COURSE NAME: B. Tech   SEMESTER: 4th

BRANCH NAME: Computer Science and Engineering / Information Technology
SUBJECT NAME: Computer Organization and Architecture

FULL MARKS: 30   TIME: 90 Minutes

Answer All Questions.
The figures in the right hand margin indicate Marks. *Symbols carry usual meaning.*

Q1.   Answer all Questions.   [2 × 3]

   a)   *Functional behavior*   - CO1
        Structural relationship
        Which statement from the above is appropriate for computer organization and which
        statement for computer architecture?

   b)   Whether Indirect addressing mode is better than Direct addressing mode? Justify   - CO2
        your answer.

   c)   What is EEPROM? Why it is required?   - CO3

Q2.   [4+4]

   a)   What is Flag Register? Explain functionality of different bits of the flag register with   - CO1
        register diagram.

   b)   Explain the systematic multiplication process of *(-15) × (6)* using general
        multiplication algorithm with flow diagram.

                                        OR

   a)   State the rules of BCD subtraction. Subtract 39 − 87 using BCD subtraction rules step   - CO1
        by step.

   b)   Differentiate between single precision and double precision IEEE 754 floating point
        standard. Represent *(314.175)$_{10}$* in single precision IEEE format.

Q3.   [4+4]

   a)   Write the control sequences for the execution of complete instruction: *ADD R1, R2,*   - CO2
        [R3] using single bus data path organization.

   b)   What is Instruction Cycle? Explain it with proper flow diagram.

                                        OR

   a)   Evaluate the arithmetic statement: $F = (X − Y + Z) / (A + B)$ by using single address   - CO2
        instruction and zero address instruction format.

   b)   Distinguish and differentiate between hardwired and micro-programmed control
        unit?

Q4.   [8]

        Design a typical RAM having four locations with a word length of 4bit. Describe each   - CO3
        cell and the overall functionality of the RAM with proper logic diagram.

                                        OR

        What is ROM? Why it is required? Explain the functionality of ROM with cell diagram.   - CO3