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APR-MAY

B. E. (Eighth Semester) Examination, 2020

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(New Scheme)

(Et&T Engg. Branch)

MICROELECTRONIC DEVICES
& VLSI TECHNOLOGY

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Part (a) of each question is compulsory having 2 marks each and attempt any **two** parts from (b), (c) and (d) from each question having 7 marks each.*

Unit-I

1. (a) What is Moore's Law?   2

(b) Explain the Czochralski (CZ) technique of crystal growth. Why it is prefferred over other techniques? 7

(c) Write detail history of evolution in Integrated circuit. 7

(d) Explain the Bridgeman technique. 7

Unit-II

2. (a) Why oxidation is needed in Integrated circuit? 2

(b) Explain Thermal Oxidation. Write the difference between thick & thin oxidation. 7

(c) Explain kinetics of thermal oxidation. 7

(d) Explain the purpose of film deposition. Also explain polysilicon deposition. 7

Unit-III

3. (a) Define Diffusion. What are the type of dopents give examples? 2

(b) Explain Ion Impantation with suitable diagram. 7

(c) Compare low energy & high energy implantation.   7

(d) Explain Diffusion equation & Diffusion mechanism.   7

Unit-IV

4. (a) Why Metallization is needed?   2

   (b) What is Lithography? Explain the electron beam Lithography.   7

   (c) What is Epitaxy? Explain the molecular beam Epitaxy.   7

   (d) Write short notes on :   7

       (i) Dry eatching vs Wet eatching

       (ii) Process simulation and integration

Unit-V

5. (a) What are the types of MOSFET?   2

   (b) Explain the MOS capacitance with equivalent circuit.   7

   (c) Explain the scaling of MOSFET. Also mention its benefits.   7

(d) Write short notes on : 7

   (i) Channel length modulation

   (ii) Sub-Threshold Region