7th Semester Regular / Back Examination 2015-16
COMPUTER SYSTEM ARCHITECTURE
BRANCH(S): AEIE,EC,ETC,IEE
Time: 3 Hours
Max marks: 70
Q.CODE: T466
Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1   Answer the following questions: (2 x 10)
   a) Differentiate between computer architecture vs. computer organization.
   b) What are the six stages of an instruction cycle?
   c) The address bus is unidirectional and the data bus is bidirectional.
      Comment this statement.
   d) Differentiate between static RAM and Dynamic RAM.
   e) What do you mean by locality of reference?
   f) Write a program that can evaluate the expression $A \times B + C \times D$ in a
      single accumulator process.
   g) Differentiate between "synchronous bus" and "asynchronous bus"?
   h) Differentiate between RISC and CISC architecture.
   i) Why computers' memory systems are typically built as hierarchies?
   j) Write the steps to retrieve a word from a memory location by the CPU?

Q2 a) Explain the Von-Neuman Architecture briefly with the help of a neat   (5)
       diagram.
    b) What are the steps perform to execute a instruction in CPU? Explain   (5)
       your answer with reference to the CPU with single-bus organization.

Q3 a) Explain zero address, one address, two address and three address   (5)
       instructions with examples.
    b) A set-associative map consists of a total 64 block divided into 4 block   (5)
       set. The main memory contain 4096 blocks each consisting of 128
       words.
       (i)How many bits are there in a main memory address?
       (ii) How many bits are there in each of the TAG, SET and WORD
       fields?

Q4 a) Write the Booth's algorithm and multiply 13 by (-6) using the Booth algorithm. (5)

b) What do you mean by Virtual memory concept? How logical address is mapped to physical address? Explain with example and diagram. (5)

Q5 a) Design a Ripple borrows subtractor circuit by the help of a truth table. (5)

b) Explain the representation of floating point number (single precision and double precision) in IEEE-754 standards? Show the IEEE Floating Point representation of number 2.35 decimal in single precision. (5)

Q6 a) What is the need of micro-programmed control unit? Draw the block diagram of micro-programmed control unit to explain conditional branching in the micro-program. (5)

b) What are the addressing modes available? Explain with examples. (5)

Q7 What do you mean by mapping function? Explain different types of mapping function in case of cache memory. (10)

Q8 Write short notes on any two of the following (5 x 2)
a) Performance of computer
b) Little-endian representation
c) Integer division
d) Page replacement policies