

Total No. of Questions : 12]

SEAT No. :

**P836**

**[4659]-95**

[Total No. of Pages : 2

**B.E. (Electronics & Telecommunication)**

**c - MICROELECTROMECHANICALSYSTEMANDSYSTEMONCHIP**

**(2008 Course) (Sem. - I) (Elective - I)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Attempt 03 questions from each section.*
- 2) *Attempt from Section I: Q1 or Q2, Q3 or Q4, Q5 or Q6, and from Section - II: Q7 or Q8, Q9 or Q10, Q11 or Q12.*
- 3) *Draw neat diagram.*
- 4) *Assume suitable data if necessary.*
- 5) *Figures to the right indicate marks.*

**SECTION - I**

**Q1)** a) What are the applications of MEMS and Microsystems in consumer products? [8]

b) Describe basics of Gyroscope with necessary sketch. [8]

OR

**Q2)** a) What is MEMS? Why MEMS are used for sensors? [8]

b) Explain with suitable example working of pressure sensor. [8]

**Q3)** a) State advantages of silicon as material used for MEMS. [8]

b) Point out difference between GaAs and silicon material for MEMS. [8]

OR

**Q4)** a) What is “conductive polymers”? How polymers can be made conductive? [8]

b) Is quartz is useful for MEMS technology? Explain in short. [8]

**Q5)** a) How Microcantilever sensors works? Explain it with suitable example. [9]

b) Justify “MEMS will play major role for medical applications”. [9]

OR

**P.T.O.**

- Q6)** Write short note on: [18]
- a) Magnetic actuators.
  - b) Chemical sensors.
  - c) Micro acclerometers.

**SECTION - II**

- Q7)** a) Draw and explain block diagram of basic system on chip model. [8]  
b) How chip complexity makes impact into production? [8]

OR

- Q8)** a) Draw a typical flow chart used for microsystem development at CSEM. [8]  
b) Justify “CAD Tools for Microsystem are Must”. [8]

- Q9)** Explain IC Fabrication Technology in detail for [18]
- a) Silicon bulk micromachining.
  - b) LIGA.
  - c) Surface micromachining.

OR

- Q10)** Write short note on: [18]
- a) Design for testability.
  - b) Built in self test.
  - c) Fault and fault simulation.

- Q11)** a) Issues in testing core based system chips. [8]  
b) Explain any two routing techniques for IC Design. [8]

OR

- Q12)** a) What reliability issues are crop up in packaging? What factors leads failures in packaging? [8]  
b) Explain generic test generation procedure with flow chart. [8]

