) Encode the following data 011100001 using
   i. Bi-phase S
   ii. Bi-phase M
   iii. Bipolar AMI
   iv. Manchester
   v. Differential Manchester (10marks)

(b) Distinguish between selective and go back N times automatic Repeat Requests ARQ (4 Marks)

(c) Prove that if a transmitter using a polynomial 1011to encode the following data 110000110 and no bit error occurs during transmission, then the receiver will not detect an error. (6 marks)

Question 3 (20 marks)

(a) Describe the importance of standards in computer networks (2 marks)
(b) Describe any **THREE** functions of the following OSI reference model layers
   i. Network layer
   ii. Presentation layer
   iii. Data link layer (9 marks)
(c) Describe any **FOUR** unbound transmission media with the aid of a sketch (4 marks)
(d) Describe any **FIVE** optical fibre connector losses with the aid of a sketch (5 marks)

Question 4(20 marks)

(a) (i) Describe medium access method

(ii) Describe any **THREE** medium access methods (10 marks)

(b) (i) Define topology as applied in computer networks
(ii) Describe any **THREE** popular topologies used in computer networks
(ii) State any **TWO** advantages for selecting each of the three topologies in Q5(a)(ii)

(10 marks)

Question 5(20 marks)

(a) Define transmission medium (1 marks)
(b) State any **TEN** advantages of optical fibre cable over other transmission media (5 marks)
(c) Outline **TWO** factors that are considered in determining minimum and maximum packet size (2marks)
(d) Outline any **FOUR** classifications of computer networks (4 marks)
(e) Distinguish between Carrier Sense Multiple Access with Collision Detection CSMA/CD and Carrier Sense Multiple Access with Collision Avoidance CSMA/CA (8 Marks)