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M.Tech.(EPDT) (2016 & Onwards) EL-IV (Sem.-3) SENSOR TECHNOLOGY AND MEMS

Subject Code: MTET-310 M.Code: 74800

Time: 3 Hrs. Max. Marks: 100

INSTRUCTIONS TO CANDIDATES:

- 1. Attempt any FIVE questions in all, out of EIGHT questions.
- 2. Each question carries TWENTY marks.
- 1. a) Give a historical development of microelectronics.
 - b) Give a classification of sensor types.
- 2. a) Explain the sacrificial layer and its role in fabrication of MEMS devices.
 - b) Discuss adhesion problems in surface micro-machining.
- 3. a) Explain dry etching and wet etching in fabrication process of MEMS devices.
 - b) What steps are involved in a modeling of thermal elastic systems?
- 4. a) What is CVD? What are the parameters that influenece CVD? Compare different CVD techniques based on temperature and pressure of operation and material used.
 - b) Differentiate between surface versus bulk micro-machining.
- 5. a) Discuss various wafer bonding techniques.
 - b) Explain the process flow for the MEMS micro-fabrication process with the help of suitable diagram.
- 6. Discuss the process of evaporation and sputtering with suitable illustrations.
- 7. a) What is a smart sensor? How does a smart sensor work? Explain it with a suitable example.
 - b) Discuss sensors based on surface-acoustic wave devices.
- 8. a) What microfluidics are used for in MEMS? Give a past, present and future of MEMS microfluidics.
 - b) What is nanolithography? Discuss various types of nanolithography used in smart sensor technology.

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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