

CBCS SCHEME

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15NT73

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019 MEMS and NEMS

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Discuss the steps involved in fabrication of IC's. (08 Marks)
b. Brief about MOEMS and Magnetic MEMS. (08 Marks)

OR

- 2 a. Explain in brief about the working principle of Piezo resistive sensors and piezo ink jet printer. (08 Marks)
b. Write a note on : i) Micro – fluidics ii) RF – MEMS. (08 Marks)

Module-2

- 3 a. Explain the working of capacitive transducer and Bipolar junction transducer. (08 Marks)
b. Write a note on Acoustic Wave transducers. (08 Marks)

OR

- 4 a. Brief about : i) Quartz Crystal Imbalance ii) Film Bulk Acoustic Wave resonator. (08 Marks)
b. Explain the importance of cantilever based transducer. (08 Marks)

Module-3

- 5 a. List and explain the various etching methods. (08 Marks)
b. With a neat sketch, explain the concept of photolithography. (08 Marks)

OR

- 6 a. Describe the thin film techniques and give the applications. (08 Marks)
b. Define Piezoelectric effect and explain the mechanism with example. (08 Marks)

Module-4

- 7 a. Define packaging and explain the various packaging technologies. (08 Marks)
b. Discuss about the various failure mechanisms. (08 Marks)

OR

- 8 a. Discuss the working of signal amplifiers and signal conditioning. (08 Marks)
b. Explain the basics of control theory with necessary case studies. (08 Marks)

Module-5

- 9 a. Explain electron beam lithography with sketch. (08 Marks)
b. Explain briefly about future challenges and applications of NEMS. (08 Marks)

OR

- 10 a. Discuss about Focused ion Beam doping and wet chemical etching. (08 Marks)
b. Explain large scale integration of NEMS devices. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.