

B.TECH. DEGREE EXAMINATION, MAY 2014**Eighth Semester****Branch : Electronics and Communication Engineering / Electronics and Instrumentation Engineering****EC 010 804 L02 / EI 010 804 L02 – MICRO ELECTRO MECHANICAL SYSTEMS****(Elective III) [EC, EI]****(New Scheme–2010 Admissions)****[Regular]****Time : Three Hours****Maximum : 100 Marks****Part A***Answer all questions.**Each question carries 3 marks.*

1. What are the components or Microsystem?
2. What are the advantages and disadvantages of using piezo resistors and capacitors as signal transducer?
3. What is Electrohydrodynamics?
4. What is Pyrolysis process? Why is this chemical reaction used in CVD?
5. What is selectivity ratio?

(5 × 3 = 15 marks)**Part B***Answer all questions.**Each question carries 5 marks.*

6. Why cannot microelectronics technology be adopted in the design and packaging of MEMS and microsystem products? Explain.
7. Explain why the change of the state of stress in a silicon diaphragm in a micropressure sensor results in a change of its resonant frequency.
8. Explain a popular method for designating crystal planes and orientation in cubic crystal families.
9. Explain Wet Etching process.
10. Describe the phenomenon of Stiction and possible ways to avoid it.

(5 × 5 = 25 marks)**Turn over**

Part C

Answer all questions.

Each question carries 12 marks.

11. Explain the application of Microsystems in different industries.

(12 marks)

Or

12. (a) Explain MEMS using electrostatic actuation.

(b) Explain MEMS as a microsensor.

(6 + 6 = 12 marks)

13. (a) Discuss briefly on Biosensors.

(b) Explain the microthermopile.

(6 + 6 = 12 marks)

Or

14. (a) Explain the components of fluidic system.

(b) Write a note on micro motors.

(6 + 6 = 12 marks)

15. (a) Explain about variation of intermolecular force with separation.

(b) Write a note on diffusion process.

(6 + 6 = 12 marks)

Or

16. (a) What is LB film? Explain few examples of LB film application in microsystem.

(b) What are the silicon compounds?

(6 + 6 = 12 marks)

17. Explain general procedure on photolithography.

Or

18. Discuss on PYD, APCYD, LPCYD and PECYD.

19. What are the principal difference between bulk manufacturing and surface micromachining? Explain.

Or

20. Explain the process used for manufacturing non-silicon based microstructures.

[5 × 12 = 60 marks]