It is a system of modular power generators at are near the customers sites and loads It potentially provide an economic
value to the consumers as well as the power grid.

30) What is meant by islanding w.r.to interconnection of distributed generation system connected to the grid?

When a distributed generation system gets disconnected from the grid and when it continues to feed the local loads the situation is called islanding.

31) How does islanding of a distributed generation system connected to the grid affect the power system?

1. over and under voltage
2. over and under frequency
3. Phase jump
4. Voltage harmonics

32) What are the effects of a distributed generation system on a power system?

1. Affects over current protection setting
2. Affects auto reclosing
3. Creates Ferro resonance
4. Causes insulation failure
5. Islanding creates power quality problems

33) What are the functions of power electronic interface in a distributed generation system connected to the grid?

1. dc to ac conversion
2. to improve power quality

UNIT-II

ECONOMIC ASPECTS OF GENERATION

1) What do you mean by Economics of power generation?

The art of determining the per unit i.e. one KWh cost of production of electrical energy is known as Economics of power generation.

2) Explain the term depreciation.

The decrease in the value of the power plant equipment and building due to constant use is known as depreciation.In practice, every power station has a useful life ranging from fifteen to thirty years. From the time the power station is installed, its equipment steadily deteriorates due to wear and tear so that there is a gradual reduction in the value of the plant. This reduction in the value of plant every year is known as annual depreciation.

3) Define load factor.

Load factor is the ratio of average demand to the maximum demand during a certain period of time and is applicable to both generating equipment and receiving equipment.

Load factor = Average demand/Maximum demand

4) What is load curve?

The curve showing the variation of load on the power station with reference to time is known as a load curve.

The load curves supply the following information

- The variation of the load during different hours of the day.
- The area under the curve represents the total number of units generated in a day.
- The peak of the curve represents the maximum demand on the station on the particular day.
- The area under the load curve divided by the number of hours represents the average load on the power station.

- The ratio of the area under the load curve to the total area of the rectangle in which it is contained gives the load factor.

5) Define diversity factor.

Diversity factor is defined as the state of being dissimilar to one another. It is defined as the ratio of sum of the maximum demands of individual consuming units in a group during a specified period to the maximum demand of the whole group during the same period.

Diversity factor = Sum of individual demands of different units in a group/Maximum demand of the entire group

The value of diversity factor is always greater than one. If thediversity factor is higher, the cost per unit of generation will be lesser.

6) What do you mean by utilisation factor?

It is a measure of the utility of the power plant capacity and is the ratio of maximum demand to the rated capacity of the power plant. It is always less than unity.

Utilization factor = Maximum Demand on the power station/Rated capacity of the power station

A low value of utilization factor indicates that the plant has been installed much in advance of need. A high value indicates that the plant is probably most efficient in the system. If its value exceeds unity, it means that the load has been carried in excess of rated capacity of the plant.

7) Write short note on load duration curve?

When the load elements of a load curve are arranged in the order of descending magnitudes, the curve thus obtained is called load duration curve.

The load curve is obtained from the same data as the load curve but the ordinates are arranged in the order of descending magnitudes. In other words, the maximum load is represented to the left and decreasing loads are represented to the right in the descending order. Hence the area under the load duration curve and the load curve are equal.

Load factor and diversity factor play a vital role in the cost of the supply of electrical energy. Higher the values of load factor and diversity factor, lower will be the overall cost per unit generated.

8) Write the significance of load factor.

Higher load factor means greater average load, resulting in greater number of units generated for a given maximum demand. Thus, the standing charges, which are proportional to maximum demand and independent of number of units generated, can be distributed over a large number of units supplied and therefore overall cost per unit of electrical energy generated will be reduced.

9) What is mean by base load?

The unvarying load which occurs almost the whole day on the station is known as base load.

10) What are the methods for determining depreciation charges?

The decrease in the value of the power plant equipment and building due to constant use is known as depreciation. The cost of depreciation will depend on the size and type of equipment and on its estimated life.

The reduction in the value of the plant every year is known as annual depreciation. Due to depreciation the plant has to be replaced by new one after its useful life. Therefore a suitable amount must be set aside every year, so that by the time the plant retires the collected amount by way of depreciation equals the cost of equipment.

The methods commonly used for determination of annual depreciation charges are

- Straight line method
- Diminishing value method and
- Sinking fund method.