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T-2 EXAMINATION (APRIL 2019)

B.Tech 6th Sem. (ECE)

COURESE CODE: 10B11EC611 MAX. MARKS: 25

COURSE NAME: Telecommunication Networks

COURSE CREDITS: 4 MAX. TIME: 1.5 Hrs.

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.CO indicates Course Outcomes.

Q1(a). There are 4 stations in a system. All 4 stations have to transmit their data over a common channel using channelization method. Design a system in which station 3 can detect the data sent by station 4 with the following specifications:

i) The codes for each station have to generated using Walsh codes with $W_1 = [+1]$. Show the 4 codewords.

ii) Station 1 is sending a 0 bit, station 2 is sending a 1 bit, station 3 is silent, and station 4 is sending a 0 bit. Show the dataword to be transmitted over the channel also. **CO-4** **(1+1+1=3)**

Q1(b). Compare High level data link control protocol with point-to-point protocol. **CO-4** **(2)**

Q2(a). Discuss CSMA/CD method with its flow diagram and comment on its throughput also. **CO-4** **(3)**

Q2(b). Byte stuff the following data: **CO-4** **(1)**

Flag	ESC	ESC			Flag	ESC		ESC

Q2(c). Bit stuff the following data: **CO-4** **(1)**

01111101111101111100111101111110

Q3(a). In figure 1, the data rate is 10 Mbps, the distance between station A and C is 2500 m, and the propagation speed is 2×10^8 m/s. Station A starts sending a long frame at time t_1 =0; station C starts sending a long frame at time t_2 =3 μsec. The size of the frame is long enough to guarantee the detection of collision by both stations. Find the following:

a. The time when station C hears the collision *(t3)*.

b. The time when station A hears the collision *(t4)*.

c. The number of bits station A has sent before detecting the collision. **CO-4** **(1+1+1=3)**

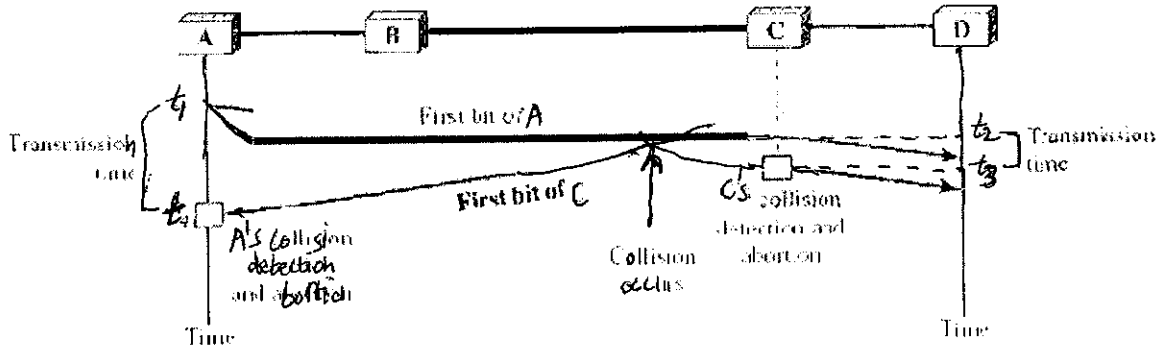

Figure 1

Q3(b). Prove that the codeword table (00000, 01011, 10111, and 11111) is not a linear code. You need to find only one case that violates the linearity. **CO-4** **(1)**

Q3(c). Discuss the drawback of checksum method of error detection. **CO-4** **(1)**

Q4(a). Given the dataword 1010011011 and the divisor 10111, show the generation of the codeword at the sender site using cyclic redundancy check (CRC) **using polynomial approach only.** **CO-4** **(2.5)**

Q4(b). Justify the names of Go-back n and Selective repeat protocols by discussing their functioning in detail. **CO-4** **(2.5)**

Q5(a). What is the limitation of crossbar switch? Discuss the solution of this limitation with diagram. Also compute the crosspoints. **CO-3** **(2.5)**

Q5(b). What are the components of packet switch? Discuss in detail. **CO-3** **(2.5)**