CBCS SCHEME

USN | | | | | | | | | |

15NT73

Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020
MEMS & NEMS

Time: 3 hrs. Max. Marks: 80

Note: ***Answer FIVE full questions, choosing ONE full question from each module.***

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.

Module-1

1 a. Discuss the steps involved in fabrication of IC's. **(08 Marks)**
b. Explain the working principle of piezo resistive sensors and piezo ink jet printer. **(08 Marks)**

OR

2 a. Explain the 4 types of MEMS packages. **(08 Marks)**
b. Enumerate the concept of miniaturization and list the benefits. **(08 Marks)**

Module-2

3 a. Write a note on Acoustic wave transducers. **(08 Marks)**
b. Define transducer. Explain the working of capacitive transducers. **(08 Marks)**

OR

4 a. Explain the importance of Cantilever based transducer. **(08 Marks)**
b. Explain the working principle,
(i) Electrochemical transducer.
(ii) Bipolar junction transducer. **(08 Marks)**

Module-3

5 a. List and explain the various etching methods. **(08 Marks)**
b. Describe the thin film techniques and give the applications. **(08 Marks)**

OR

6 a. Explain sputtering process and short list its application. **(08 Marks)**
b. Explain the concept of epitaxial growth and give its types. **(08 Marks)**

Module-4

7 a. Explain the concept of reliability and stability. **(08 Marks)**
b. Enumerate the concept of, (i) CMOS (ii) Transmitters **(08 Marks)**

OR

8 a. Define packaging and explain the various packaging techniques. **(08 Marks)**
b. Discuss the working of signal amplifiers and signal conditioning. **(08 Marks)**

Module-5

9 a. Define NEMS. Explain Nano machining of NEMS. **(08 Marks)**
b. Explain briefly about future challenges and applciaitons of NEMS. **(08 Marks)**

OR

10 a. Write short note on stencil lithography and sacrificial etching. **(08 Marks)**
b. Discuss about Focused ion beam doping and with respect to chemical etching. **(08 Marks)**

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