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

CLASS: BTECH **SEMESTER : VII**
BRANCH: BIOTECH. **SESSION : MO/2024**

SUBJECT: BE407 NANOBIOTECHNOLOGY

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.

			CO	BL
Q.1(a)	Define the terms Nanotechnology & Nanobiotechnology? Explain the concept of Surface Plasmon Resonance with proper sketch and example.	[5]	CO1	L1, L2
Q.1(b)	Explain the Beer-Lambert's Law? Differentiate between SEM & TEM?	[5]	CO1, CO3	L2, L4
Q.2(a)	Define Liposomes? Discuss the concept of nanomaterials existence in biosystem with supporting examples?	[5]	CO2	L1, L2
Q.2(b)	Differentiate between the terms Self Assembly & Self Organization with supporting examples?	[5]	CO2	L4
Q.3(a)	Classify nanomaterials based on dimensionality? Discuss the molecular mechanism for nanoparticle formation with suitable representations?	[5]	CO1, CO3	L2
Q.3(b)	"Quantum Dots offers band gap tunability". Support the statement with a suitable explanation?	[5]	CO3	L5
Q.4(a)	Explain the concept "biosynthesis of nanoparticles"? Describe the cellular mechanism involved for biosynthesis of nanoparticles from bacteria?	[5]	CO3	L 2
Q.4(b)	Compare the advantages & limitations of nanoparticles synthesis via biological over conventional synthesis methods?	[5]	CO3	L4
Q.5(a)	Explain the working principle of a biosensor with schematics. Describe the principle, working and applications of carbon nanotube biosensor?	[5]	CO4	L2
Q.5(b)	Evaluate the nanotoxicological challenges with their impact on health and environment?	[5]	CO4	L5

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