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**Gandhi Institute of Engineering and Technology University, Odisha, Gunupur  
(GIET UNIVERSITY)**



Ph.D. (First Semester-Summer) Examinations, December – 2025  
**23SPPEEE1011 – Distributed Generation and Microgrid**  
(EEE)

Time: 3 hrs

Maximum: 70 Marks

**The figures in the right hand margin indicate marks.**

<b>Answer ANY FIVE Questions.</b>	<b>(14 x 5 = 70 Marks)</b>	<b>Marks</b>
1.a. How distributed generation and microgrid are interrelated? What are the main similarities in distributed generation and microgrid?		8
b. Explain the similarities and dissimilarities of on-grid and off-grid system in distributed generation system?		6
2.a. How do Energy storage elements plays a vital role for energy security in distributed generation?		8
b. Explain about stability and power quality issues in grid integration.		6
3.a. What is microgrid? Explain the architecture of microgrid with neat block diagram.		7
b. What is the role of energy storage technologies in microgrid?		7
4.a. What are the fundamental requirements for grid interconnection and describe about the impacts of grid integration?		8
b. How Electric charging station will improve the performance of microgrid.		6
5.a. What are the key functions of microgrid? Describe its benefits.		7
b. Explain about anti-islanding schemes and how it will influence microgrid operation.		7
6.a. What are the disadvantages of conventional power generation and how distributed generation can solve the issue of energy crisis?		6
b. Write short notes on following		8
i. Control of microgrid	ii. Security of microgrid	
7.a. How active and reactive power control will play a major role in microgrid interfacing? Justify with some examples.		8
b. Explain the communication infrastructure in microgrid integration.		6
8.a. Briefly explain the regulation standards and framework for distributed generation.		8
b. How the voltage and frequency will affect the performance of grid integration?		6

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