Time: 3 Hrs **Marks: 80**

Note: - 1. Question No. 1 is compulsory.
2. Attempt any three questions out of remaining five questions.
3. Assume suitable data if necessary & justify the same.
4. Figures to the right indicate marks.

Qu.1 Attempt **any Four.**

(a) What is micro-grid? Explain the significance of Micro grid. **[5]**
(b) Explain the concept of microgrid.
(c) What are the benefits of smart meters over conventional meters?
(d) Discuss the issues of islanding in distributed generation
(e) What are the IEEE 1547 standards? List the IEEE 1547 series.

Qu.2 (a) Explain with neat diagram the control architectures of centralized & decentralized micro grid. **[10]**
(b) Write a brief review on distributed generation topologies **[10]**

Qu.3 (a) Explain the Impact of grid integration of renewable energy resources on existing power system **[10]**
(b) Explain in detail the role of Microgrids in smart-grid scenario. **[10]**

Qu.4 (a) What is smart grid? State the function of smart grid. Discuss the future opportunities in smart grid **[10]**
(b) Discuss the various anti-islanding schemes employed in microgrid operation. **[10]**

Qu.5 (a) Explain the role of Microgrid in black-start and grid synchronization. **[10]**
(b) Discuss the need for Intelligent Electronic Devices (IEDs) in power systems. **[10]**

Qu.6 (a) Write a short note on **(ANY-TWO)**
1. Smart Grid Technologies
2. Cyber Security for Smart Grid. **[20]**
3. Smart grid Substation & Feeder Automation.

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