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10NT81

Eighth Semester B.E. Degree Examination, June/July 2017

Advanced Nanomaterials and Devices

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. Explain in detail about Molecular sieves and their applications. (10 Marks)
b. What are Nanosponges? Write the preparation and applications. (10 Marks)

- 2 a. Explain the quantum effects in Quantum wires and mention their applications. (08 Marks)
b. Write a brief note on Quantum Dots and their synthesis and fabrication techniques. (12 Marks)

- 3 a. Describe consequences and limitations of Moore's law. (08 Marks)
b. Explain in brief about Carbon Nanotube based FET. (12 Marks)

- 4 a. Mention and explain about any two lithography techniques used for Nanofabrication. (12 Marks)
b. Write about Black phosphorous (BP) interface engineering and biological interface engineering. (08 Marks)

PART – B

- 5 a. Describe about energy supply and chemical energy for molecular machines. (10 Marks)
b. Explain about molecular shuffle with neat sketches. (10 Marks)

- 6 a. Explain initiation and force generation and real time dynamics. (08 Marks)
b. Explain about mechanism, dynamics and energetic of ATP synthase. (12 Marks)

- 7 a. Explain biomacro molecular nanoreactions. (10 Marks)
b. Discuss about rod shaped and cage structured nanoreactions. (10 Marks)

- 8 a. Justify molecular switches as logic gates. (12 Marks)
b. Explain molecular based electronic circuits. (08 Marks)

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Important Note : 1 On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.