

Exam.Code:0932
Sub. Code: 6927

1058

B.E. (Electronics and Communication Engineering)

Eighth Semester

Elective – IV & V

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. Attempt the following:-

- a) Name any two techniques used for etching.
- b) Name any two MEMS based devices.
- c) Name any two substrates used for MEMS devices.
- d) Define MEMS.
- e) What do you mean by micromachining? (5x2)

UNIT – I

II. a) Define microsystems. State its applications.

b) Describe the characteristics of Silicon and Gallium Arsenide materials used as substrate for MEMS. (4,6)

III. Explain the operation of following sensors with suitable diagrams:-

- a) Chemical Sensor
- b) Optical Sensor (5,5)

IV. What is scaling? Explain scaling in electrostatic and electromagnetic forces. (10)

UNIT – II

V. Explain photolithography fabrication process with the help of block diagram. (10)

VI. Write technical notes on:-

- a) Bulk micromachining
- b) LGA process (5,5)

VII. a) How a Silicon die can be designed for micro-manufacturing? Describe.

b) Explain microsystems packaging. (5,5)

x-x-x