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# DMI-ST. EUGENE UNIVERSITY

ZAMBIA

DEGREE EXAMINATION – JUNE 2024

Semester: IX

055 CS 91 DATA COMMUNICATION

Time: 3:00 Hours

Max. Marks: 100

Answer any FIVE Questions (5 x 20 = 100 Marks)

1. a) Compare simplex, half duplex and full duplex transmission modes with examples. (10 Marks)  
b) Explain the components, data representation of data communication. (10 Marks)
2. a) Discuss the architecture of a Soft switch in telecommunications networks. (10 Marks)  
b) Explain the North American digital multiplexing hierarchy, detailing the different levels and their corresponding transmission rates. Discuss the significance of this hierarchy in telecommunications and its historical evolution. (10 Marks)
3. a) Explain X.21 modem and its types in a detailed manner. (10 Marks)  
b) Explain the concept of connecting devices. (10 Marks)
4. a) Explain the concept of transmission impairment. (10 Marks)  
b) Draw and explain the block diagram of an coaxial cable communication system. (10 Marks)
5. a) Illustrate the Error correction methods with examples. (10 Marks)  
b) Explain Error detection methods of simple parity check and two-dimensional parity check. (10 Marks)
6. a) Compare and contrast serial and parallel transmission modes. Discuss their respective advantages, disadvantages, and typical applications in data communication. (10 Marks)  
b) Discuss the principles of data compression, and LZ compression. (10 Marks)
7. a) Explain the categories of transmission error. (10 Marks)  
b) Elaborate the Cyclic redundancy check. (10 Marks)