

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]

