

**3 Hours)**

**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) Distinguish between micro-grid & smart grid [5]

(c) Discuss the issues of islanding in distributed generation [5]

(d) What are the IEEE 1547 standards? List the IEEE 1547 series. [5]

(e) Why is there a need for Intelligent Electronic Devices (IEDs) in power systems? [5]

Qu.2  
(2) Discuss with diagram the typical structure and configuration of AC microgrid. [10]

- (a) Discuss with diagram the typical structure and configuration of AC microgrid. [10]
- (b) Discuss in brief the role of energy storage in microgrid operations and stability [10]

Qu.3 (2) Describe in brief the control architectures of decentralized micro grid. [10]

(b) Explain the different functions of Smart-Grid. What are the future opportunities & barriers of Smart Grid? [10]

Qu.4 (2)	Explain in detail the role of Microgrids in smart-grid scenario.	[10]
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(b) Explain role of real time pricing in the context of smart grid. [10]

Qu.5 Discuss the micro-grid functions under black-start and grid synchronization mode. [10]  
(a)

(b) Discuss the operation of microgrid in Grid connected and islanded mode, [10]

Qu.6 **Write a short note on (ANY-TWO)**

(a) 1. Smart Grid Technologies [20]

## 2. Wide Area Network (WAN)

### 3. PCUs in DC and AC microgrids

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