

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: MTECH
BRANCH: BIOTECH**

**SEMESTER : II
SESSION : SP/2025**

SUBJECT: BE602 ADVANCES IN NANOBIO TECHNOLOGY

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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Q.1(a)	Explain the concept of Quantum Confinement and Surface Plasmon Resonance?	[5]	CO	BL
Q.1(b)	Discuss the salient properties of Carbon nanotube and its method for fabrication with suitable representation?	[5]	CO1	L2
Q.2(a)	Differentiate between SEM and TEM? Give the principle & schematic of SEM?	[5]	CO2	L4
Q.2(b)	Enlist the different Top-Down approaches for nanofabrication? Explain any one in detail.	[5]	CO2	L1,L2
Q.3(a)	Define nanomotors? Discuss suitable example about different known biomolecular nanomotors?	[5]	CO3	L1,L2
Q.3(b)	Define S Layers? Illustrate their unique structure, properties and function?	[5]	CO3	L1,L2
Q.4(a)	Differentiate between a biosensor and a nanobiosensor? Illustrate the schematic and principle of working of a biosensor?	[5]	CO4	L4,L2
Q.4(b)	Discuss the principle, working & applications of Carbon nanotube biosensor?	[5]	CO4	L2
Q.5(a)	“Nanotechnology has revolutionized the biomedical field”. Justify with supporting examples?	[5]	CO4	L5
Q.5(b)	Evaluate the nanotoxicological challenges with its impact on health and environment?	[5]	CO4	L4

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