Course Name - Digital Integrated Circuit

Faculty Name - Prof. Amitava Dasgupta

Institute Name - IIT Madras

Course Syllabus -

Lecture - 1 Semiconductors

Lecture - 2 Modelling of PN Junction Diodes

Lecture - 3 Modelling of BJTs

Lecture - 4 Diode and BJT Model Parameter Extraction

Lecture - 5 BJT Inverters DC and Switching Characteristics

Lecture - 6 Schottky Transistor

Lecture - 7 Specifications of Logic Circuits

Lecture - 8 Qualitative discussion on TTL Circuits

Lecture - 9 Standard TTL Circuits

Lecture - 10 Schottky (74s..) and Low power Schottky (74ls)

Lecture - 11 Advanced TTL Circuits

Lecture 12 I-square L Technology

Lecture - 13 Edge triggered D-F/F

Lecture - 14 I-square L - Condition for Proper Operation

Lecture - 15 I- square L - Propagation delay Self aligned

Lecture - 16 Schottky Transistor Logic

Lecture - 17 Stacked I-square L

Lecture - 18 ECL Basic Operation

Lecture - 19 Quantitative analysis of ECL 10k Series gates

Lecture - 20 ECL 100k series; Stacked ECL gates; D-F/F

Lecture 21 Emitter Function Logic;Low Power ECL;

Lecture 22 Polyemitter Bipolar Transistor In ECL;Propagation

Lecture 23 Heterojunction Bipolar Transistor Based ECL;ECL

Lecture 24 nMOS Logic Circuits

Lecture 25 nMOS Logic Circuits(cont..,); CMOS :Introduction

Lecture 26 CMOS Inverter

Lecture 27 CMOS NAND,NOR and Other Gates: Clocked CMOS

Lecture 28 Dynamic CMOS ;Transmission Gates;Realization Of

Lecture 29 BiCMOS Gates

Lecture 30 BiCMOS Driver;BiCMOS 32-bit Adder

Lecture 31 Digital Integrated Circuits

Lecture 32 Digital Integrated Circuits

Lecture 33 CMOS SRAM

Lecture 34 BiCMOS SRAM

Lecture 35 DRAM-CMOS and BiCMOS

Lecture 36 ROM-EPROM,EEPROM and Flash EPROM

Lecture 37 GaAs MESFET Characteristics and Equivalent Circui

Lecture 38 Direct Coupled FET Logic; Superbuffer FET Logic

Lecture 39 Buffered FET Logic; Schottky Diode FET Logic