Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - OCT 2023

Semester : Semester VII - 2020
Course Code : ECE3044
Course Name : Sem VII - ECE3044 - IC Fabrication Technology
Program : B. TECH

Date : 31-OCT-2023
Time : 2:00PM - 3:30PM
Max Marks : 60
Weightage : 30%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **(5 X 2 = 10M)**

1. Lithography uses either zinc and aluminum metal plates or stones for printing.Mention the purpose of the projection lens system in optical lithography equipment.
(CO1) [Knowledge]
2. The number of transistors doubles in roughly two years.Identify the law and list the types of integration of transistors.
(CO1) [Knowledge]
3. An integrated circuit is a set of electronic circuits on one small flat piece of semiconductor material, usually silicon.List out the basic steps involved in IC manufacturing process.
(CO1) [Knowledge]
4. The fabrication cycle of VLSI chips consists of a sequential set of basic steps.During the fabrication process, the devices are created on the chip.Why is the Czochralski method widely used in semiconductor manufacturing?
(CO2) [Knowledge]
5. Silicon is the most common material for semiconductors.Mention some properties of silicon-dioxide.
(CO2) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **(3 X 10 = 30M)**

6. Czochralski crystal growing technique is a process which converts polycrystalline material to single crystalline material.Explain with a diagram Czochralski crystal growing technique in IC fabrication proce.
(CO1) [Comprehension]

7. Silicon is the most important semiconductor for the microelectronics industry.Routine evaluation of ingots are required.Explain the Characteristics and evaluation of crystal.Also explain the point defects and line defects in a crystal structure.

(CO1) [Comprehension]

8. The oxidation technique choosen depends upon the thickness and oxide properties.Oxides that are relatively thin are grown in dry oxygen whereas thick oxides requires stream for their generation.Explain the different oxidation techniques used in IC fabrication.

(CO2) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION **(1 X 20 = 20M)**

9. Photo-lithography is the selected removal of the oxide in the desired area using the photo resist.Explain with diagrams the steps involved in Photo-lithography and also the different methods of mask alignment.

(CO2,CO1) [Application]