USN

10MT63

Sixth Semester B.E. Degree Examination, June/July 2019
Micro and Smart System Technology

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Define Smart Materials. Explain the application of Smart Materials. **(10 Marks)**
b. Explain the operation of ADXL 50 accelerometer with a neat schematic diagram. **(10 Marks)**

2 a. Explain the operation of Piezo resistive pressure sensor, with neat diagram. **(10 Marks)**
b. Briefly explain portable blood analyzer. **(10 Marks)**

3 a. Discuss different types of etching with relevant diagram, chemical equation and etchants. **(10 Marks)**
b. Explain the process of photolithography, with neat schematic diagram. **(10 Marks)**

4 a. Discuss the effect of residual stress and residual stress gradient. **(10 Marks)**
b. Explain Bimorph effect. **(10 Marks)**

PART – B

5 a. Discuss the need for numerical methods for solution of equation. **(10 Marks)**
b. Explain Finite Element model for structures with piezoelectric sensors and actuators. **(10 Marks)**

6 a. Explain six different examples of OP – AMP based circuits. **(10 Marks)**
b. Write a short note on PID controllers. **(10 Marks)**

7 Write short notes on :
a. Wire Bonding.
b. Ball Grid array.
c. Flip chip assembly.
d. Micro system packaging. **(20 Marks)**

8 a. Explain design consideration of Piezo resistive pressure sensor. **(10 Marks)**
b. Discuss vibration control of a beam with neat block diagram. **(10 Marks)**

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