Exam.Code:0932
Sub. Code: 33705

2015

B.E. (Electronics and Communication Engineering)

Eighth Semester

EC-814: MEMS and Microsystems

Time allowed: 3 Hours Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. **(a)** How micro actuator works?

(b) What is scaling?

(c) Why short channel effects occur in small device?

(d) Give role of CAD in MEMS.

(e) Describe LGA process. **[5x2]**

UNIT - I

II. **(a)**What is voltage scaling? Its pros and cons. **[5]**

(b) What is DIBL? How its can be mitigated. **[5]**

III. **(a)** Explain scaling in electromagnetic forces. **[5]**

(b) Why Silicon Material highly preferred in MEMS devices? **[5]**

IV. **(a)** Discuss the properties of piezoelectric materials. **[5]**

(b) What is packaging? How packaging materials affect the performance of microsystem. **[5]**

UNIT - II

V. **(a)** How diffusion and ion-implantation process works? **[5]**

(b) Describe metallization? Discuss metallization methods. **[5]**

VI. **(a)** What is etching? Explain dry etching technique. **[5]**

(b) Why sputtering required? Describe sputtering techniques. **[5]**

VII. Write a note on:

(a) Bulk micromachining. **[5]**

(b) Microsystem packaging. **[5]**

x-x-x