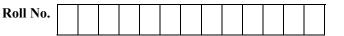
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Paper Id:

Sub Code:KEC072



#### B.TECH. (SEM VII) THEORY EXAMINATION 2022-23 VLSI DESIGN

#### Time: 3 Hours

Total Marks: 100

Note: Attempt all Sections. If you require any missing data, then choose suitably.

#### SECTION A

### 1. Attemptall questions in brief.

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- (a) Define the term critical path.
- (b) State the term sheet resistance.
- (c) Define the term Scaling.
- (d) What is a delay in any circuit?
- (e) What is a cascade circuit?
- (f) Differentiate between Combinational and Sequential circuits.
- (g) What is a semiconductor memory?
- (h) Define the term Low-Power circuit.
- (i) Define the term defects.
- (j) What is the term testability?

# SECTION B

#### 2. Attempt any *three* of the following:

- (a) Explain different design methodologies used in VLSI Design.
- (b) Describelinear delay model used in VLSI Design.
- (c) What is noise in VLSI? Define different noise margins used to analyse and circuit.
- (d) Describe different types of Power dissipation in VLSI circuits.
- (e) Explain different faults defined in any VLSI circuits.

#### SECTION C

- 3. Attempt any *one* part of the following:
  - (a) Describe MOORE'S Law. Give a detailed evolution of VLSI Circuits.
  - (b) Explain the Y-Chart VLSI design flow by describing each arm separately.

## 4. Attempt any *one* part of the following:

- (a) Describe the term Logical effort and calculate the logical effort of a CMOS 2input NOR gate.
- (b) Definedifferent types of Scaling used in VLSI Design.

### 5. Attempt any *one* part of the following:

- (a) With a neat diagram make the layout of a 2-input AND gate using CMOS.
- (b) Describe the working and applications np-CMOS logic.

### 6. Attempt any *one* part of the following:

- (a) Explain the working and applications of a 6-T SRAM cell.
- (b) Describe different types of ROM cells.

7. Attempt any *one* part of the following:

- (a) With the use of a block diagram, define the Ad-HoC technique for testing a VLSI Circuit.
- (b) DescribeBuilt-in-Self-Test technique for testing a VLSI Circuit.

2x10 = 20

10x3 = 30

10x1 = 10

10 x1 = 10

10x1 = 10

10x1 = 10

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10x1 = 10