SIIT ITS 323

ITS 323 – QUIZ 3				
First name:	Last name:			
ID:		Total Mark	ːs:	
			out of 1	10
In all questions, assume bits are number left to rig is 0, the second bit is 1, the third bit is 0 and the s		e sequence (10111, t	the first bit
Question 1 [2 marks]				
Consider a simplified CRC error detection algor frame check sequence (which is appended to the must be $(f + 1)$ bits in length. If the frame to be bit FCS:	end of the data) is	f bits in leng	gth, and	the divisor
a) What is a possible value (in binary) of the	divisor? [1 mark]		
b) If the first two bits of the FCS are received Show your calculations. [1 mark]	ved in error, can	the receiver	detect 1	the errors?
Question 2 [4 marks]				
 a) Which technique is designed for sending one) 	g analog data as	an analog si	ignal? (s	select only
a. Pulse Code Modulation				
b. Amplitude Modulation				
c. Delta Modulation				
d. Manchester Encoding				
e. NRZ Invert on Ones				
f. Frequency Shift Keying				
b) Choosing a very long time-out interval for because there will be many unnecessary frame is received after original frame is re	retransmissions	-		
		True	/	False

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c) The highest frequency component of an analog data is 2MHz. If Pulse Code Modulation with each code represented as 4 bits is used, following the sampling theorem, the data rate should be:

- a. 250kb/s
- b. 1Mb/s
- c. 2Mb/s
- d. 4Mb/s
- e. 8Mb/s
- f. 16Mb/s
- g. 32Mb/s
- d) A receiver using the sliding window mechanism has a buffer size of 63000 bytes. Assume each frame is 1000 bytes in length. How many bits should be used to represent the sequence number carried in the header?
 - a. 1 bit
 - b. 2 bits
 - c. 5 bits
 - d. 6 bits
 - e. 7 bits
 - f. 63 bits
 - g. 64 bits

Question 3 [3 marks]

What is the propagation time if using Stop and Wait Flow Control protocol gives a maximum throughput of 125Mb/s.

You can assume:

- Data rate is 1Gb/s
- Data frame size is 9000 bits of data plus 1000 bits of header
- ACK size is 2000 bits
- No processing delay

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Question 4 [1 mark]

Go-Back-N ARQ with a k bit sequence number limits the maximum window size to 2^k -1. Explain a problem that may occur if the maximum window size was *greater than* 2^k (e.g. 2^k +1). (A diagram may help with your explanation).