**Homework Assignment # 1**

CMPE 110 - Winter 2017

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**Question 1:**

**(A)**

Instruction per Second =

P1:

P2:

P3:

P2 has best performance

**(B)**

Processor 1:

IC = **1.2**

Number of Cycle =

Processor 2:

IC = **1.33**

Number of Cycle = **1.99**

Processor 3:

IC = **1**

Number of Cycle =

C.

P1:

P2:

P3:

**Question 2:**

**(A)**

Speedup= = **2.08**

**(B)**

Assume all the 53% time are reduced. Therefore the maximum speedup

=

**Question 4:**

**(A)**

P1:1.7

P2:1.7

**(B)**

Time P1:1.7

Time P2: 1.7

Therefore, P2 is 50 % faster than P1

**(C)**

Time p1 =

Time p2 =

**Question 5:**

**(A)**

**(B)**

CPI = 3.5

**(C)**

New CPI =  **= 3.44**

New Time =

Speedup = = 1.14

It’s 14% faster.

**Question 6:**

**(A)**

MIPS A =

MIPS B =

**(B)**

Time A =

Time A =

**(C)**

MIPS : A is better.

Time : B is better

**Question 7:**

1. I’ll choose A because it takes only 15 ns for A rather than 16ns for B
2. I’ll choose B because it takes only 64 ns for B rather than 80ns for A.
3. When there are more than 4 instructions.

**Question 8:**

**(A)**

Arithmetic Mean:

X:881.5

Y:1313

Z:701.25

Geometric Mean:

X:844.61

Y:1239.49

Z:567.22

For X and Y, I would choose arithmetic mean because their ratio are close.

For Y and Z, I would choose geometric mean.

**(B)**

|  |  |  |  |
| --- | --- | --- | --- |
| Ranking | 1 | 2 | 3 |
| Machine | Z | X | Y |