

VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

B.Tech. IV Year II Semester Regular Examinations, May 2025

PRINCIPLES AND APPLICATIONS OF NANO TECHNOLOGY

(EIE)

Time: 3 hours

Max. Marks: 70

Answer ALL questions in PART-A.

Answer any ONE question from each unit in PART-B.

All Questions Carry Equal Marks.

PART-A

5X2=10M

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|---|----|-------|------|
| a) Mention the applications of Fluorescence microscopy. | 2M | CO- 3 | BL-2 |
| b) What are Quantum dots? | 2M | CO- 2 | BL-1 |
| c) State the principle of sol-gel process. | 2M | CO- 2 | BL-1 |
| d) Mention the importance of Graphene. | 2M | CO- 4 | BL-2 |
| e) List the memory devices used in nano electronics. | 2M | CO- 4 | BL-1 |

PART-B

6X10=60M

UNIT-I

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| 1. Discuss the applications of nanotechnology in the field of Electronics, Instrumentation, Medical and Material science. | 10M | CO- 1 | BL- 2 |
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| 2. a) Compare Top-down vs. Bottom-up approaches | 5M | CO- 1 | BL- 3 |
| b) Explain in detail the Feynman's perspective of nanoscience. | 5M | CO- 1 | BL- 2 |

UNIT-II

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| 3. Write short notes on Carbon nanotubes, nano peapods and nano rods. | 10M | CO- 2 | BL- 2 |
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| 4. a) Briefly discuss the Polymer-based nanostructures and gold nanostructures. | 10M | CO-2 | BL- 2 |
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UNIT-III

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| 5. Explain any two top-down approaches in detail. | 10M | CO- 2 | BL- 2 |
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| 6. Discuss about chemical synthesis and wet deposition techniques in detail. | 10M | CO- 2 | BL- 2 |
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UNIT-IV

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| 7. Describe the principle and different working modes of SPM, AFM and its advantages. | 10M | CO- 3 | BL- 2 |
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| 8. Explain the principle of working, operational aspects, limitations, and applications for SEM. | 10M | CO- 3 | BL- 2 |
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UNIT-V

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| 9. Explain the working and operation of Ballistic deflection transistors. | 10M | CO- 3 | BL- 2 |
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| 10. Describe about any two III-V compounds and Boron Nitride Nano-mesh materials. | 10M | CO- 4 | BL- 2 |
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UNIT-VI

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| 11. Explain about printed electronics and molecular electronics. | 10M | CO-4 | BL-2 |
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| 12. Write short notes on Spintronics and Nano electronic displays. | 10M | CO-4 | BL-2 |
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