Roll No.: ……

SGT UNIVERSITY

END TERM THEORY EXAMINATION JULY-2022

Faculty/College of Study:	**Engineering & Technology**	**Year/Semester:**	**6th Semester**
Program:	**B.Tech (ECE)**	**Duration:**	**03:00 Hrs**
Course/Subject:	**VLSI Design**	**Maximum Marks:**	**60**
Course/Subject Code:	**13040606**	**Batch:**	**2018**

Instructions:-

1. Write Your Roll No. on the Question Paper.
2. Candidate should ensure that they have been provided correct question paper. Complaint(s) in this regard, if any should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. All Questions are compulsory. Marks are indicated against each question.
4. Illustrate your answer with diagram wherever required.

SECTION-A

(Very Short Answer Type Questions)

Note: All Questions are compulsory: - [12X1=12 Marks]

S. No.	Question	Marks Allotted
1	What is channel in MOSFET?	1
2	Define velocity saturation.	1
3	Define BJT.	1
4	Differentiate n-channel and p- channel MOSFET.	1
5	When Pinch-off condition occurs?	1
6	Give any two applications of CMOS?	1
7	What is MOS?	1
8	Why poly silicon is used?	1
9	What is fabrication process?	1
10	Name few scaling parameters?	1
11	Define via?	1
12	What is variable resistor?	1

SECTION-B
(Short Answer Type Questions)

Note: All Questions are compulsory: - **[4X2=8 Marks]**

S. No.	Question	Marks Allotted
13	How FET is better than BJT?	2
14	What is comparator?	2
15	What is the function of GATE terminal?	2
16	What is twin tub technology?	2

SECTION-C
(Descriptive Answer Type Questions)

Note: All Questions are compulsory: - **[4X4=16 Marks]**

S. No.	Question	Marks Allotted
17	Design a switch using NMOS. **OR** What are various architectural issues in VLSI? Discuss them.	4
18	Explain the working of Depletion MOSFET with varying V_{GS} and V_{DS}? **OR** Plot and discuss all three regions of operation of P-MOSFET.	4
19	Discuss all the steps used in the fabrication process in detail.	4
20	What is MOSFET amplifier. Discuss in detail with diagram.	4

SECTION-D

(Long Answer Type Questions)

Note: All Questions are compulsory: - **[4X6=24 Marks]**

S. No.	Question	Marks Allotted
21	What is oscillator? Explain its working and draw using MOSFET.	6
22	What is Bi-CMOS? How it is designed? Draw and discuss.	6
23	Elaborate the operation of Enhancement-MOSFET for different V_{GS} and V_{DS}. Plot proper diagrams to support your answer and show the pinch off condition.	6
24	What is design flow in VLSI? Elaborate in detail. **OR** What are stick diagrams? Draw CMOS inverter using stick diagram.	6