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63/2 (SEM-2) CSIT 2.1

2022

COMPUTER SCIENCE AND TECHNOLOGY

(Theory paper)

Paper Code : CSIT 2.1

(Data Communication and Computer Networks)

Full Marks – 80

Time – Three hours

**The figures in the margin indicate full marks
for the questions.**

1. Answer the following questions : 1×5=5
 - (i) For what purpose UDP connection is used ?
 - (ii) Give a difference between Simplex and Duplex communication.
 - (iii) Mention difference between TCP and UDP.
 - (iv) Define bandwidth.
 - (v) What is throughput ?

[Turn over

2. Answer any *five* from the following questions :

3×5=15

- (i) State difference between IPv4 and IPv6.
- (ii) Define Bit Rate. Assume we need to download text documents at the rate of 100 pages per minute. What is the required bit rate of the channel ?
- (iii) Suppose a signal travels through a transmission medium and its power is reduced to one-half. This means that $P_2 = (\frac{1}{2})P_1$. In this case, how the attenuation (loss of power) can be calculated ?
- (iv) Explain different types of errors.
- (v) Explain Character Oriented Protocols and Bit Oriented Protocols.
- (vi) Explain the structure of datagram with different fields.
- (vii) How SMTP works ?

3. Answer any *four* from the following questions :

5×4=20

- (i) Explain mesh topology with proper diagram.
- (ii) Discuss the different transmission impairments.

(iii) Define Signal to Noise Ratio (SNR). The power of a signal is 10 mW and the power of the noise is $1\mu\text{W}$; what are the values of SNR and SNR_{dB} ?

- (iv) How does a single-bit error differ from a burst error ?
- (v) Explain Stop-and-Wait protocol.

4. Answer any *four* from the following questions :

6×4=24

- (i) How the different layers of OSI model interact ?
- (ii) Discuss between Nyquist Bit Rate and Shannon Capacity.
- (iii) Discuss the Pulse Code Modulation with proper diagram.
- (iv) How Coaxial cable is different from twisted pair cable ? Explain their performances.
- (v) Explain how the switch datagram network works with proper diagram.

5. Write short notes on any *four* :

4×4=16

(i) Sniffing and Spoofing

(ii) Pharming

(iii) Digital Certificate

(iv) FDM

(v) WDM.