Unit-II

O1. A multi-string inverter is mainly used to:

A) Increase battery size
B) Connect multiple PV strings with individual DC-DC converters
C) Reduce solar radiation
D) Increase wind energy generation
Answer: B

2. Micro-inverters are installed:

A) At the battery bank
B) At the transformer
C) On each solar module
D) At the utility grid
Answer: C

3. The major advantage of micro-inverters is:

A) Higher shading losses
B) Module-level MPPT
C) No AC output
D) Increased maintenance
Answer: B

4. In a module-integrated inverter system, each PV module has:

A) A separate battery
B) An integrated inverter
C) A transformer
D) A diesel generator
Answer: B

5. The primary function of an inverter in a PV system is:

A) Convert AC to DC
B) Store energy
C) Convert DC to AC
D) Increase irradiance
Answer: C

6. Which inverter topology uses a central inverter for the entire PV plant?

A) Micro-inverter
B) String inverter
C) Central inverter

D) Hybrid inverter
Answer: C

7. MPPT stands for:

A) Maximum Power Point Tracking
B) Minimum Power Production Technique
C) Maximum Panel Protection Technology
D) Module Power Processing Tool
Answer: A

8. Which inverter topology provides the highest flexibility under partial shading?

A) Central inverter
B) String inverter
C) Micro-inverter
D) Square-wave inverter
Answer: C

9. The efficiency of modern solar inverters is typically:

A) 20–30%
B) 40–50%
C) 70–80%
D) 95–99%
Answer: D

10. Inverter sizing is generally based on:

A) PV array rating and load demand
B) Temperature only
C) Battery color
D) Module weight
Answer: A

11. The battery capacity is usually expressed in:

A) Volts
B) Amperes
C) Ampere-hours (Ah)
D) Watts
Answer: C

12. For a stand-alone PV system, batteries are used to:

A) Increase solar radiation
B) Store excess energy
C) Reduce panel voltage

D) Generate AC power directly
Answer: B

13. A grid-connected PV system generally:

A) Requires large battery banks
B) Operates independently of the utility grid
C) Is connected to the utility network
D) Uses diesel generators continuously
Answer: C

14. Net metering is commonly associated with:

A) Stand-alone systems
B) Grid-connected systems
C) Wind turbines only
D) Fuel cells only
Answer: B

15. In a stand-alone PV system, power is supplied:

A) Only when grid is available
B) Directly from the utility company
C) Independently of the grid
D) From thermal power plants
Answer: C

16. Which component stores energy in a stand-alone solar PV system?

A) Transformer
B) Inverter
C) Battery
D) MPPT Controller
Answer: C

17. The DC output of a solar PV module depends mainly on:

A) Solar irradiance and temperature
B) Grid frequency only
C) Transformer rating
D) Battery size only
Answer: A

18. Which PV system type is most suitable for remote villages without grid access?

A) Grid-connected PV system
B) Stand-alone PV system
C) Hybrid thermal plant

D) Nuclear power plant
Answer: B

19. The inverter model generally includes:

A) Switching devices and control circuits
B) Solar cells only
C) Wind turbine blades
D) Battery electrolyte only
Answer: A

20. During battery sizing, the number of autonomy days refers to:

A) Number of PV modules
B) Days the system can operate without solar input
C) Number of inverters
D) Number of transformers
Answer: B

Fill in the Blank Questions

Multi-string Inverters, Microinverters, Inverter Topology, Battery and Inverter Sizing, Types of PV Systems

1. A _____ inverter is used when multiple PV strings operate independently with separate MPPT controls.

Answer: Multi-string

2. A _____ is installed at the individual PV module level to convert DC power into AC power.

Answer: Microinverter

3. Module-integrated inverters are also known as _____.

Answer: Microinverters

4. The primary function of an inverter is to convert _____ current into alternating current.

Answer: Direct (DC)

5. The arrangement of power electronic switches in an inverter is called inverter _____.

Answer: Topology

6. A full-bridge inverter topology typically uses _____ power switches.

Answer: Four

7. The output waveform of a basic inverter is generally a _____ wave.

Answer: Square

8. In solar PV systems, batteries are sized based on the required energy demand and the desired _____ days.

Answer: Autonomy

9. The capacity of a battery is commonly expressed in _____-hours (Ah).

Answer: Ampere

10. The inverter rating should be greater than or equal to the maximum connected _____.

Answer: Load

11. A Grid-Connected Solar PV System is directly connected to the utility _____.

Answer: Grid

12. Grid-connected PV systems generally do not require large-scale _____ storage.

Answer: Battery

13. A Stand-Alone Solar PV System operates independently of the utility _____.

Answer: Grid

14. In stand-alone PV systems, batteries are used to store excess _____ generated by the solar panels.

Answer: Energy

15. Net metering is commonly associated with _____-connected solar PV systems.

Answer: Grid