

No. of Printed Pages : 03

Roll No.

BB767

M.Tech. EXAMINATION, May 2019

(Second Semester)

(B. Scheme) (Re-appear)

ECE(VLSI)

MTVLSI580

INTRODUCTION TO MEMS

Time : 3 Hours]

[Maximum Marks : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

(3-32/12)M-BB767

P.T.O.

Unit I

1. Explain all processes involved in Integrated circuit fabrication while drawing diagram for each stage. **15**
2. What is Micromachining ? Explain its application in MEMS systems. Also draw comparison between bulk and surface micromachining and LIGA process. **15**

Unit II

3. (a) What do you understand by the term 'microactuators' in MEMS systems ? Discuss micropump and its applications. **7½**
(b) Explain Ink-jet printer heads as application of microactivator systems. **7½**
4. Name and explain all microactuation mechanisms used in MEMS. **15**

Unit III

5. (a) Name and explain the various types of mechanical problem associated with surface micromachining. **7½**
(b) Explain micromotor as a MEMS device with its applications. **7½**
6. (a) Explain piezoelectric materials with its properties. **7½**
(b) Explain gear train as a MEMS device. **7½**

Unit IV

7. What are microarray and DNA chips ? How they are used in MEMS ? **15**
8. In detail explain optical/photonic devices used in MEMS. **15**