

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2023

B.Tech- VI Semester (CE)

COURSE CODE(CREDITS): 18B1WCE 639 (3)

COURSE NAME: Open channel flow and Hydraulic Machine

COURSE INSTRUCTORS: Ashish Kumar

MAX. MARKS: 25

MAX. TIME: 1 Hour 30 Minutes

Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

- Q1.** Explain the different components of the Pelton turbine with neat diagram with their functioning. [5]
- Q2.** A trapezoidal channel has side slope of 1 horizontal to 2 vertical. The slope of the bed of the channel is given 1 in 1500. The area of section is 40 m^2 . Find the dimensions of the section if it is most economical. Take value of Chezy's constant, $C= 50$. [5]
- Q3.** A Pelton wheel is to be designed for a head of 60 m when running at 200 rpm. The pelton wheel develops 96 kW shaft power. The velocity of the bucket = 0.45 times the velocity of the jet, overall efficiency =0.85 and Co-efficient of the velocity =0.98 [6]
- Q4.** Explain the phenomenon of hydraulic jump in open channel with neat sketch. [3]
- Q5.** The depth of flow of water, at a certain section of a rectangular channel of width 4 m is 0.5 m. The discharge is $10 \text{ m}^3/\text{s}$ through the channel . If a hydraulic jump takes place on the downstream side, find the depth of flow after the jump. [3]
- Q6.** Explain the different types of efficiency of a turbine. [3]