CBCS SCHEME

USN | | | | | | | | | | |

18NT71

Seventh Semester B.E. Degree Examination, Feb./Mar. 2022
Nanoelectronics

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. With a neat sketch, explain short channel MOS transistor and split gate transistor. **(15 Marks)**
b. Explain about Electron Spin Transistor. **(05 Marks)**

OR

2 a. Write a note on Quantum Cellular Automata. **(10 Marks)**
b. Discuss about Single Electron Transistor in detail. **(10 Marks)**

Module-2

3 a. Explain about various properties of CNT's. **(10 Marks)**
b. Discuss about various applications of CNT's. **(10 Marks)**

OR

4 a. With a neat sketch explain Quantum dot FET. **(10 Marks)**
b. Explain about organic FET and Fin FET. **(10 Marks)**

Module-3

5 a. Give a detailed note on IV characteristics of P-CNTFET and N-CNTFET. **(10 Marks)**
b. Discuss about memory cell using CNT FET. **(10 Marks)**

OR

6 a. Discuss about different structures of CNT's. Explain about SWNTs. **(10 Marks)**
b. Explain about design of inverter using CNT FET. **(10 Marks)**

Module-4

7 a. With a neat sketch, explain Resonant Tunneling Diode. **(10 Marks)**
b. Describe about dynamic logic circuits and digital circuits based on the RTBT. **(10 Marks)**

OR

8 a. Explain about three terminal FTD's. **(10 Marks)**
b. Write a note on Tunneling diode with a neat sketch. **(10 Marks)**

Module-5

9 a. Discuss about tunnel junctions. Add a note on applications. **(10 Marks)**
b. Write a note on tunneling through potential barrier. **(10 Marks)**

OR

10 a. Describe about coulomb blockade and blockade in nano capacitor. **(10 Marks)**
b. Explain about field emission and gate oxide tunneling in detail. **(10 Marks)**

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