Exam.Code:0929
Sub. Code: 33668

2076

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. Answer the following:-

(a) Subtract 101011 from 111100 using 2's complement.

(b) What are the advantages of Gray Code?

(c) Normalize the floating-point expression: 0.000101×2^5.

(d) What is the need for combinational circuits?

(e) Design a 2-bit binary up counter. (5x2)

UNIT - I

II. (a) Explain the concept of parity checking for error detection with a suitable example.

(b) Discuss various power reduction techniques used in digital circuit design. (2x5)

III. (a) What is a multiple-bit error? Explain how it can be detected using suitable techniques.

(b) Explain different methods to reduce propagation delay in digital systems. (2x5)

IV. Why Programmable Logic Devices (PLDs) are used? Explain the working of a Programmable Array Logic (PAL) with a suitable design example. (10)

UNIT - II

V. (a) Draw the circuit diagram of an D Flip-Flop and explain its operation with the help of a truth table.

(b) Differentiate between synchronous and asynchronous sequential circuits. Give one example of each. (2x5)

VI. Design a Moore state machine using a state diagram and explain its working with a suitable example. (10)

VII. (a) Design a 4-bit Carry Look Ahead Adder and explain its operation.

(b) What is Array Multiplier and explain its working with a suitable example. (2x5)

x-x-x