

Roll No.

Total Pages : 03

BT-7/M-20

37048

HYDRO ELECTRIC POWER
DEVELOPMENT
CE-413E/CE-413N

Time : Three Hours]

[Maximum Marks : 75

Note Attempt Five questions in all, selecting at least one question from each Unit. All questions carry equal marks. Assuming any missing data.

Unit I

1. (a) Discuss pros and cons of hydel power as compared to power obtained from other sources. **7½**
(b) Explain the difference between base load and peak load plants. For what type of conditions hydro electric power is very much suitable. **7½**
2. (a) What is hydropower development? Give brief account of perspective power development vice versa power demand in the country. **7½**
(b) Define storage power development. Does it differ from run of river power development? **7½**

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Unit II

3. (a) Discuss briefly different types of hydraulic valves used in penstocks with sketches. **7½**
(b) Why are conduit valves provided in a water convergence system? Discuss functioning of a needle and you tube valves. **7½**
4. What do you mean by water hammer pressure ? Find expression for it. Also discuss critically the different types of surge tanks. Mention design steps of simple surge tank as well. **15**

Unit III

5. (a) Explain types of draft tube. Derive a relation for efficiency of a draft to be used in turbine. **7½**
(b) What are the characteristic causes of francis turbine? Explain them with diagram. **7½**
6. (a) Determine number of turbine and diameter of runner for a power plant having 20 cumecs in flow, 10 m head, turbine efficiency 90% and speed, 55 rpm. Assume specific speed as 255 rpm and speed ratio as 0.9. **7½**
(b) Discuss method of design of spiral casing with sketch. **7½**

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Unit IV

7. (a) Define a power house. Elaborate the three parts of hydel power plant with neat sketch. **7½**
- (b) Define an underground power house. Why and where construction of such plant is necessitated? **7½**
8. (a) What do you understand by various types of cavities essentially needed in underground powerplant? Explain them properly. **7½**
- (b) What are the components of a double basin systems of a tidal power plants? Explain its working with neat sketches. **7½**