THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

BACHELOR TECHNOLOGY IN INFORMATION COMMUNICATION TECHNOLOGY
(BTECH ICT 2011M)

EIT 4201: NETWORK DESIGN & IMPLEMENTATION

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: MAY/JUNE 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
Answer any **THREE** questions. Question **ONE** is Compulsory
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

SECTION A (Compulsory - 30 marks)

Question One (30 Marks)

a) Explain the following terms: (10 marks)
   i) Ethernet switching
   ii) Network design
   iii) Dynamic Host Configuration Protocol (DHCP)
   iv) Topology
   v) Variable length subnet masking (VLSM)

b) Explain the difference between: (20 marks)
   i) "IPv4" and "IPv6"
   ii) "Repeater" and "Bridge"
   iii) "Transmission Control Protocol (TCP)" and "User Datagram Protocol (UDP)"
   iv) "Network address" and "Broadcast addres"
   v) "Extranet" and "Intranet"

SECTION B (Answer any TWO questions – 40 Marks)

Question Two (20 marks)

a) State any **TWO** problems associated with the star topology   (2 marks)

b) Explain any **TWO** factors to consider when choosing a network media   (2 marks)
c) Explain the hardware and software requirements in a network design   (8 marks)
d) Outline the basic network testing and troubleshooting procedures   (8 marks)

Question Three (20 marks)

a) Explain the terms:
    i)   Routing
    ii) Protocols   (4 marks)
b) Describe the following intermediate routing protocol: (12 marks)
    i)   Routing Information Protocol (RIP)
    ii) Open Shortest Path First (OSPF)
    iii) Enhanced Interior Gateway Routing Protocol (EIGRP)
c) With an aid of a diagram, describe the term "Internet Control Message Protocol (ICMP)"

                                                            (4 marks)

Question Four (20 marks)

a) Most businesses actually have only a few requirements for their network. The design goals should aim at addressing such requirements. Outline any FIVE goals of network design
                                                         (10 marks)
b) Mombasa University has contracted you to design its local area network. Describe steps in network design necessary for the accomplishment of the task.   (10 marks)

Question Five (20 marks)

a) Explain the term "Virtual Local Area Network (VLAN)   (2 marks)

b) Explain any **FOUR** benefits of VLAN   (8 marks)

c) Explain the term "computer networks"   (2 marks)

d) Explain the application of compute networks in the following areas: (8 marks)
    i)   Business Applications
    ii) Home Applications
    iii) Mobile Users
    iv) Social Issues