



# **SNS COLLEGE OF ENGINEERING**

Kurumbapalayam (Po), Coimbatore – 641 107

**An Autonomous Institution**

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai



## **DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

### **UNIT – IV**

### **ECONOMIC DISPATCH AND UNIT COMMITMENT PROBLEM on Diversity factor and Demand Factor**



## PROBLEM

1. A generating system has a maximum demand of 35,000 KW and has a connected load of 65,000 KW. The number of units generated annually is  $25.6 \times 10^7$ . Calculate
  - i) The load Factor and
  - ii) The demand Factor



## PROBLEM

$$\text{Load factor} = \frac{\text{Total units generated annually}}{\text{Maximum demand} \times \text{Hours in a year}}$$

$$= \frac{25.6 \times 10^7}{35,500 \times 8760} = 0.8232 \text{ (or) } 82.32\%$$

$$\text{Demand factor} = \frac{\text{Maximum demand}}{\text{Connected load}}$$

$$= \frac{35,500}{65,000} = 0.546 \text{ (or) } 54.6\%$$



## PROBLEM

2. A generating station supplies the following loads: 15,000 KW, 12,000KW, 8,500 KW, 6,000 KW and 450KW. The station has a maximum demand of 22,00KW. The annual load factor of the station is 48%. Calculate

- i) The number of units supplied annually
- ii) The diversity factor and
- iii) The demand factor



## SOLUTION



Number of units annually :

$$\text{Load factor} = \frac{\text{Total units supplied (or) generated annually}}{\text{Maximum demand} \times \text{Hours in a year}}$$

∴ Total units supplied annually

$$= (\text{Load factor}) \times (\text{Maximum demand}) \times (\text{Hours in a year})$$

$$= 0.48 \times 22000 \times 8760$$

$$= 92.5 \times 10^6 \text{ KWh}$$

$$\text{Diversity factor} = \frac{\text{Sum of individual maximum demand}}{\text{Maximum demand on station}}$$

$$= \frac{15000 + 12000 + 8500 + 6000 + 450}{22000}$$

$$\text{Diversity factor} = 1.9068$$

$$\text{Station demand factor} = \frac{\text{Maximum demand}}{\text{Connected load}}$$

$$= \frac{22,000}{15000 + 12000 + 8500 + 6000 + 450}$$

$$= 0.5244 \text{ (or) } 52.44 \%$$

