

Question Paper

Exam Date & Time: 22-Nov-2018 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SCHOOL OF INFORMATION SCIENCES

FIRST SEMESTER MASTER OF ENGINEERING - ME (VLSI DESIGN)

Digital Systems and VLSI Design [EDA 613]

Marks: 100

Duration: 180 mins.

END SEMESTER DEGREE EXAMINATION NOVEMBER 2018

Answer all the questions.

- 1) With relevant sketches explain the different stages of manufacturing solid state devices. (10)
- 2) Explain the possible crystal defects and their effects after the crystal is grown. (10)
- 3) Explain Silicon On Insulator (SOI) process with neat diagrams. (10)
- 4) Explain, with a neat diagram, horizontal tube furnace system and its various sections used in thermal oxidation method. (10)
- 5) a) With a neat diagram, describe the structure of a MOSFET. (05) (10)
b) List the advantages of MOSFET over BJT. (05)
- 6) What are the important second order effects in MOSFETs? Explain them briefly. (10)
- 7) Explain the operation of a CMOS inverter, showing different regions of operation. (10)
- 8) State and prove the theorem specifying the condition for zero short-circuit power consumption in a CMOS gate. (10)
- 9) Derive a complete low frequency, small signal model for a MOSFET with bulk effect. (10)
- 10) Design a CMOS single bit full adder. Using this adder, explain how do you construct a magnitude comparator circuit? (10)

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