Reg. No. : | | | | | | | | | | | | |

Question Paper Code:U5415

M.E. DEGREE EXAMINATION, NOV 2024

Professional Elective

Power Electronics and Drives

21PPE515 - SOLAR AND ENERGY STORAGE SYSTEM
(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1.	(a)	Explain the important aspects of solar cell design that affect efficiency and draw the cross-section of a typical commercial solar cell.	CO1-U	(20)
		Or		
	(b)	Demonstrate the formation of a PN junction and explain the characteristics	CO-U	(20)
2.	(a)	Compare various controller topologies adapted for photovoltaic systems.	CO2-Ana	(20)
		Or		
	(b)	Analyze the different approaches of the design for the stand-alone photovoltaic system	CO2-Ana	(20)
3.	(a)	Design a grid connected residential photovoltaic system and discuss the components and issues relevant to the use of photovoltaic in this application.	CO3-Cr	(20)
		Or		
	(b)	Design a grid tied solar PV system and discuss its components.	CO3-Cr	(20)
4.	(a)	Categorize the methods of solar energy storage and explain the thermal energy storage system	CO4-Ana	(20)
		Or		
	(b)	Examine any one of the secondary or rechargeable battery technology	CO4 -Ana	(20)

5. (a) Identify the use of solar cells in telecommunication application CO5- App (20)

Or

(b) Organize the use of solar cells in CO5- App (20)

(i) Water-pumping application

(ii) Direct drive application