B. Tech Degree V Semester (Supplementary) Examination, August 2006

EC 503 MICROELECTRONICS & INTEGRATED CIRCUITS

(1998 Admission)

Time : 3 Hours   Maximum Marks : 100

I.   Explain the following processing steps used in the fabrication of ICs.
         (a)   Epitaxial growth
         (b)   Photolithography
         (c)   Isolation technique
         (d)   Metallization.   (20)

OR

II.   (a)   What are the prime differences between Monolithic, thin film and thick film
                technologies?   (6)
        (b)   Describe different steps involved in the production of Electronic Grade Silicon.   (14)

III.   (a)   What are the different fabrication steps for an NMOS transistor? Draw the cross
                sectional view.   (14)
        (b)   Compare the performance of n-channel MOSFET over P. channel MOSFET.   (6)

OR

IV.   (a)   How isolation is achieved between transistors in MOS technology?   (8)
        (b)   Explain the fabrication steps of a Monolithic JFET structure.   (12)

V.   (a)   Explain the working of a supply independent Bipolar Transistor current source.   (10)
        (b)   Write short notes on DC level translators.   (10)

OR

VI.   (a)   Explain the working of a MOSFET current source.   (10)
        (b)   Explain the working of any one of the constant voltage source.   (10)

VII.   Explain the following methods used for thin film processing
         (i)   Vacuum Evaporation
         (ii)   DC Cathode Sputtering
         (iii)   Vapour – Phase Deposition
         (iv)   Plating Techniques   (20)

OR

VIII. (a)   Discuss the structure and characteristics of planar wave guides.   (8)
        (b)   Explain any one type of optical switch.   (6)
        (c)   Compare thin film and thick film devices.   (6)

IX.   (a)   Write short notes on PLD and PLA.   (6)
        (b)   Explain the operation of a CCD memory with the help of a neat diagram.   (7)
        (c)   Explain the operation of I^2L inverter.   (7)

OR

X.   (a)   Distinguish between RAM, ROM and EPROM based on their fabrication.   (8)
        (b)   Explain the significance of ASICS.   (7)
        (c)   Discuss briefly about FPGA.   (5)

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