U N I V E R S I T Y O F C A P E T O W N

Department of Electrical Engineering



**EEE3096S – Embedded Systems II**

**Practical 4: RPI-3B SPI and Interrupt (RPI-Python Serial Com. And RPI-Python Interrupt)**

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**Practical 4: RPI-3B SPI and Interrupt**

1.a) Explain the SPI communication protocol with a timing diagram. (2)

b) Define interrupt and threaded call-back in the context of an embedded system. (2)

c) Write a function that converts a 10-bit ADC reading from the potentiometer to a 3V3 limited voltage output. (2)

d) Write a function that converts a 10-bit ADC reading from temperature sensor to a reading in degree Celsius *(Have a look at the datasheet)*. (3)

e) Write a function that converts a 10-bit ADC reading from the LDR to a percentage representing the amount of light received by the LDR. (2)

*The flashlight from a smartphone could be used as the maximum amount of light received by LDR.*

f) Draw a flowchart of the system. (4)