B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2017

MEMS & ITS APPLICATIONS

(Electronics & 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)

(a) What is LIGA?

(b) Give an importance of bulk micro machining of silicon.

(c) Write the electrical properties of semiconductor.

(d) Explain the principle of dry etching.

(e) Explain magnetic switching method.

(f) Write the applications of mechanical switches.

(g) Define mutual induction.

(h) Write about variable inductor.

(i) What are the limitations of phase shift filter?

(j) 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:

(a) Poly silicon film deposition method.

(b) Buried oxide process of bulk micro machining for silicon.

OR

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

UNIT - III

6 Explain electro mechanical finite element analysis of MEMS.

OR

7 Write note on the following:

(a) Thermal switching.

(b) Magnetic switching.

UNIT - IV

8 Describe briefly about MEMS gap-tuning capacitors.

OR

9 Explain the following:

(a) Polymer based inductor.

(b) Folded inductor.

UNIT - V

10 Explain the following MEMS packages:

(a) Metal packages.

(b) Water-level packaging.

OR

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

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