JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2023

B.Tech-I Semester (CSE/IT/ECE/CE/BT/BI)

COURSE CODE(CREDITS): 18B1WPH731(03) MAX. MARKS: 25

COURSE NAME: Nanotechnology

COURSE INSTRUCTORS: Dr. Ragini Raj Singh MAX. TIME: 1 Hour 30 minutes

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*Note: (a)All questions are compulsory.*

*(b)Marks are indicated against each question in square brackets.*

*(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems*

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**Q.1.** Discuss

(a) Interaction of collides with medium particles [CO:1; Marks:1]

(b) Steric Repulsion [CO:1; Marks:1]

(c) Concept of free energy in chemical synthesis [CO:1; Marks:1]

**Q.2.** What are the possible effects of charges on collides in the synthesis of nanomaterials? Discuss it with reference to electric double layer and electric potential with appropriate graphs and diagrams. [CO:2; Marks:3]

**Q.3.** Discuss all the aspects of bottom up process of nucleation with proper explanations with diagrams? [CO:2; Marks:3]

**Q.4.** What is size selective precipitation method, explain the full procedure with process flow chart? [CO:3; Marks:3]

**Q.5.** Discuss synthesis of metal and semiconducting nanoparticles using chemical method ? Give examples in the form of chemical equations for both. [CO:3; Marks:4]

**Q.6.** For what Langmuir-Blodgett method is used for, and discuss it in detail with supportive diagrams and necessary elements. [CO:4; Marks:4]

**Q.7.** What are SWCNTs and MWCNTs, discuss different possible structure in both the cases and also discuss their respective electrical and thermal properties? [CO:4; Marks:5]