

# POKHARA UNIVERSITY

Level: Bachelor  
Programme: BE  
Course: Data Communication (New)

Semester: Fall

Year : 2023  
Full Marks: 100  
Pass Marks: 45  
Time : 3hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

1. a) Define Simplex, Half Duplex and Full Duplex mode of data transmission. Briefly explain digital communication system with the help of general block diagram. 8
  - b) Differentiate between different types of transmission modes. Briefly Explain RS- 232C. 7
  2. a) Define Signal. Briefly explain periodic and non-periodic signals, energy and power signals, deterministic and random signals, continuous and discrete time signals. 7
  - b) Define unit step signal with necessary mathematical expression and graphical illustration. Check the following system for linearity, causality, static & dynamic and time invariance. 8
- $$y(n) = Ax(n) + B$$
3. a) Compare and contrast between OSI and TCP/IP with necessary figures. 7
  - b) Define guided and unguided transmission media. State the advantages of optical fiber over other guided media. 8
  4. a) Why burst error is difficult to handle than single error? Explain why CRC is better than parity method of error detection. 7

OR

- Explain various transmission impairments of a communication system.
- b) Compare and contrast between lossless and lossy compression. 8
  5. a) Explain the importance of flow control. Briefly explain sliding window flow control mechanism. 8
  - b) Explain the multiplexing technique applied in digital telephony with their significance, application and multiplexing hierarchy. 7
  6. a) Is switching and routing same? Differentiate between message switching, circuit switching and packet switching. 8



- b) Differentiate between PSK, ASK and FSK modulation techniques with necessary diagram. 7

**OR**

Encode the Bit Stream 011010001 using the following scheme.

- i. NRZ – I
  - ii. NRZ \_ L
  - iii. Manchester
  - iv. Differential Manchester
7. Write short notes on: (Any two) 2×5
- a) Cellular Telephony
  - b) Point to Point protocol
  - c) QPSK