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

Date: 28<sup>TH</sup> JULY 2022  
Time: 11:30AM – 1:30PM

**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS**

**QUESTION ONE (30 MARKS)**

Throughout the 1980's, LAN technology and its implementation grew at a phenomenal rate and recently has enabled telecommunications. By the 1990's, the ability to inter-network LANs via the Wide Area Networks was limited to relatively slow speed and inefficient mechanisms. The need to inter-network LANs at higher speeds using more effective communication methods led to the development of Frame Relay that has had a number of applications in the business communication. The Frame Relay has replaced Broadband technologies typically used for providing Internet access across telephone lines traditionally used for simply providing telephony connections.

- a) Explain any three methods that are applied for the network security. (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 6 types of networks and an example for the area they cover as stipulated in data communication and networking. (6 Marks)
- e) Using a well labeled diagram give a clear picture of different type of transmission media. (10 Marks)

**QUESTION TWO (20 MARKS)**

- a) Explain the advantages of a layered model. (5 Marks)
- b) Explain the seven layers of the Open Systems Interconnection (OSI) and its importance in networking. (10 Marks)
- c) Compare and contrast the OSI model and the TCP/IP model. (5 Marks)

**QUESTION THREE (20 MARKS)**

- a) Distinguish between *guided* and *unguided* transmission media; and give an example of each case. (4 Marks)
- b) Explain the different transmission impairments. (6 Marks)
- c) Discuss any functions of Network Interface Card. (10 Marks)

**QUESTION FOUR (20 MARKS)**

- a) Kiriri women's University has a network at the main campus. Which type of network do they have?
- b) Explain the Client – Server model as a configuration for the business data communication systems (8 Marks)
- c) Many organizations are adopting networking technology to aid in performing their operations. Explain any *six* benefits associated with networking (12 Marks)

**QUESTION FIVE (20 MARKS)**

- a) Explain the term multiplexing. (2 Marks)
- b) Explain the concept of time division multiplexing. (8 Marks)
- c) Which is the most appropriate multiplexing method for today's networks? Give reasons for your answer. (10 Marks)