

## CE-312 &amp; WATER POWER SYSTEM AND DESIGN

Time: 1:30 Hours

Max. Marks: 25

<p><b>Note:</b> Answer all questions. All questions carry equal marks. Assume suitable missing data, if any.</p>
--

1. What is meant by environmental impact assessment and environmental analysis of hydropower projects? Discuss power duration curve and its role for the assessment of amount of hydropower available at a site?
2. What do understand by installed capacity of a power plant? What are the various considerations in fixing installed capacity with regard to number of size and number of units?
3. Discuss various types of hydropower plants. Why runoff river plants are preferred these days over storage based plants? Draw a neat sketch of typical run of river power plant?
4. Give relative economics of a hydropower plant and thermal power plant
  - (i) Compare advantage and disadvantage of three major types of power development
  - (ii) What are the base load and peak load plants? For what type of load conditions hydroelectric power is very much suitable.
5. A run of river plant on a stream has inflow of 40 cumecs and net head of 30 m with provision for pondage to meet daily peak demand with a load factor of 80%.
  - (i) Determine the power generation capacity of the plant at 90% overall efficiency
  - (ii) The plant runs as peaking station for 4 hours and a balance period in the day for average load. What amount of pondage is needed?