

B.Tech III Year I Semester (R15) Supplementary Examinations June 2018

MEMS & MICROSYSTEMS

(Electronics & Communication Engineering)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) Name any two techniques used for doping silicon.
 - (b) What are the advantages of RF sputtering over DC sputtering?
 - (c) Compare bulk and surface micromachining.
 - (d) List the properties of silicon nitride.
 - (e) List the applications of RF-MEMS devices.
 - (f) What are the features of MEMS capacitive accelerometers?
 - (g) What is a MEMS gyro SENSOR?
 - (h) Compare CVD and PVD.
 - (i) What are the smart sensors? Explain its significance.
 - (j) Discuss the effect of residual stresses in silicon.

PART – B

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

UNIT – I

- 2 List the properties and applications of piezo electric materials.

OR

- 3 What are the different materials used in MEMS fabrication processes and explain each one of their properties and applications.

UNIT – II

- 4 Discuss the step by step approach of polysilicon surface micromachining process for a piezoresistive micro cantilever in detail.

OR

- 5 Explain the electron beam lithography process in detail. Mention its merits and limitations.

UNIT – III

- 6 Discuss the wet etching and dry etching techniques.

OR

- 7 Describe the principle of operation MEMS gyro sensor.

UNIT – IV

- 8 Discuss the fabrication steps involved in MEMS capacitive accelerometer.

OR

- 9 What is piezoelectricity? Explain the operating principles of MEMS piezoelectric accelerometer.

UNIT – V

- 10 Draw and discuss the operation of CNT-FET.

OR

- 11 Explain the principle of working of any one bio sensor.
