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10NT72

Seventh Semester B.E. Degree Examination, Dec.2016/Jan.2017
Carbon Nanostructure

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Explain types of CNTs and its properties. (10 Marks)
b. Discuss any two purification techniques for CNT. (04 Marks)
c. Give the preparation method of CNT by CVD method. (06 Marks)
- 2 a. Explain electrical and vibrational property of CNTs. (10 Marks)
b. Write a short note on carbon cluster. (04 Marks)
c. Discuss Raman Spectroscopy of CNT and name the modes involved. (06 Marks)
- 3 a. Explain the types and applications of diamond like carbon. (08 Marks)
b. Give the comparison of graphite, diamonds and diamond like carbon. (06 Marks)
c. What is nanodiamond? Give its properties and applications. (06 Marks)
- 4 a. Write a note on Hammers method. Give its advantages and disadvantages. (10 Marks)
b. Explain solvent sonication method with neat diagram. (10 Marks)

PART – B

- 5 a. Discuss the properties and applications of whiskers and cones. (10 Marks)
b. Write a note on graphite and polyhedral crystals. (10 Marks)
- 6 a. Explain functionalisation of carbon nanostructures by amidation and hydrogenation. (10 Marks)
b. Write a short note on oxidative purification. (04 Marks)
c. Explain covalent functionalisation. (06 Marks)
- 7 a. Write a note on addition of nucleophilic carbenes with steps. (10 Marks)
b. Discuss about sidewall functionalisation by electrophilic addition. (10 Marks)
- 8 a. What are Lithium ion batteries? Give its working principle and mechanism. (10 Marks)
b. Give applications of carbon nanostructures in various fields. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any remaining identification, appeal to evaluator and/or equations written eg, 42+8=50, will be treated as maipractice.