USN | | | | | | | | | | | **10NT72**

Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018
Carbon Nano Structures

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1   a. Explain growth mechanism of CNT with neat diagrams. **(12 Marks)**
    b. List out the disadvantages of laser ablation and electric arc processes. **(04 Marks)**
    c. Write a note on CVD method used to synthesis CNT. **(04 Marks)**

2   a. Explain in detail about electrical and vibrational properties of CNT. **(10 Marks)**
    b. Brief about carbon clusters. **(04 Marks)**
    c. Discuss about Raman spectroscopy of CNT and name all the modes present. **(06 Marks)**

3   a. Explain in detail about different types of fullerenes. **(08 Marks)**
    b. Discuss about the comparison of graphite, diamond, and DLC. **(06 Marks)**
    c. Explain briefly about metal carbide derived carbon. **(06 Marks)**

4   a. Write a detailed note on hammers method. list out its advantages and disadvantages. **(10 Marks)**
    b. Explain in detail about super critical fluids. **(10 Marks)**

PART – B

5   a. Brief about whiskers and cones. **(10 Marks)**
    b. Explain about properties and applications of graphite and polyhedral crystals. **(10 Marks)**

6   a. Explain about functionalization of carbon nano structures by thiolation and halogenation. **(10 Marks)**
    b. Write a short note on oxidative purification. **(04 Marks)**
    c. Explain about covalent functionalization. **(06 Marks)**

7   a. Explain the nucleophilic addition of carbenes. **(10 Marks)**
    b. Discuss about cycloadditions and carbine addition. **(10 Marks)**

8   a. Explain in detail about construction and working of fuel cells. **(10 Marks)**
    b. Brief about applications of nano tubes in drug delivery. **(10 Marks)**

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