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18NT751

## Seventh Semester B.E. Degree Examination, Feb./Mar. 2022 Applications of Nanotechnology in Electronics

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. Explain applications of nanotechnology for electric power. (10 Marks)  
b. Write a note on applications of nanotechnology in energy transformation. (10 Marks)

OR

- 2 a. With neat sketch explain high temperature ceramic oxide cells. (10 Marks)  
b. Write a note on carbon nanotubes wires and cables mention applications. (10 Marks)

### Module-2

- 3 a. Explain about nanostructured thermoelectric materials. (10 Marks)  
b. Describe the energy consumption in information and communication technology. (10 Marks)

OR

- 4 a. Explain about impact of nanotechnology on telecommunications. (10 Marks)  
b. With a neat sketch explain quantum cellular automata. (10 Marks)

### Module-3

- 5 a. With a neat sketch, explain biosensor. Mention applications. (10 Marks)  
b. Give a detailed note on thermal energy sensors. (10 Marks)

OR

- 6 a. Explain about electrical resistance sensor and electrical power sensor. (10 Marks)  
b. With the sketch, explain electromagnetic sensor. (10 Marks)

### Module-4

- 7 a. Give a short note on nanomachining MEMs based on EBL. (10 Marks)  
b. Explain MEMs fabrication with a neat sketch. (10 Marks)

OR

- 8 a. Write a note on focused ion beam wet chemical etching with the neat sketch. (10 Marks)  
b. Give a note on large integration, future challenges and applications of MEMs. (10 Marks)

### Module-5

- 9 a. With neat sketch explain quantum dot FETs. (10 Marks)  
b. With a neat sketch Graphene FETs. (10 Marks)

OR

- 10 a. With the neat sketch explain PinFETs. (10 Marks)  
b. Describe about the design of inverter using CNTFET. (10 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.