14 JUL 2023

Reg. No.												

Question Paper Code	12005

M.E. / M.Tech. - DEGREE EXAMINATIONS, APRIL/MAY 2023

Second Semester

M.E. - Power Electronics and Drives

20PPEEL209 - DISTRIBUTED GENERATION AND MICRO GRID

(Regulations 2020)

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	State the advantages of conventional power generation.	*2,K1,CO1*
2.	What are fuel cells?	*2,K1,CO1*
3.	What are the different topologies used for distributed generation?	*2,K1,CO2*
4.	Write the short notes on captive power plant.	*2,K1,CO2*
5.	Define frequency limits in grid interconnection.	*2,K1,CO3*
6.	Describe the impact of grid interconnection on the reliability of the existing power system.	*2,K2,CO3*
7.	Identify two drivers for the adoption of micro grids.	*2,K2,CO4*
8.	Compare and contrast AC and DC micro grids.	*2,K2,CO4*
9.	What are the power quality issues that can arise in micro grids?	*2,K2,CO5*
10.	What are the advantages and disadvantages of grid-connected mode in micro grids?	*2,K1,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Explain the working principle of tidal energy and its applications.	*13,K2,CO1*
		OR	
	b)	Discuss the need for non-conventional energy resources and their importance in the current scenario.	*13,K2,CO1*
12.	a)	Discuss the different topologies used for distributed generation and their advantages and disadvantages.	*13,K2,CO2*
		OR	
	b)	Discuss the IEEE 1547 standard and its role in interconnecting distributed resources to electric power systems. Explain the different requirements specified in the standard.	*13,K2,CO2*

13. a) Explain the concept of transient stability and its relevance in grid integration. *13,K2,CO3*

OR

b) Discuss the measures taken to mitigate the effects of grid disturbances on grid-connected systems. *13,K2,CO3*

14. a) Examine the potential risks associated with micro grids, including cyber security threats and grid isolation concerns. *13,K2,CO4*

OR

b) Analyze the impact of micro grids on grid resilience, highlighting their ability to withstand and recover from disturbances. *13,K2,CO4*

15. a) Discuss the role of protection devices in micro grids and explain the techniques used for fault detection and isolation. *13,K2,CO5*

OR

b) Explain the concept of demand response in micro grids and discuss its role in optimizing energy consumption and grid stability. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Discuss the different topologies used for distributed generation, their advantages, disadvantages, and applications. *15,K3,CO2*

OR

b) Conduct a case study analysis of a real-world micro grid implementation, highlighting the project objectives, challenges faced, and outcomes achieved. *15,K3,CO4*