Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

Fifth Semester

Agricultural Engineering

CAI335 - Solar and Wind Energy System

Regulations - 2021

Duration : 3 Hrs *Maximum: 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Define Solar Azimuth angle and Angle of incidence.	L1	1	2
2.	Delineate Solar drier. What are the different types of Solar drier?	L1	1	2
3.	What are the different types of solar stills?	L1	2	2
4.	Define photovoltaic cell.	L1	2	2
5.	Define Lift and Drag.	L1	3	2
6.	Outline the nature of Wind.	L1	3	2
7.	What are the main components of VAWT?	L1	4	2
8.	What is standalone system?	L1	4	2
9.	What are the advantages of Geothermal Energy?	L2	5	2
10.	Define Fuel Cell.	L1	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)*

Q.No			*Questions*	*BLT*	*CO*	*Marks*
11.	a		What are the instruments used for measuring solar radiation and sunshine? Illustrate any ONE type of solar radiation measuring instrument with its working principle. What are its advantages and disadvantages?	L2	1	16
			Or			
	b	i	Elaborately explain the Flat Plate Collectors with neat sketch.	L2	1	8
		ii	What is the principle of solar drying? What are the different types of solar dryers available? Why the black lining in a solar dryer is important?	L2	1	8
12.	a		What do you understand by Optically concentrating collectors? Classify it and explain any one in detail with neat sketch.	L2	2	16
			Or			
	b	i	What is the work and usage of solar still? Explain with neat sketch about any one type of the conventional solar still.	L2	2	8
		ii	Build a neat sketch for PV powered water pumping system.	L2	2	8

13.	a	i	Explain with neat sketch about the air foil terminology with its Nomenclature.	L2	3	10
		ii	Briefly explain the Betz coefficient.	L2	3	6
			Or			
	b	i	Explain about Aerodynamics with Aerodynamic forces on a turbine blade.	L2	3	10
		ii	What are the major applications of turbine blades?	L2	3	6
14.	a		What are the Design considerations required for the Horizontal Axis Wind Turbine (HAWT) explain along with Aerodynamics of the wind blade?	L3	4	16
			Or			
	b	i	Draw and explain various types rotors used for HAWT.	L2	4	8
		ii	Explain with neat sketch about Yaw control in Upwind Machines.	L2	4	8
15.	a		Draw and explain the following: i. Open cycle OTEC plant ii. Closed cycle OTEC plant	L2	5	16
			Or			
	b		Contrast between dry–steam and wet–steam hydrothermal system with neat sketches in Geothermal energy.	L2	5	16