

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

**CLASS: BTECH
BRANCH: BIOTECH**

**SEMESTER : VII
SESSION : MO/2025**

SUBJECT: BE407 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 with respect to nanomaterials?	[5]	CO CO1	BL BL2
Q.1(b)	Explain the Beer-Lambert's Law? Differentiate between SEM & TEM?	[5]	CO1, CO3	L2, L4
Q.2(a)	Discuss nucleic acids as nanomaterials in biosystems with suitable representation?	[5]	CO2	BL2
Q.2(b)	Differentiate between Self Assembly & Self Organization with suitable examples?	[5]	CO2	BL4
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]	CO1, 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)	Describe the principle, working and applications of carbon nanotube biosensor? Give suitable example.	[5]	CO3,4	BL2
Q.5(b)	"Nanotechnology advancements are boon or bane for society". Justify your answer with examples suitably.	[5]	CO4	BL5

:::21/11/2025:::M