2054

M.E. (Electronics and Communication Engineering)
Second Semester
ECE-1205: VLSI 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) What is a pass transistor? How it is different to a MOS inverter?

   b) Explain two short channel effects in a MOSFET.

   c) Differentiate between local routing and global routing.

   d) Explain the working of a RS flipflop.

   e) What are ratioed circuits? Give examples   (5x2)

UNIT - I

II.   a) Differentiate between accumulation, inversion and depletion regions of a MOSFET.

   b) Explain why drain ON current does not increase in saturation region.   (5,5)

III.   a) Differentiate between a CMOS inverter and a MOS inverter with active load.

   b) What is an active resistor?

   c) What is a basic difference between an NMOS pass transistor and a CMOS transmission gate?   (3,3,4)

IV.   Write notes on:-

   a) CMOS NOR gate working

   b) CMOS half adder.   (5,5)

UNIT - II

V.   a) Explain how a VLSI digital circuit can be described using a language? Explain the salient features and types of such a language.

   b) Differentiate between full custom VLSI design and a semi custom VLSI design.

                                              (5,5)

P.T.O.

VI. a) Explain and compare the terms placement and floor planning. What are their types? Name two of the algorithms of placement and floor planning.

b) Explain how the clock is distributed in a VLSI chip? (7,3)

VII. Write notes on:-
   a) Power line distribution in a VLSI layout
   b) Types of routing in a VLSI layout. (5,5)

x-x-x