



PROGRAM : NATIONAL DIPLOMA
ENGINEERING : COMPUTER SYSTEMS
ENGINEERING : ELECTRICAL

SUBJECT : MICROPROCESSORS 3

CODE : CMP 311

DATE : SUMMER SSA EXAMINATION 2015
8 DECEMBER 2015

DURATION : (SESSION 3) 15:00 - 18:00

TOTAL MARKS : 100

EXAMINER : A de Jaeger

MODERATOR : Dr. O Oyerinde

NUMBER OF PAGES : 3 PAGES

INSTRUCTIONS

1. ANSWER ALL QUESTIONS
 2. DRAW INTERMEDIATE CIRCUITS
 3. ALL VALUES MUST HAVE THE APPROPRIATE UNITS
 4. CALCULATORS ARE PERMITTED
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Question 1 **[10]**

Name four different means of communication when using micro-processors with a SHORT description of each

Question 2 **[10]**

What is a “port” in the context of micro-controllers?
Name and explain the 3 main modes of operation of a port.

Question 3 **[15]**

- Describe the difference between “polling” and “interrupts” [5]
- What are the advantages and disadvantages of each? [5]
- Would a micro-processor be able to function without interrupts? (Explain). [5]

Question 4 **[20]**

Describe the memory allocation procedure when calling a general function. Highlight the dynamic and fixed memory portions of the process.

Question 5 **[10]**

What are the 3 main “loop” constructs in C and C++?
Give an example of each.
Which one is the most general?

Question 6 **[20]**

Draw the PS/2 keyboard receive state diagram.

Question 7 [15]

What does “non-volatile memory” mean and how is it normally implemented in a micro-controller?

TOTAL [100]