



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

Instructions to Candidates:

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)
- Ethernet switching
 - Network design
 - Dynamic Host Configuration Protocol (DHCP)
 - Topology
 - Variable length subnet masking (VLSM)
- b) Explain the difference between: (20 marks)
- “IPv4” and “IPv6”
 - “Repeater” and “Bridge”
 - “Transmission Control Protocol (TCP)” and “User Datagram Protocol (UDP)”
 - “Network address” and “Broadcast address”
 - “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