

Ryerson University
Department of Electrical and Computer Engineering
COE 608–Computer Organization and Architecture

Midterm Test

March 8, 2016

Name: _____ **Student Number:** _____

Time limit: 1 hour 40 min

Examiners: N. Mekhiel

Notes:

- a) Closed book.
- b) No calculators.
- c) Answer all questions **in the space provided.**

Total Marks=30

Q1- Assume the following C code :-

```
for(i=0; i<=1000; i++) {  
    A[i] =B[i]+ A[i];  
}
```

Assume that \$S0 has the address of A[0] and \$S1 has the address of B[0] and i is in \$S3.

1.1-(5 Marks) Write the above code using MIPS instructions.

Name: _____

Section: _____

1.2 (2 Marks) How many instructions are executed during running this code.

1.3 (2 Marks) How many memory data references will be made during the execution.

1.4 (3 Marks) Find the performance of above code in MIPS 1 GHz processor assuming that arithmetic instruction takes 1 cycle, data transfer instruction takes 6 cycles, conditional branch takes 2 cycles and jump takes 1.2 cycle.

1.5 (3 Marks) Find the speed up if system uses a cache to speed the data transfer by 2 times.

Name: _____

Section: _____

Q2.3- (5 Marks) Determine IEEE754 Floating point representation for **-7.875**