22BTP320BN

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2025
(Third Semester)

Branch – **BIOTECHNOLOGY**

MAJOR ELECTIVE COURSE – II: NANOBIOTECHNOLOGY

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Which among the following is the typical size range of nanoparticles? a) 1 to 100 mm b) 1 to 100 mm c) 1 to 100 nm d) 100 to 1000 nm	K1	CO1
	2	Basic confirmation test for nanoparticle size is a) SEM b) TEM c) Confocal d) XRD	K2	CO1
2	3	NLSI stands for a) Novel Line Stability Index b) New Linear Stability Index c) Non-Linear Stability Information d) Novel Line Standing Index	K1	CO2
	4	Gecko foot's stickiness is due to a) Natural gums b) microscopic hairs c) vacuum d) suction	K2	CO2
3	5	Which type of interactions are NOT commonly involved in antibody immobilization on biosensor surfaces? a) Covalent b) Ionic c) Magnetic d) Van der Waals	K1	CO3
	6	Significance of DNA-Gold nanoparticle conjugate is a) conductivity b) stability c) size d) less expensive	K2	CO3
4	7	Therapeutic antibodies are termed a) magic bullets b) nanodots c) nano toxins d) nano bombs	K1	CO4
	8	Highest priority of nano drug delivery system is a) dosage b) target specific c) drug-dependent d) size	K2	CO4
5	9	Entity responsible for antimicrobial property of nanotextiles is a) silver b) dyes c) silica d) starch	K1	CO5
	10	Programmable shape changing delivery molecules employed for heart surgery are a) MEMS b) Miniature sensors c) Nanobots d) Nanoelectronics	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Illustrate nanoparticle synthesis.	K2	CO1
		(OR)		
	11.b.	Outline the principle of confocal microscopy.		
2	12.a.	Identify the significance of neurons in silicon modelling.	K3	CO2
		(OR)		
	12.b.	Exemplify the natural nanocomposites for colouration.		
3	13.a.	Detail S-Layer protein structure and assembly.	K3	CO3
		(OR)		
	13.b.	Elaborate DNA profiling.		
4	14.a.	List out the nano-based diagnosis for cancer.	K4	CO4
		(OR)		
	14.b.	Examine nanoparticles in cancer therapeutics.		
5	15.a.	Analyze the supremacy of nano-finishing in textiles.	K4	CO5
		(OR)		
	15.b.	Distinguish the role of nanotechnology in agriculture.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions
ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Simplify the working mechanism of AFM. Discuss its types.	K4	CO1
2	17	Analyze the role of biology nanocomposites' structure.	K4	CO2
3	18	Explain the function of enzymes in sensor systems.	K4	CO3
4	19	Compare the traditional and nano-dependent *in-vivo* detection of tumors.	K4	CO4
5	20	Examine the advantage of nano-sensors for pollution monitoring.	K4	CO5

Z-Z-Z END