THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering and Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

**UNIVERSITY EXAMINATION FOR DEGREE IN
BACHELOR OF SCIENCE IN I.T- BSC I.T 11M**

BIT 2108: COMPUTER NETWORKS

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: FEBRUARY/MARCH 2012

TIME: 2 HOURS

<u>**Instructions to Candidates:**</u>
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*)

QUESTION 1 (30 marks)

(a) Outline any **FOUR** TCP/IP layers   2 Marks

(b) (i) Outline any **FOUR** optical fibre applications

  (ii) Describe the advantage of graded index multimode over step-index multimode optical fibre

    with the aid of a sketch   5 Marks

(c) Explain any **THREE** reasons that make parallel transmission outside the computer difficult
                                                                            3 Marks

(d) (i) State any **FOUR** classification of computers

  (ii) State why it's not advisable to classify networks according to distance   3 marks

(e) Describe a the purpose of a *transceiver* in computer network   2 marks

(f) Distinguish between half duplex and full duplex with the aid of a sketch   2 marks

(g) Identify any **THREE** levels of synchronization in computer communication   3 marks

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(h) Describe the importance of topology in computer networks   2 marks
(i) Describe briefly any **FOUR** types of multiplexing commonly used in computer networks

                                                                           4 marks

(j)   (i) Distinguish between asynchronous and synchronous transmission modes

          (ii) State any **TWO** advantages of asynchronous over synchronous mode

          (ii) State any **TWO** advantages of synchronous over asynchronous mode   4 marks

QUESTION TWO [20 marks]

(a) State the importance of standards in computer networks   1 Mark

(b) Describe any **THREE** functions of the following OSI reference model layers
            i.   Data link Layer
            ii. Network layer
            iii. Presentation Layer   9 marks

(c) Encode the following data 110000110 using
            i.   Bi-phase S
            ii. Bi-phase M
            iii. Bipolar AMI
            iv. Manchester
            v.   Differential Manchester   10 marks

QUESTION THREE [20 marks]

(a) Outline any **FOUR** advantages of Coaxial cable over Twisted pair cable   2 Marks
(b) Describe the optical fibre communication link with the aid of a sketch   4 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 10 marks

QUESTION FOUR [20 marks]

(a) Outline **TWO** meaning of modulation as applied in channel encoding   2 mark

(b) Describe any **TWO** reasons for using a *bridge* in a computer network   2 marks
(c) Describe the function of the following network devices
            i.   Gateway
            ii. Proxy server
            iii. Firewall
            iv. Router   8 marks
(d) Describe in detail any **FOUR** routing techniques   8 marks

QUESTION FIVE [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