Register Number:……..

KUMARAGURU college of technology
character is life

B. TECH DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

Seventh Semester

BIOTECHNOLOGY

U18BTE0007: Nanobiotechnology

COURSE OUTCOMES

CO1: Understand the synthesis processing of various nanomaterials
CO2: Apply and interpret the various characterization techniques for nanomaterials
CO3: Apply and evaluate the various nanomaterials applications in different field
CO4: Understand and apply the natural biomolecules for various biological applications
CO5: Understand and apply the nano-biochips, nano-biosensor and micro array for biological Applications
CO6: Evaluate the nanomaterials in cancer diagnosis and treatment

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions: -
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Define nanoparticles	CO1	[K_2]
2.	Sketch the top down and bottom-up approach of nanomaterial preparation	CO1	[K_3]
3.	List of any four applications of XRD	CO2	[K_2]
4.	What are the advantages of AFM?	CO2	[K_1]
5.	Distinguish the single-walled and multi-walled carbon nanotube	CO3	[K_3]
6.	Provide any two applications of fullerenes	CO3	[K_2]
7.	What do you mean by magnetosome?	CO4	[K_2]
8.	Enlist the applications of nanofiber	CO4	[K_2]
9.	Name any four polymers used in drug delivery system	CO5	[K_2]
10.	What is the importance of bioimaging?	CO6	[K_2]

Answer FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Numerous intriguing nanodevices are under development that could enhance cancer diagnosis, therapy, and detection. Provide any relevant instances to support the statement.	16	CO1	[K_3]
12.	a)	Write a detailed note on any two method of nanomaterials synthesis by bottom-up approach.	10	CO1	[K_2]
	b)	How does AFM work?	6	CO2	[K_3]
13.	a)	Discuss the working principle, instrumentation and applications of SEM.	16	CO2	[K_3]
14.	a)	Explain any two synthesis methods of fullerenes and their possible applications.	12	CO3	[K_2]
	b)	List the potential applications of quantum dots.	4	CO3	[K_2]
15.	a)	Discuss the bacteriorhodopsin and its experiment on structural determination with neat sketch	16	CO4	[K_3]
16.	a)	Explain the working principle of nanobiosensor with a neat sketch.	6	CO5	[K_2]
	b)	Nanoparticles enhance drug delivery by targeting specific cells, improving efficacy, and reducing side effects in personalized treatments. Substantiate the statement with any one suitable example.	10	CO6	[K_3]

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