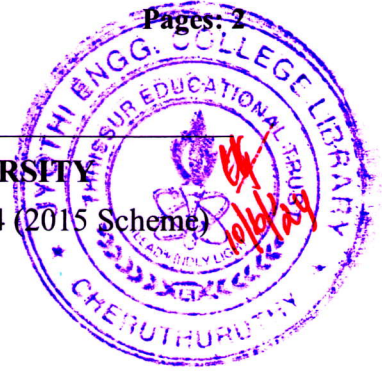


Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
 Seventh Semester B.Tech Degree (S, FE) Examination May 2024 (2015 Scheme)



**Course Code: MR 403**

**Course Name: NANOTECHNOLOGY**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 5 marks.*

- |   |   | Marks |
|---|---|-------|
| 1 | Outline the effects of surface area to volume ratio with examples.                        | (5)   |
| 2 | Mention the different types of nanostructure fabrication methods. Explain any one method. | (5)   |
| 3 | Explain the process of transmission electron microscopy with neat sketch.                 | (5)   |
| 4 | Why some materials are called smart materials? Explain about the smart materials.         | (5)   |
| 5 | Discuss about the precautions required for the prevention of nanoparticle exposure        | (5)   |
| 6 | Explain the process of photolithography.  | (5)   |
| 7 | Discuss about nanobots and its working  | (5)   |
| 8 | List the advantages and disadvantages of targeted drug delivery system.                   | (5)   |

**PART B**

*Answer any three full questions, each carries 10 marks.*

- |    |  |      |
|----|--|------|
| 9  | a) Describe quantum dots. How they are classified?                               | (5)  |
|    | b) Elucidate the different areas of applications of quantum dots.                | (5)  |
| 10 | a) Explain the solgel synthesis with the neat sketch of processing steps.        | (10) |
| 11 | a) Elucidate the various methods for the preparation of carbon nanotubes.        | (10) |
| 12 | a) Discuss about nanofluids. Describe the various methods to prepare nanofluids. | (6)  |
|    | b) Mention the classification of nanocomposites.                                 | (4)  |
| 13 | a) Discuss in detail about nanoclays and its preparation                         | (6)  |
|    | b) Explain nanowires with its properties.  | (4)  |

**PART C**

*Answer any two full questions, each carries 15 marks.*

- 14 a) Enumerate the soft lithographic process. Sketch the methods of fabrication and explain the methods of fabrication. (10)
- b) Describe the photoresist materials. (5)
- 15 a) Discuss about the problems associated with nanoparticles (5)
- b) Enumerate the potential human hazards for nanoscale particulates. How it can be controlled? (10)
- 16 a) Explain in detail on the applications of nanotechnology in different fields. (7)
- b) Discuss about nanoelectronics and nanoelectronic devices in detail (8)
- 17 a) Elucidate the different types of targeted drug delivery system. (9)
- b) Write short notes on MEMS. (6)

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