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MAY 2019/ENDSEM REEXAM

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? Explain in brief. [6]

OR

b) Explain the properties of analog signal with suitable diagram. [6]

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) Define the steps in Pulse Code Modulation for the conversion of analog signal to digital. [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) Explain the functions of Physical and Data link layer in brief. [4]

OR

b) Write short note on any two network connecting devices. [4]

Q.5) a) Explain the Cyclic Redundancy Codes for error detection given the dataword 1001 and divisor 1011. (Perform the check on receiver side also). [6]

- b) Find the minimum hamming distance from the following two [4]
pairs of words:
a. (000,011) b.(10101,11110)
- c) Assume we are sending data items of 16 bit length. If two data [4]
items are swapped during transmission, can the traditional
checksum detects this error? Explain it.

OR

- Q.6) a) Given the dataword 101001111 and the divisor 10111, show the [6]
generation of the CRC codeword at the sender site.
- b) In a codeword, we add two redundant bits to each 8 bit data [4]
word. Find the number of :
a. valid codewords b. invalid codewords
- c) Explain the types of HDLC frames. Draw the frame structure of [4]
each type.

- Q.7) a) Draw and explain flow diagram of CSMA/CA. [6]
- b) Differentiate between slotted Aloha and pure Aloha. [4]
- c) What are most common Gigabit Ethernet implementations? [4]

OR

- Q.8) a) Draw and explain flow diagram of CSMA/CD. [6]
- b) Give the taxonomy of multiple-access protocols. [4]
- c) In pure Aloha network with $G=1/2$, How is the throughput [4]
affected in each of the following cases:
a. G is increased to 1 b. G is decreased to $1/4$