DEPARTMENT OF CIVIL ENGINEERING

Design of Dams

Assignment III

1. What are the common types of spillways? Explain with neat sketches the syphon type.
2. Describe the principle used in the development of ogee spillway profile. Describe the discharge characteristics of ogee spillways with vertical upstream face under free flow condition.
3. Write a short notes on Radial Gates.
4. Write short notes on:
   i) Surge tank
   ii) Draft tube
   iii) Intake Structure
   iv) Penstocks
   v) Tailrace
5. Write short notes on:
   i) Load factor
   ii) Demand factor
   iii) Capacity factor or Plant factor
   iv) Firm factor
   v) Power factor
6. A common load is shared by two hydel stations; one being a base load station with 20MW installed capacity, and the other being a stand-by station with 20MW capacity. The yearly output of the stand-by station is 10×10^6 kWh and that of base load plant as 110×10^6 kWh. The peak load taken by stand-by station is 12 MW and this station works for 2500 hours during the year. The base load station takes a peak of 18 MW. Find out:
   i) Annual load factors for both stations
   ii) Plant use factors for both stations
   iii) Capacity factors for both stations
7. Three turbo-generators each of capacity 10,000kW have been installed at a hydel power station. During a certain period of load, the load on the plant varies from 12,000 kW to 26,000 kW. Calculate:
   i) total installed capacity
   ii) load factor
   iii) plant factor
   iv) utilization factor