

03/05/2016

8E8023

Roll No. _____

Total No. of Pages : 2

8E8023

B.Tech. VIII Semester (Main) Examination, April/May 2016

Electronics and Communication Engg.

8EC3A MEMS and Nanotechnology

Common with 8EI4.2A

Time : 3 Hours

**Maximum Marks : 80
Min. Passing Marks : 24**

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.) Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Give the difference between top down and bottom up approach in nanotechnology with suitable diagram (8)
- b) What do you mean by superconductor? Explain Massiner Effect in super conductor (8)

OR

1. a) What do you mean by single electron tunneling. Write its advantages on device scaling (8)
- b) Write short notes on Graphenes and CNT (8)

Unit - II

2. a) Discuss various CVD techniques for deposition of S_iO_2 . Also state the parameter on which S_iO_2 deposition depends (8)
- b) What do you mean by optical lithography? Explain proximity printing and compare it with contact and projection printing (8)

OR

2. a) What do you mean by etching in device manufacturing process. Write prone and cones of wet and dry etching (8)
- b) What is gettering? Explain intrinsic gettering process. Write benefit and advantage of gettering (8)

Unit - III

3. Briefly explain the difference between reighley and Raman scattering. Which type of scattering results in a longer wavelength than the incident light, Reighley Raman stokes or Raman anti-stokes (16)

OR

3. a) What do you understand by dynamic light scattering(DLS) technique. Also write its application ? (8)
b) Write the difference between SEM and TEM (8)

Unit - IV

4. a) Explain the concept of quantum mechanics of low dimensional structure (8)
b) Write the difference between quantum dots, quantum wires and quantum wells ? (8)

OR

4. a) What do you mean by Nano biology (8)
b) What are Nano medicines? What approach has been used for developing nano medicines (8)

Unit - V

5. a) Given the comparison between microelectronics and microsystems (8)
b) Write about wire bonding and flip chip assembly process used in packaging of MEMS (8)

OR

5. a) What do you mean by active substrate materials (8)
b) Explain about various type package used in MEMS technology (8)