

Reg No: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIFTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019

Course Code: CH363

Course Name: PRINCIPLES OF NANOMATERIALS AND NANOTECHNOLOGY

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

Marks

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| 1 | a) Describe the classification of nanomaterials. | (7) |
| | b) Define nanoscale. How are nanoscale materials characterized? | (8) |
| 2 | a) What are self-assembled monolayers? How are they formed? | (5) |
| | b) Using a ray diagram explain the principle and working of a scanning electron microscope. | (10) |
| 3 | a) Describe any two bottom-up methods for synthesis of nanomaterials. | (15) |

PART B

Answer any two full questions, each carries 15 marks.

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| 4 | a) Write short notes on nanowires, nanotubes and nanorods. | (9) |
| | b) Describe the optical and magnetic properties of nanomaterials. | (6) |
| 5 | a) Describe the synthesis of nanomaterials through homogenous nucleation. | (7) |
| | b) What are carbon nanotubes? How are they synthesized? | (8) |
| 6 | a) What is biologically-inspired nanotechnology? Explain with two examples. | (10) |
| | b) Explain the mechanical properties of nanostructured materials. | (5) |

PART C

Answer any two full questions, each carries 20 marks.

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| 7 | a) What is chemical vapour deposition? How is it carried out? | (10) |
| | b) What are nanomedicines? Explain with two examples. | (10) |
| 8 | a) What are polymer nanocomposites? How are they prepared? List out their advantages. | (10) |
| | b) Write short notes on nanoelectronics. | (10) |
| 9 | a) What are nanoscale intelligent materials? What are its applications. | (10) |
| | b) Describe the applications of nanotechnology in the field of chemical and biosensing. | (10) |