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Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Nano Electronics

Time: 3 hrs.

Max. Marks: 80

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

Module-1

1 a. What is nano technology? Give classification of nanostructures. **(10 Marks)**
  b. Explain Moore's law. **(06 Marks)**

OR

2 a. Explain Top down and bottom up approaches in material fabrication. **(10 Marks)**
  b. What is miniaturization of material or devices? Explain with example. **(06 Marks)**

Module-2

3 a. With diagram, explain any one microscopic technique for material characterization. **(10 Marks)**
  b. Explain bulk and surface diffraction technique. **(06 Marks)**

OR

4 a. Write a note on Quantum wells and Quantum dots. **(10 Marks)**
  b. Explain Quantum wires. **(06 Marks)**

Module-3

5 a. Discuss the steps involved in self assembly techniques. **(10 Marks)**
  b. Explain epitaxial growth process. **(06 Marks)**

OR

6 a. What is ballistic carrier transport? Explain the mechanism. **(10 Marks)**
  b. Describe resonant tunneling phenomenon. **(06 Marks)**

Module-4

7 a. What are Carbon Nano Tubes (CNTs)? Explain the different forms of CNTs. **(10 Marks)**
  b. Explain the wrapping arrangements in carbon nanotubes and its effects on electronic properties. **(06 Marks)**

OR

8 a. Discuss different areas of applications of CNTs with examples. **(10 Marks)**
  b. Differentiate between the electrical behavior of SWCNT and MWCNT. **(06 Marks)**

Module-5

9 a. What are sensors and Nanosensors? Explain with examples. **(06 Marks)**
  b. What are Nano biosensors? Explain nano biosensor with example. **(10 Marks)**

OR

10 a. Explain optical memories based on quantum dot structure. **(08 Marks)**
   b. Write a note on NEMs and MEMs. **(08 Marks)**

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