Code: 15A04506 **R15**

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)

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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.

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