IVU.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main Examinations

Programme: B.E. **Semester: VI**

Branch: Electrical and Electronics Engineering **Duration: 3 hrs.**

Course Code: 19EE6CE1WS **Max Marks: 100**

Course: Wind and Solar Energy Systems

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	CO	PO	Marks
1	a)	Discuss on various categories of control options in renewable energy systems.	*CO1*	*PO7*	**10**
	b)	With a neat diagram, show the flow of energy passing continuously as renewable energy through earth	*CO2*	*PO2*	**10**
		OR			
2	a)	Discuss on pollution and environmental impact of renewable and non-renewable energy systems.	*CO2*	*PO2*	**10**
	b)	How do you match supply and demand with renewable energy options ? Explain highlighting the advantages of connecting a renewable energy system to a grid network?	*CO2*	*PO2*	**10**
		UNIT - II			
3	a)	List the different types of solar radiation measuring instruments? Explain with the help of a diagram any one type of pyrheliometer?	*CO2*	*PO2*	**10**
	b)	Define the angle of declination, Solar Azimuth angle, Altitude Angle, Hour Angle, Zenith Angle.	*CO1*	*PO7*	**10**
		OR			
4	a)	Discuss in detail about the different components of solar radiation striking a collector surface on earth with the help of diagrams and equations?	*CO3*	*PO3*	**12**
	b)	What is Air Mass Ratio? Illustrate and explain with the help of a neat diagram. Also Define Blackbody.	*CO2*	*PO2*	**08**

			UNIT - III			
	5	a)	Develop an accurate equivalent circuit of Photovoltaic cell and thereby obtain the expressions for voltage and current.	*CO2*	*PO2*	**12**
		b)	What is impact of Insolation and Temperature on I-V Curves?	*CO3*	*PO3*	**08**
			OR			
	6	a)	Explain a method of mitigating the shading effect?. What is the solution for this in practical situation	*CO2*	*PO2*	**10**
		b)	Give the classification of PV cells based on the technologies used for manufacturing processes.	*CO1*	*PO7*	**10**
			UNIT - IV			
	7	a)	What are the features of Stand Alone PV System? Explain with neat diagrams	*CO2*	*PO2*	**12**
		b)	What are MPPTs what is their significance?	*CO2*	*PO2*	**08**
			OR			
	8	a)	Explain the peak hours approach to estimate the PV performance.	*CO2*	*PO2*	**12**
		b)	What is effect of Duty Cycle of MPPT on the performance PV module.	*CO2*	*PO2*	**08**
			UNIT - V			
	9	a)	What is the significance of Battery I-V curves? With reference to this, compare ideal battery with real battery.	*CO2*	*PO2*	**10**
		b)	Describe with a neat diagram the components of wind electric conversion system.	*CO4*	*PO3*	**10**
			OR			
	10		Discuss the effect of temperature and elevation on the wind power generation and correction required while estimating wind power generation.	*CO4*	*PO3*	**20**

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