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

Question Paper Code: 9024

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – JUNE / JULY 2024

Second Semester

Biotechnology

P23BT207 – GREEN ENERGY TECHNOLOGY

(Regulation 2023)

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.	'Sun is called the ultimate source of energy' - Justify this statement.	2	K3	CO1
2.	List the different resources of fossil fuel.	2	K1	CO1
3.	Infer the need of understanding the kinetics of any biochemical reaction.	2	K2	CO2
4.	Mention the major sources of biomass.	2	K1	CO2
5.	Give any TWO examples for Solid and Gaseous fuel each.	2	K1	CO3
6.	Differentiate between auto and force ignition in combustion.	2	K2	CO3
7.	State Stefan Boltzmann law of radiation.	2	K1	CO4
8.	Describe the purpose of a solar concentrating collector.	2	K2	CO4
9.	Infer the need for energy system modelling.	2	K2	CO5
10.	What is script file and function file?	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Analyze the different process of energy flow in man-made ecosystem.	13	K2	CO1
	(OR)			
b)	Classify the different sources of renewable energy and explain each.	13	K2	CO1
12. a)	Portray the major catabolic pathway of Glucose biomolecule.	13	K2	CO2
	(OR)			
b)	With a neat diagram, exemplify the role of photo bioreactors in the large-scale harvesting of photosynthetic organism.	13	K2	CO2
13. a)	i. Illustrate the theory behind combustion.	8	K1	CO3
	ii. Relate the importance of triple T of combustion.	5	K2	
	(OR)			
b)	i. Compare and contrast CFBC and AFBC.	8	K3	CO3
	ii. Brief on the combustion stoichiometry.	5	K2	
14. a)	Discuss the various elements of Solar geometry in detail.	13	K2	CO4
	(OR)			
b)	i. Exemplify the working principle of Solar flat plate collectors.	5	K2	CO4
	ii. Derive an expression to determine the efficiency factor of a solar flat plate collector.	8	K3	
15. a)	Elaborate the main objectives, components and detailed steps in the modeling of Power electronic system.	13	K2	CO5
	(OR)			
b)	Categorize the different optimization methods of Green energy simulation systems and discuss each.	13	K2	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	Narrate the detailed steps involved in the large-scale conversion of lignocellulosic feedstock into biofuels, with a neat flowsheet.	15	K5	CO2
	(OR)			
b)	Demonstrate the recent advancements in the Carbon capture, usage and storage (CCUS) systems.	15	K2	CO3