



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

UNIVERSITY ORDINARY EXAMINATION

2018/2019 ACADEMIC YEAR

**SECOND YEAR SECOND SEMESTER EXAMINATION FOR, DIPLOMA IN
INFORMATION TECHNOLOGY**

SIT 058 – NETWORK DESIGN & ADMINISTRATION

DURATION: 2 HOURS

DATE:

TIME:

Instructions to candidates:

1. Answer question One and Any Other Two questions
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

- a) Define the following terms as use in networking:
 - i. Network design
 - ii. Data communication
 - iii. Protocol
 - iv. Bandwidth
 - v. Signaling
- b) Explain the difference between media access control (MAC) address and Internet (IP) address (6 marks)
- c) State five advantages of server based network (5 marks)
- d) Explain the difference between the following: (6 marks)
 - i. CSMA/CD and Token passing access methods
 - ii. Physical topology and logical topology
 - iii. Half duplex and full duplex
- e) Discuss five fundamental network design goals (5 marks)
- f) State the three major security threats perceived by users and provider of a computer based system (3 marks)

SECTION B - ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

- a) (i) With the aid of a well labeled diagram, discuss the layers of TCP/IP reference model (8 marks)
- (ii) Explain the difference between TCP and OSI reference model (6 marks)
- (iii) State and explain three protocols found on application layer of TCP/IP reference model (3 marks)
- b) Discuss at least three causes of signal impairment (3 marks)

QUESTION THREE (20 MARKS)

- a) Briefly explain the following under data transmission in wide area network (2 marks)
 - i. Packet switching
 - ii. Circuit switching
- b) (i) Munyao has been assigned a task of designing MUT computer lab network. Discuss four factors he can consider when designing the network (8 marks)
- (ii) State the transmission media he will use when designing the network and give reasons for your choice (2 marks)
- c) (i) State two functions of media access control methods (2 marks)
- (ii) Explain three differences between random and controlled access methods (6 marks)

QUESTION FOUR (20 MARKS)

- a) Describe with specific examples four use of computer network (4 marks)
- b) Briefly describe two distinguishing features of Local Area Network (LAN) and Wide Area Network (WAN) (4 marks)
- c) With the aid of a diagram, describe field of Ethernet frame (6 marks)
- d) Explain the advantage of synchronous over asynchronous communication (4 marks)
- e) Briefly describe two types of servers that can be found in a network (2 marks)