

E. (Electronics) - Sem VIII (CBCGS) -
 Paper / Subject code: 53006 / MEMS Technology
 (3 Hours) (Total Marks: 80)

Please check whether you have the right question paper.

- N.B.: 1) Question No.1 is compulsory.
 2) Answer any Three out of remaining five questions
 3) Draw the neat diagrams wherever necessary.

- Q1. 20M
 A) Explain Air Bag deployment System in brief.
 B) What are micro-actuators pertaining to MEMS Technology? Give two examples.
 C) Define piezoresistivity and list out all piezo-resistive coefficients.
 D) Explain the role of sacrificial layer in fabrication of MEMS devices.
- Q2. 10M
 A) What are polymers? Draw structure of PMMA polymer and discuss its role in MEMS fabrication.
 B) What do you understand by a clean room? Explain the steps in a standard RCA cycle during wafer cleaning. 10M
- Q3. 10M
 A) State different types of pressure sensors and explain in detail, fabrication steps for a piezo-resistive pressure sensor. 10M
 B) Draw neat diagram and explain lift-off process. Why would one use it, in MEMS fabrication? 10M
- Q4. 10M
 A) Explain the steps involved in fabrication of MEMS with proper illustration of surface micromachining. 10M
 B) Describe the DRIE process. How can DRIE achieve virtually perfect vertical etching? 10M
- Q5. 10M
 A) What do you mean by wafer bonding? Explain with neat diagram, different wafer bonding techniques. 10M
 B) Describe the representative process flow for fabricating the ink jet printer head by Hewlett-Packard. Also explain the operating principle of this MEMS device with proper illustration of Ink-firing mechanism. 10M
- Q6. Write short note on: 20M
 A) MEMS packaging & its challenges.
 B) High Aspect Ratio MEMS fabrication.
 C) Role of MEMS in IoT.
 D) MEMS Accelerometer.