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DATA COMMUNICATION
2010-2011 Term, Final Exam

10.01.2011

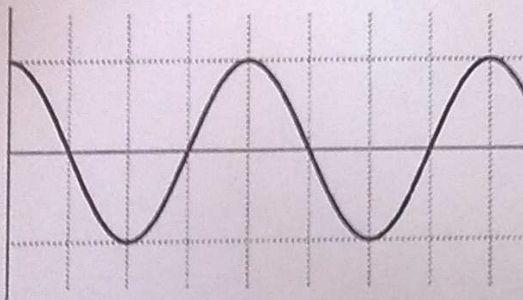
Question-1: (25 p)

- For data stream 1011001 ($d_7 \dots d_1$), find the hamming coded data will be sent.
- Data stream, coded by (7,4) hamming and received is 10010100101 ($d_7 \dots p_1$).
 - Check that if there is an error or not.
 - If there is an error find that which bit is in error, correct it.
 - Remove the check bits and write the data.

Question-2: (30 p)

- The generator function is $G(x) = x^3 + x^2 + 1$, find the data stream will be sent if data is 11110101. Then code the data stream with Differential Manchester
- The generator function is $G(x) = x^3 + x^2 + 1$ and the received data stream with CRC is 111101011. Find that if there is an error or not (Show, why there is an error or not).

Question-3: (10 p)



In figure, each division for vertical (y) axis is 10 V and each division for horizontal (x) axis is 5 msec.

- Find frequency, period and phase angle of signal.
- Write the equation of signal in sinus form.

Question-4: (20 p)

There are 4 digital data source that use **equally divided** same satellite transmission medium multiplexed by FDM. Satellite transmission medium has a 1000 kbps channel capacity. Source-1, Source-2, Source-3 and Source-4 have a data rate of 1500 kbps, 1000 kbps, 2000 kbps and 750 kbps respectively. Configure the system.

Question-5: (15 p)

What are the ARQ-Automatic Repeat Request protocols. Write their names and explain them.