

Question Bank (K Scheme)

Name Of Subject: VLSI APPLICATIONS

Unit Test: I

Subject Code: 316340

Course: EJ6K

Semester: VI

Chapter 1: Introduction TO CMOS technology

14 M

2 Marks

- 1) State the important application of VLSI.
- 2) List the basics IC fabrication process
- 3) Define: a) Metastability
b) Noise Margin c) Power Dissipation d) Fan-Out e) skew

4 Marks

- 4) Comparison between BJT & CMOS.
- 5) Explain with neat diagram wafer processing by C-Z method.
- 6) Explain CMOS as a transmission gate.
- 7) Explain n well fabrication process of CMOS.
- 8) Explain the Twin tub process for fabrication of IC
- 9) Explain operation of CMOS NOR gate
- 10) Explain operation of CMOS NAND gate.
- 11) Design a logic circuit for $Z = \overline{AB + CD}$ using CMOS NAND gate.

Chapter 2: Advance Programmable Digital Devices (CPLD, FPGA, ASIC)

10 M

2 Marks

- 1) Comparison between Melay & Moore machines.
- 2) List and explain feature of CPLD.
- 3) List feature of FPGA.
- 4) State any two applications of CPLD and FPGA.

4 Marks

- 5) Differentiate between asynchronous sequential and synchronous sequential circuits.
- 6) Draw & explain Melay machines.
- 7) Draw & explain Moore machines.

- 8) Draw state diagram & block diagram of Mealy state machine with clocked output.
- 9) Draw state diagram & block diagram of Moore state machine with clocked output.
- 10) Explain 3-bit asynchronous down counter.
- 11) Design a sequence detector to detect the sequence 011 using JK flip flop. Use Mealy machine
- 12) Draw and Explain block diagram of CPLD architecture.
- 13) Draw and Explain block diagram of FPGA architecture.
- 14) Draw & explain ASIC Design flow.
- 15) Differentiate between FPGA and CPLD

Unit - III Introduction to VLSI Design Concepts

16 Marks

2 Marks

- 1) Define:
a) Entity b) Architecture c) Configuration d) package e) library
- 2) What is the difference between VHDL and Verilog?
- 3) List any two arithmetic operators in VHDL.
- 4) List any two logical operators in VHDL.

4 Marks

- 5) State the use and syntax of a) Signal b) Variable c) Constant
- 6) Compare VHDL and Verilog
- 7) Explain entity and architecture with an example.
- 8) Explain VHDL data types with examples.
- 9) Differentiate between signal and variable.
- 10) Explain the different VHDL objects: signal, variable, and constant.
- 11) Explain enumerated data types and their applications.
- 12) Explain arithmetic operators in VHDL with examples.
- 13) Describe relational and logical operators in VHDL.
- 14) Explain shift operators used in VHDL.