

19/05/2025 BE CHEMICAL SEM-VIII C-SCHEME NANOTECHNOLOGY QP CODE: 10083224

Time: Three Hours

Marks:80

- N.B.: 1 Question **ONE** is compulsory
 2 Attempt any **THREE** questions out of the remaining
 3 Figure to the right indicate full marks
 4 Illustrate answers with sketches wherever required and Diagram at appropriate places carries marks
 5 Assume suitable data if necessary and indicate it clearly.

- 1 Write short notes
 - (a) Explain applications of nanotechnology in water treatment. (05)
 - (b) Define- surface diameter, volume diameter, drag diameter, specific surface diameter and aerodynamic diameter for a particle. (05)
 - (c) Explain Electric Arc synthesis of fullerenes. (05)
 - (d) Explain principle of atomic lithography. (05)
- 2 (a) With suitable diagram, explain steps involved in Super critical agglomeration. (10)
- (b) Compare top down and bottom up technologies for nanomaterial. (10)
- 3 a With suitable diagram explain the principle involved in Microwave spectroscopy. (05)
- b Explain principle of Sol Gel Processing. (05)
- c With suitable diagram explain condensed phase synthesis of nanoparticles. (10)
- 4 a Explain electro deposition as a nanostructuring method. (10)
- b With suitable diagram explain the method used for semiconductor compounds and thermoelectric components on Nanoscale. (05)
- c What is role of gold nanoparticles in drug delivery systems. (05)
- 5 (a) What is role of protein nanoparticles in drug delivery systems? (10)
- (c) Describe different Types of Inorganic materials used for the synthesis of Hybrid Nano-bio assemblies. (10)
- 6 (a) Calculate the area and volume of following shaped particles (a) Sphere of radius R (b) Cube of side A (c) Rectangular paralleled pipe of sides A and B (d) Cylinder of radius R and height H (12)
- (b) Explain four steps involved in collection process for a particulates in fluid. (08)
