(b) List the mechanical problems associated with surface micromachining. **5**

8. (a) Give major tasks involved in each step of three level microsystem packaging. **10**

(b) Write a short note on Microsystem assembly. **5**

No. of Printed Pages : 04 **Roll No. .....**

CC-64

M. Tech. EXAMINATION, May 2018

(Third Semester)

(Re-appear Only)

ECE/Industry Integrated

MTEC607B

MEMS AND IC INTEGRATION

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.

Unit I

1. (a) Differentiate between MEMS and Microsystem. **5**

(b) List the advantages of miniaturization of machines and devices. **5**

(c) Explain briefly essential components of a microsystem. **5**

2. (a) Describe the working principle of acoustic wave sensor. **8**

(b) Draw and explain the schematic of a micropump. **7**

Unit II

3. (a) Give theoretical formulation of amplitude of vibrations of the proof mass in an accelerometer. **10**

(b) Give engineering applications of FEM. **5**

4. (a) How fluid flow can be modeled in nanoscale designs ? **7**

(b) Discuss fluid flow mechanism at macro and meso scales. **8**

Unit III

5. (a) What are the different types of scaling laws that are applicable to design of microsystem ? **5**

(b) What is Paschen's effect ? Explain. **5**

(c) Give disadvantages and scaling down power supply system. **5**

6. (a) Explain, how oxidation process is used in microsystem fabrication ? **8**

(b) Discuss the role of semiconductor materials in the design of MEMS devices. **7**

Unit IV

7. (a) What is LIGA Process ? Describe various steps of LIGA Process with the help of block diagram. **10**