22BCU518N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(Fifth Semester)

Branch – **BIOCHEMISTRY**

NANOBIOLOGY

Time: Three Hours Maximum: 75 Marks

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

Q. No	Question	K Level	CO
1	The term nanotechnology was coined in 1974 by a. Richard Feynman b. Admiral David E, Jeremiah c.Nario Taniguchi d. K. Eric Drexler	K1	CO1
2	Majority of the spontaneous molecular self assembly in the living organism is achieved by a. disulphide bond b. covalent bond c. ioninc linkage d. H-bond	K2	CO1
3	Buckyball, a carbon nanotube is made up of a. C_{50} b. C_{60} c. C_{90} d. C_{100}	K1	CO1
4	Soft lithography, a group of microfabrication that is commonly made of a. polydimethylsiloxane b. alkyl chain c. alkane thiolates d. cantilever	K2	CO2
5	3D bioimpringing technology is mainly used in the manufacturing a. carbon nanotube b. Scaffolding system c. soft lithography d. nanoliposomes	K1	CO2
6	Which of the following technique is used to find the functional groups of a molecule? a. AFM b. SEM c. TEM d. FTIR	K2	CO2
7	Biodegradable copolymer membrane of RBC is produced by using a. polylactide (PLA) b. collagen matrix c. glycerin matrix d. chittosan polymer	K1	CO3
8	Inside of nanorobot for HIV treatment will be coated with the gold nano particle attached to a. Viral like particle b. CD8 matrix c. P24 mAb d. CD4 matrix	K2	CO3
9	Choosing drugs to treat meningitis is difficult, because the presence of a. retinal barrier b. placental barrier c. blood-brain barrier d. blood-CSF barrier (choroid)	K1	CO3
10	The detector element of a biosensor device is interacting with an analyte of biological sample by all the following properties, *except* a. optical b. piezoelectric c. sound d. electrochemical	K2	CO3

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

Q. No		Question	K Level	CO
11	a	Explain the introduction and history of nanobiotechnology.	K2	CO1
		(OR)		
	b	Interpret the size-dependent phenomena of a physical and chemical materials.		
12	a	Infer the properties and applications of nanodendrimers.	K2	CO2
		(OR)		
	b	Describe the nanofabrication of NEMS and its application.		

Cont...

13	a	Relate the zeta potential and nanotechnology.	K2	CO2
		(OR)		
	b	Explain the types and application of liposomes in drug delivery system.		
14	a	Outline the applications of nanobodies and chromobodies in our immune system.	K2	CO
		(OR)		
	b	Explain briefly on components of clottocytes.		
15	a	Write briefly on artificial muscle.	K2	CO3
		(OR)		
	b	Illustrate briefly on manufacturing biochip.		

SECTION -C (30 Marks)

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

Q. No	Question	K Level	CO
16	Demonstrate the convergent assembly in nano scale molecular manufacturing.	K3	CO1
17	Elaborate on the quantum dots and its application in nanotechnology.	K2	CO2
18	Develop the points on principle, components and application of SEM.	K3	CO3
19	Demonstrate the components and functions of nanorespirocyte.	K2	CO3
20	Summarize the types and manufacture of artificial pancreas.	K2	CO3

Z-Z-Z END