



*(University of Choice)*  
**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

**MAIN CAMPUS**

**UNIVERSITY EXAMINATIONS  
2021/2022 ACADEMIC YEAR**

**SECOND YEAR FIRST SEMESTER EXAMINATIONS**

**FOR THE DIPLOMA  
OF INFORMATION TECHNOLOGY**

**COURSE CODE: DIT 069**

**COURSE TITLE: DATA COMMUNICATION AND NETWORKS II**

**DATE: 20/04/2022 TIME: 12:00 – 1:30P.M**

**INSTRUCTIONS TO CANDIDATES**

Question ONE (1) is compulsory  
Answer ANY other TWO (2) questions

**TIME: 1 HOUR 30 MINUTES**

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## QUESTION ONE [24 MARKS]

- a) Define the following terms as used in data communications and networks [4 marks]
- Data
  - Data Communication
  - Network
  - Internet
- b) Masinde Muliro university of science and technology wants to install network in the campus. What are some of the factors they are going to consider when selecting a network topology? [4 marks]
- c) The county government of Kakamega have been running on wireless connectivity. A network specialist advised them to install fiber optics on its offices. Give any **FOUR** benefits they are likely to experience using Fiber optics over wireless media. [4 marks]
- d) For each of the following networks, discuss the consequence if a connection fails. [8 marks]
- Five devices arranged in mesh topology
  - Five devices arranged in star topology (Not counting the hub)
  - Five devices arranged in a bus topology
  - Five devices arranged in a ring topology
- e) The effectiveness of a data communication system depends on four fundamental characteristics. Briefly outline the four characteristics. [4 marks]

## QUESTION TWO [18 MARKS]

- a) Describe what distributed processing is as used in computer networks [2 marks]
- b) Name and briefly explain the five components of a data communication system [10 marks]
- c) Analyze the following modes of communication with reference to cost, speed of transmission and reliability [6 marks]
- Serial
  - Parallel

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### QUESTION THREE [18 MARKS]

- a) Define a protocol as used in computer networks [2marks]
- b) Standards are essential in creating and maintaining an open and competitive market for equipment manufacturers and in guaranteeing national and international interoperability of data and telecommunication technology. Briefly explain the two broad categories of data communication standards. [4 marks]
- c) With the Aid of a diagram, explain the three modes of data communication that can exist between two communicating devices giving at least one example in each case [6 marks]
- d) Explain any FOUR ways that network managers can enhance availability and reliability of their networks [4 marks]
- e) Give any two professional bodies that deals with development of network standards [2 marks]

### QUESTION FOUR [18 MARKS]

- a) What is the purpose of the layering approach in the OSI and TCP/IP model? [3 marks]
- b) The **OSI Model** or the **Open Systems Interconnection Model** is a conceptual framework which describes the functions of a networking system. It is used for the transfer of data over a network which moves through different layers.
- i) Identify the seven layers of the OSI model. [5 marks]
- ii) Draw a well labeled diagram of the layers of the OSI model showing how data flows from the sender to the receiver. [7 marks]
- c) Match the following to one or more layers of the OSI model [3 marks]
- i) Route determination
- ii) Flow control
- iii) Provides access for the end users

### QUESTION FIVE [18 MARKS]

- a) Explain the importance of the network protocol architecture [4 Marks]
- b) With regards to network configurations
- i) Briefly discuss the two types of Network Configurations [4 Marks]
- ii) Compare and Contrast between the two types of configurations [10 Marks]

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