Bangladesh University of Engineering & Technology (BUET)
Dept. of Computer Science & Engineering (CSE)

CSE 305: Computer Architecture
Class Test 1, July 2015

Time: 20 minutes Full Marks: 20

Name:	Student No.:

Assume a processor with 2 GHz clock rate is executing a program that requires following instructions,

Instructions →	**FP**	**INT**	**L/S**	**BRANCH**
Instruction Count ($\times 10^6$)	50	110	80	16
CPI	1	1	4	2

1. Calculate the execution time of the program. 5

	FP	**INT**	**L/S**	**BRANCH**
IC ($\times 10^6$)	50	110	80	16
CPI	1	1	4	2
Clock Cycles ($\times 10^6$)				
Clock Time ($\times 10^{-3}$)				
Total Execution Time		___ (ms)		

2. By how much must we improve the CPI of **FP** instructions if we want the program to run two times faster? 5

Execution time after improvement	= = = ___ (ms)
Execution time _____ __	= = ___ (ms)

3. By how much must we improve the CPI of **L/S** instructions if we want the program to run two times faster? 5

Execution time after improvement	= = = ___ (ms)
Execution time _____ __	= = ___ (ms)

4. By how much is the execution time of the program improved if the **CPI** of **INT** and **FP** instructions is reduced by 40% and the **CPI** of **L/S** and **Branch** is reduced by 30%? 5

	FP	**INT**	**L/S**	**BRANCH**
IC ($\times 10^6$)	50	110	80	16
Changed CPI				
Changed Clock Cycles ($\times 10^6$)				
Changed Clock Time ($\times 10^{-3}$)				
Changed Total Execution Time		___ . _ (ms)		

Execution time/performance improvement, $=$

$=$