Total No. of Questions – [08] Total No. of Printed Pages: 02

G.R. No.	

paper code: U 229-125 (BE - F&FS)

DECEMBER 2019/ENDSEM – Backlog Exam

S. Y. B. TECH. (COMPUTER) (SEMESTER - II)

COURSE NAME: Fundamentals of Data Communication

COURSE CODE: CSUA22175

(PATTERN 2017)

Time: [**2 Hours**] [Max. Marks: **50**]

Instructions to candidates:

1) **Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1) a) What does the Shanon capacity and Nyquist theorem have to do with communications? [6]

OR

b) Calculate the phase shift for the following [6]

a. A sine wave with the maximum amplitude at time zero
b. A sine wave with maximum amplitude after ¼ cycle
c. A sine wave with zero amplitude after ¾ cycle and increasing

Q.2) a) Draw the graph of differential Manchester Scheme using each of the following data streams, assuming that the last signal level has been positive. [6]

a. 00000000 b. 11111111 c. 01010101 d. 00110011

OR

b) What is Spread Spectrum? Explain FHSS and DSSS with suitable example [6]

Q.3) a) Differentiate between Guided media and Unguided media [6]

OR

b) What do you mean by Digital Subscriber Lines? Explain various types of DSLs in short [6]

Q.4) a) What is the difference between a port address, a logical address, and a physical address? [4]

OR

b) Differentiate between LAN, MAN and WAN [4]

Q.5) a) Given the dataword 101001111 and the divisor 10111, show the generation of the CRC codeword at the sender side. [6]

b) Find the minimum hamming distance from the following two pairs of words [4]
(000,011) b.(10101,11110)

c) Bit-stuff the following frame payload [4]
0001111100001111101000111111011110000111

OR

Q.6) a) Explain the Cyclic Redundancy Codes for error detection with the given dataword 1001 and divisor 1011. Perform the check on receiver side also. [6]

b) In a codeword, we add two redundant bits to each 8 bit data word. Find the number of [4]
a. valid codewords b. invalid codewords

c) Differentiate between HDLC and PPP [4]

Q.7) a) What is collision? How CSMA/CD deals with collision? [6]

b) Differentiate between slotted Aloha and pure Aloha [4]

c) Explain any two channelization techniques for collision avoidance. [4]

OR

Q.8) a) Draw and explain flow diagram of CSMA/CD [6]

b) In pure Aloha network with G=1/2, how is the throughput affected in each of the following cases? [4]
a. G is increased to 1 b. G is decreased to 1/4

c) What are most common Fast Ethernet implementations? [4]