

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SECOND SEMESTER M.TECH DEGREE EXAMINATION (Regular), JULY 2022

(2021 Scheme)

Course Code: 21MD206-F**Course Name:** Introduction to Nanotechnology**Max. Marks:** 60**Duration:** 3 Hours**PART A***(Answer all questions. Each question carries 3 marks)*

1. What is mean by quantum dots? Explain any method for the production of quantum dots?
2. What are nanocrystalline materials? Give any TWO examples.
3. What do you understand by the term miniaturization? Discuss the challenges associated with it.
4. Explain the concept of nano-sphere lithography.
5. Explain bottom-up approach in nanotechnology with an example.
6. List out the various advantages and disadvantages of CVD technique.
7. Explain the concept of nanofluids.
8. List out the physical methods used for the preparation of nanomaterials.

PART B*(Answer one full question from each module, each question carries 6 marks)***MODULE I**

9. With neat sketches, classify nanostructures based on dimensionality. (6)

OR

10. Discuss any TWO concepts from the lecture of Richard P Feynman - "There's Plenty of Room at the Bottom – An invitation to enter a new field of physics". (6)

MODULE II

11. With neatly labelled diagram, explain the working of Transmission Electron Microscope. (6)

OR

12. Explain the concept of surface energy. Suggest and discuss the methods for reduction of surface energy. (6)

MODULE III

13. With a suitable example, explain how Langmuir-Blodgett (L-B) films can be utilized as a photodiode. (6)

OR

14. Explain different metallization techniques? (6)

MODULE IV

15. Describe the concept of Focused Ion Beam Lithography. (6)

OR

16. Explain the process of plasma-aided nanofabrication. (6)

MODULE V

17. With a neatly labelled diagram, explain the process of templating method for synthesis of nanomaterials. (6)

OR

18. Explain sono-chemical method for the preparation of nanomaterials with a suitable example. (6)

MODULE VI

19. With a neatly labelled diagram, explain the process of electric arc method for synthesis of nanomaterials. (6)

OR

20. With a neatly labelled diagram, explain the process of laser ablation method for the synthesis of carbon nanotubes. (6)
