Time : 3 Hrs.   **[Marks : 80]**

N.B. : (1) Question No 1 is Compulsory.
      (2) Attempt any three questions out of the remaining five.
      (3) All questions carry equal marks.
      (4) Assume suitable data, if required and state it clearly.

Q1.   Attempt any FOUR   [20]

    a   Convert $(436.71)_{10}$ into binary, octal and hexadecimal number systems.

    b   Design and explain 4-bit Ripple Carry Adder.

    c   Distinguish between PAL and PLA devices.

    d   Explain the Pin Diagram of IC 74194 counter.

    e   Write a code in Verilog HDL to implement half subtractor circuit.

Q2.   a   Design Full adder using IC 74138 Decoder.   [10]

    b   A function is defined as F(A, B, C)= $\sum$m (1,2,3,7)   [10]
        Design the system using single IC74151 multiplexer.

Q3.   a   Design a Non-Overlapping Mealy Sequence Detector for sequence 1101   [10]

    b   With a neat diagram and truth tables, design IC7490 as decade counter.   [10]

Q4.   a   Design IC7485 as an 8-bit comparator.   [10]

    b   With suitable examples, explain Weighted codes, Parity codes and Hamming   [10]
        codes.

Q5.   a   Write a short note on FPGA Devices. Distinguish between FPGA and CPLD devices.   [10]

    b   Implement NOT and NOR Gates using CMOS devices.   [10]

Q6.   a   Write a code in Verilog HDL to implement 4-bit Up-down counter.   [10]

    b   Explain the working of IC74163 a MOD-16 Counter.   [10]

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