EXAM 1 of EET 340
Introduction to Computer Organization and Architecture

Name:

1.(10 Points) What are the five components of a computer? Give at least two examples for each component. (You do not need to discuss the components)

2. (15 Points) Convert Decimal value to binary and then convert to hexadecimal value (Show the steps of calculation): 21_{10}

3. (20 Points) Convert following assembly instruction to 32 bit machine code and then change it to Hexadecimal format. LDUR X10, [X12, #8]
NB: Opcode for LDUR is 1986, which is 11111000010 in 11 bit binary.

4. (10 Points) Provide definition of the followings:
a. Assembly language b. Machine Code c. Amdahl's law

5. (20 Points) Convert C++ code snippet to LEGv8 assembly code. The following variables a, b, and c are associated with the registers X19, X20, and X21, respectively. The base address of array d is in X22. Comment the code.

```
for (i=1; i<=a; i++)
{
  d[b] = i + c;
}
```

6. (25 Points) Consider three different processors P1, P2, and P3 executing the same instruction set. If the processors each execute a program in 10 seconds, find the number of cycles and the number of instructions (each processor)?

	P1	P2	P3
Clock Rate	3.5 GHZ	3 GHZ	4.5 GHZ
CPI	1.5	1	2.5