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ELEX 2117 : Digital Techniques 2 2025 Winter Term

Quiz 3 1:30 – 2:20 PM Friday, March 28, 2025 SW03-1710

This exam has three (3) questions on two (2) pages. The marks for each question are as indicated. There are a total of eight (8) marks. Answer all questions. Write your answers and all rough work in this paper and nowhere else. Show your work. Underline or draw a box around your final answer. Numerical answers must include units. Books and notes are allowed. No electronic devices other than calculators are allowed. Show your work.

This exam paper is for:

Paper, Test 1 A00123456

Each exam is equally difficult.

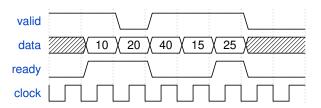
Answer your own exam.

Do not start until you are told.



Question 1 2 marks Question 2 2 marks

The following timing diagram shows the values on a valid/ready interface:



Dolphins can emit sounds up to about 125 kHz. What sampling frequency would be required to record these sounds?

What values were transferred over the interface on data?

How many bits of resolution would be required if the recording required a signal-to-noise ratio of 53 dB,

Question 3 4 marks

Draw the waveform that would transmit the 8-bit value 8'h53 from slave to master over an SPI interface using the

conventions used the lecture notes. Include the following signals: SS, MISO, and SCLK.

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This exam paper is for:

Paper, Test 2 A00123456

Each exam is equally difficult.

Answer your own exam.

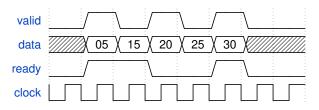
Do not start until you are told.

Name:	
BCIT ID:	
Signature:	



Question 1 2 marks Question 2 2 marks

The following timing diagram shows the values on a valid/ready interface:



Dolphins can emit sounds up to about 150 kHz. What sampling frequency would be required to record these sounds?

What values were transferred over the interface on data?

How many bits of resolution would be required if the recording required a signal-to-noise ratio of 40 dB,

Question 3 4 marks

Draw the waveform that would transmit the 8-bit value 8'h35 from master to slave over an SPI interface using the conventions used the lecture notes. Include the following signals: \overline{SS} , MOSI, and SCLK.

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