Question no.2: Answer the following questions in terms of the machine language.

1. Write the instruction 2304 (hexadecimal) as a string of 16 bits.
2. Write the op-code of the instruction B2A5 (hexadecimal) as a string of 4 bits.
3. Write the operand field of the instruction B2A5 (hexadecimal) as a string of 12 bits.
4. If op-code of an instruction is 0011, then what will be the operation of this instruction?
5. Write down the hexadecimal equivalent of 1011 0010 1010 0111 instruction.

Question no.3: Suppose the memory cells at addresses 20 through 28 in the machine contain the following (hexadecimal) bit patterns:

Address Contents

20

PC IR Instruction/Execution

20 12

21 20

22 32

23 30

24 B0

25 21

26 24

27 C0

28 00

If we start the machine with its program counter containing 20, answer following:

1. What bit patterns will be in registers 0, 1, and 2 when the machine halts?

You need to show complete working in above box as what will be value of PC and IR and give a little description of execution of the instruction.

Hint: A machine is considered halted when IR contains C000.

Question no. 2: Translate the following instructions from English into the machine language and vice versa.

A. LOAD register 6 with the hexadecimal value 77.

B. LOAD register 7 with the contents of memory cell 77.

C. JUMP to the instruction at memory location 24 if the contents of register 0 equals the value in **register A**.

D. B100

E. 2BCD

Question no.3: Suppose the memory cells at addresses 00 through 05 in the machine contain the following (hexadecimal) bit patterns:

Address Contents

PC IR Description/Execution

00

00 25

01 B0

02 35

03 04

04 C0

05 00

If we start the machine with its program counter containing 00, when does the machine halt?

You need to show complete working in above box as what will be value of PC and IR and give a little description of execution of the instruction.

Hint: A machine is considered halted when IR contains C000.