GARISSA UNIVERSITY

**SCHOOL OF PURE AND APPLIED SCIENCES**

**BACHELLOR OF INFORMATION SCIENCE Y2S1**

**DATA COMMUNICATION**

**TIME 2 HRS**

**Answer question one and any other two questions**

**QUESTION ONE**

1. Define the following terms
   1. Data communication [2Marks]
   2. modulation [2Marks]
   3. Internet protocols **[2Marks]**
2. Explain the advantages of computer networks in an organization (6 Marks)
3. Explain three types of communication modes with the help of diagram **[6 Marks]**
4. Explain three advantages of optical fiber compared to other communication media (6 Marks)
5. Explain three considerations when choosing a communication media (6Marks)

**Question Two**

1. Differentiate between
   1. Server based architecture and peer based architecture (6 Marks)
   2. Ethernet technology and token passing technology (6 Marks)
2. You are requested to design a university local area network. Discuss physical and logical design and present it in a diagram assuming it is a star topology (8Marks)

**Question Three**

1. Explain three types of signal Multiplexing techniques in a data communication system (6 Marks)
2. With the help of a diagram explain the components of digital communication circuit (6 Marks)
3. In a communication system which uses 101 CRC for error detection, a sender wants to send 11001 data stream. Explain the process from the sender to the receiver (8Marks)

**Question FOUR**

1. Explain the functions of
   1. Data link layer (3Marks)
   2. Networking layer (3Marks)
2. Explain three differences between UDP and TCP in transport layer (6Marks)
3. The university is hiring a network administrator to be in charge of the university network. Explain the skills and duties of a good administrator (8Marks)

**Question FIVE**

1. Explain three objectives of network security (6mks)
2. Explain attacks that targets computer networks and how they can be protected (6Marks)
3. Explain the following emerging technologies in data communication
   1. mobile computing (4mks)
   2. Tele medicine (4mks)