

Eighth Semester B.E. Degree Examination, Aug./Sept.2020 Nanoelectronics

Time: 3 hrs.

Max. Marks: 80

*Note: i) For Regular Students: Answer any FIVE full questions irrespective of modules.
ii) For Arrear Students : Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

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| 1 | a. Explain quantum electronics. Write a note on upcoming electron devices. | (08 Marks) |
| | b. With neat sketch explain about quantum cellular automata. | (08 Marks) |
| 2 | a. Write a note on transistor and nanoeffects in FET, SET and BJT. | (08 Marks) |
| | b. Discuss about FET versus SET with neat sketch. | (08 Marks) |

Module-2

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| 3 | a. Enumerate the applications of CNT's. | (08 Marks) |
| | b. Describe the three structures of CNT's with neat sketch. | (08 Marks) |
| 4 | a. Describe organic FET with neat sketch. | (08 Marks) |
| | b. Explain FinFET with neat sketch. | (08 Marks) |

Module-3

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| 5 | a. List out the applications and importance of Nanotubes in FET's. | (08 Marks) |
| | b. Describe about the DWNT's. Mention properties and applications. | (08 Marks) |
| 6 | a. With the neat sketch, explain SWNT's. Mention properties and applications. | (08 Marks) |
| | b. Explain the IV characteristics of P-CNTFET and N-CNTFET in detail. | (08 Marks) |

Module-4

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| 7 | a. Explain RTD with a neat sketch. | (10 Marks) |
| | b. Give a short note on Tunnelling diode. Mention applications. | (06 Marks) |
| 8 | a. Write a note on digital circuit based on RTBT with neat sketch. | (08 Marks) |
| | b. With neat sketch describe three terminal tunneling diode. | (08 Marks) |

Module-5

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| 9 | a. Explain tunneling through potential barrier. | (08 Marks) |
| | b. Discuss about hot electron effect in MOSFET's. | (08 Marks) |
| 10 | a. Explain about blockade in quantum dot circuits. | (08 Marks) |
| | b. Briefly explain about Tunneling Junctions. Mention applications of tunneling. | (08 Marks) |