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SEAT No. :

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BE/INSEM/APR-615

B.E. (Chemical Engineering) (Semester - II)

409352B : NANOTECHNOLOGY

(2015 Pattern) (Elective - IV)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data if necessary.
- 5) Use of log table, calculator and steam table is permitted.

Q1) a) Explain any two synthesis methods used for carbon nanotubes. [7]

b) Explain the applications of different nanomaterials in catalysis. [3]

OR

Q2) Explain the different types of carbon based nanomaterials along with their physical properties and applications. [10]

Q3) Explain bottom-up and top-down approaches for fabricating nanostructures with examples. What are the advantages and disadvantages of both methods? [10]

OR

Q4) Define Electrodeposition method and explain its principle. Write advantages and disadvantages of CVD. [10]

P.T.O.

Q5) a) Explain principle and operation of Fourier Transform Infrared Microscope (FTIR). [7]

b) Write about the principle of AFM. [3]

OR

Q6) a) What is the basic principle in Scanning Electron Microscope? Explain how it is different from Optical Microscopy. [7]

b) What is the capability of STM in characterization of nano structures? [3]

