

2005-COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

B.TECH DEGREE EXAMINATION DECEMBER-2005

VLSI SYSTEM DESIGN

(ELECTRONICS AND COMMUNICATION ENGINEERING)

TIME-3HOUR

MARKS-100

ANSWER ALL QUESTIONS

MARKS [10*10=100]

- 1a. Derive an expression for the V-I relationship in a pn-junction
- b. Explain the properties of GaAs
- 2a. Explain the meaning of the unit Cg.
- b. Derive an expression for the trans conductance of an nMOS transistor in terms of transistor parameters
- 3a. Draw the CMOS inverter transfer characteristics and analytically explain the various regions of operation
- 4a. Explain how CMOS transfer characteristics change with beta ratio
- b. What are the problems associated with while driving large capacitive loads by CMOS inverter? How these problems can be remedied?
- 5a. Compare CMOS and NMOS IC technologies
- b. Explain the process sequence for Bi CMOS process
- 6a. Explain the applications of ion implantation
- b. With neat sketches, explain the ion implantation equipment
- 7a. Write a note on lambda based design rules for Nmos
- b. Draw the stick diagram and layout for a nMOS shift register cell
- 8a. Explain the effects of scaling length, width and supply voltage in a MOS circuit
- b. What are the features of CMOS domino logic
- 9a. List any two differences between combinational and sequential circuits. Give example for each
- b. Explain a CMOS pseudo static memory cell. Draw the stick diagram
- 10a. Explain any two problems in VLSI fabrication for small lambda
- b. Explain the CAD tools for capture and simulation in VLSI design