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KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2022/2023 ACADEMIC YEAR
FIRST YEAR, FOURTH SEMESTER EXAMINATION
FOR THE DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
DIT 1010- DATA COMMUNICATION AND NETWORKING

Date: 08TH DECEMBER 2022
Time: 11:30AM – 1:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

Read the following excerpt carefully and answer the questions that follow

Modern businesses rely heavily on the implementation of effective communication and information systems as some of the strategic measures for the success of their operations. Ideally, although most of the modern organizations make use of communication and computer networks, most of the processes appear to be isolated. However, regardless of the fact that many managers have the capability to use various computer applications to process certain applications, only a few managers are able to use tools installed on computers for communicating such information with other departments or even retrieve information from these computers. As such, in order to triumph over such challenges, it is paramount to strategize on the development of an organizational computer network. Essentially, this is a new form of converging communication and computers. Importantly, computer networks are effective in managing communication all challenges while at the same time, establishing a free flow of communication and information without limits. That said, this paper aims at providing various recommendations to the computer network system that covers a location comprising of 40 users.

- a) With examples differentiate between data transmission mode and transmission media. (4 Marks)
- b) State and discuss FOUR networking devices and how it can be used. (4 Marks)
- c) Clearly distinguish the terms *analog* and *digital* forms of data representation and illustrate each of the data signal forms. (6 Marks)
- d) Discuss the concept of client and server and its importance in data communication and networking. (6Marks)
- e) In detail discuss common components of a network and their functions. (10 Marks)

QUESTION TWO (20 MARKS)

The Open Systems Interconnection (OSI) 7-layer model, sometimes called the International Standards Organization (ISO) 7-layer model, is a critical model for modern computer networking.

- a) In the correct sequence from either end, identify the seven layers of the ISO/OSI 7-layer model. (7 Marks)
- b) Briefly explain the function of each layer. (7 Marks)

- c) What are the advantages of the OSI model (6 Marks)

QUESTION THREE (20 MARKS)

- a) Explain the concept of time division multiplexing. (5 Marks)
- b) Explain the different transmission impairments and their effect they have in our day to day activity. (7 Marks)
- c) Discuss any functions of Network Interface Card. (8 Marks)

QUESTION FOUR (20 MARKS)

- a) Discuss the concept of tokens as discussed in network topologies. (4 Marks)
- b) Kiriri University main campus has about 100 computers. Recommend a network topology for the university giving reasons for your choice. (8 Marks)
- c) Many organizations are adopting networking technology to aid in performing their operations. Explain any *five* benefits associated with networking (8 Marks)

QUESTION FIVE (20 MARKS)

- a) Explain the term multiplexing. (3 Marks)
- b) How will a network be secured from intruders and students who might attempt to access confidential information such as examinations? (7 Marks)
- c) Which is the most appropriate multiplexing method for today's networks? Give reasons for your answer. (10Marks)