

**MEMS & ITS APPLICATIONS**

(Electronics &amp; Instrumentation Engineering)

Time: 3 hours

Max. Marks: 70

**PART - A**

(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- What is LIGA?
  - Give an importance of bulk micro machining of silicon.
  - Write the electrical properties of semiconductor.
  - Explain the principle of dry etching.
  - Explain magnetic switching method.
  - Write the applications of mechanical switches.
  - Define mutual induction.
  - Write about variable inductor.
  - What are the limitations of phase shift filter?
  - Write the advantages of micro machined filters.

**PART - B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT - I**

- 2 Explain construction and working of electro dynamic transducers.

**OR**

- 3 Describe piezo resistive sensing and surface acoustic wave sensors.

**UNIT - II**

- 4 Write a note on the following:

- Poly silicon film deposition method.
- Buried oxide process of bulk micro machining for silicon.

**OR**

- 5 Describe isotropic and orientation dependent wet-etching process of silicon based MEMS.

**UNIT - III**

- 6 Explain electro mechanical finite element analysis of MEMS.

**OR**

- 7 Write note on the following:

- Thermal switching.
- Magnetic switching.

**UNIT - IV**

- 8 Describe briefly about MEMS gap-tuning capacitors.

**OR**

- 9 Explain the following:

- Polymer based inductor.
- Folded inductor.

**UNIT - V**

- 10 Explain the following MEMS packages:

- Metal packages.
- Water-level packaging.

**OR**

- 11 Describe about ferrite phase shifters and distributed MEMS phase shifters.

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