Exam.Code:0929
Sub. Code: 33668

2124

B.E. (Electronics and Communication Engineering)
Fifth Semester
EC-505: Digital System Design

Time allowed: 3 Hours Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

(a) Add the following numbers:

$(68A7D)_{16} + (436C5)_{16}$

(b) What are advantages of BCD codes?

(c) Renormalized the expression: $\overline{\overline{A}BC\overline{D} + \overline{A}\overline{B}C\overline{D}}$

(d) Describe the needs of sequential circuit.

(e) Design a two bit sequential circuit in which 4-bit binary number output number should be the sequence of the binary number. (5x2)

UNIT - I

II. a) Minimize the following SOP expression on K-MAP.

$$wxy + \overline{w}yz + x\overline{y}z + w\overline{x}yz$$

b) Explain the role of CAD tool in digital system design. (2x5)

III. a) What is noise margin? Give its significance in digital system design.

b) Define delay and Differentiate in propagation delay and wire delay. (2x5)

IV. Minimize the following multiple outputs function and realize it using universal gates.

$F_1 = \Sigma m(0,2,6,10,11,12,13) + d(3,4,5,14,15)$

$F_2 = \Sigma m(1,2,6,7,8,13,14,15) + d(3,5,12)$ (10)

UNIT -II

V. a) Draw circuit of J-K flip-flop and explain it using truth table.

b) What is difference between combinational and sequential circuits? Give one example of each. (2x5)

VI. Design a State machine using state diagram and explain in detail. (10)

VII. a) Design a 8-bit carry took ahead adder.

b) Design a booth multiplier and explain with example. (2x5)

x-x-x