

Roll No.

OLE-24515

B. Tech. 7th Semester (Civil) Examination – April, 2021

HYDROPOWER ENGINEERING

Paper : CE-451-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Attempt the following questions : $4 \times 5 = 20$

- (a) Define the terms load curve and load duration curve.
- (b) Explain the advantages of hydropower over Thermal Power.

SECTION – B

4. (a) Write a short note on pump storage plant. What are the advantages of a pump storage plant for short peak load duration ? 10
- (b) Describe the general layout of runoff river plant with the help of neat sketch. 10
5. (a) What are the different types of pump storage plant ? Describe reversible turbines and Cavitation in turbine. 10
- (b) Explain the basic features of hydropower plants, also explain efficiency of pump storage plant. 10

SECTION – C

6. What do you mean by water hammer effect ? Write the expression for water hammer pressure for rigid and Elastic pipe. 20
7. (a) Briefly explain the different types of valves used in penstock arrangements. 10

- (b) Describe the terms design criteria of penstock anchor blocks. 10

SECTION – D

8. (a) What do you mean by cavitation ? What is Cavitation factor and discuss its significance of water turbines ? 10
- (b) Define the term specific speed of a water turbine. What information does it give and how it is made used in practice? Indicate how the form of a reaction turbine depends upon specific speed ? 10
9. (a) Sketch of typical power house and describe the functions of all components briefly. 10
- (b) Write a short note on ventilation in power house. 10
