Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 9008

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024
Sixth Semester
Biotechnology
U19BTV12 – ENVIRONMENTAL BIOTECHNOLOGY
(Regulation 2019)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What are bio-tools for environmental protection?	2	K1	CO1
2.	Can you provide examples of genetically engineered organisms for environmental protection?	2	K2	CO1
3.	What surface properties favor biofilm formation?	2	K2	CO2
4.	How do bacteria facilitate the decolorization of azo dyes?	2	K1	CO2
5.	What are the enzymes involved in biopulping?	2	K3	CO3
6.	Define biomining and write the methods of biomining.	2	K3	CO3
7.	What are the different types of Environmental Monitoring?	2	K4	CO4
8.	List out the examples of bioindicators.	2	K3	CO4
9.	What is the technique used for Microbial composting?	2	K4	CO5
10.	What are the importance of single-cell protein?	2	K4	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Discuss in detail about the merits and demerits of genetically engineered organisms.	13	K2	CO1
		(OR)			

	b)	Explain the application of biotechnology in environmental monitoring and protection.	13	K2	CO1
12.	a)	How the immobilization technology is used in wastewater treatment? Discuss.	13	K3	CO2
		(OR)			
	b)	Write about the different enzymes in Rhizosphere engineering and explain oil degradation using microbes.	13	K3	CO2
13.	a)	Explain the Insitu and Exsitu bioremediation with their merits and limitation.	13	K3	CO3
		(OR)			
	b)	Describe and discuss the Role of GEMS in the degradation of xenobiotics.	13	K4	CO3
14.	a)	How the cell-free biosensors and non-specific whole-cell biosensors used in biomonitoring?	13	K4	CO4
		(OR)			
	b)	Discuss and describe the principle and operation of biofiltration.	13	K4	CO4
15.	a)	What are the value-added products produced from waste? Explain the production process of ONE such a value-added product from waste.	13	K4	CO5
		(OR)			
	b)	Differentiate between biofertilizers and biopesticides with suitable examples.	13	K4	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.			Questions	Marks	KL	CO
16.	a)		Explain the following:		K6	CO4
		i.	Bioreactors for wastewater treatment.	5		
		ii.	Biodegradation of agrochemicals.	5		
		iii.	Role of GEMS in degradation of xenobiotics.	5		
			(OR)			
	b)	i.	How the xenobiotic compounds are biotransformed? Explain.	5	K5	CO4
		ii.	Write about the Microbial metabolism and Reed bed technology.	5		
		iii.	Describe the optical based biosensor for environmental monitoring.	5		