

KTU B.Tech S4 model Questions for FLUID MECHANICS -II

MODEL QUESTION PAPER Prepared by ktubtechquestions.com

FOURTH SEMESTER B.TECH DEGREE EXAMINATION

May/June 2017

CE206 FLUID MECHANICS -II

Time: 3 Hrs

Marks: 100

PART A

(Answer any two)

1. **a) Distinguish between a Kaplan and a Propeller turbine. (5 Marks)**
 b) Define specific speed of a centrifugal pump ? Derive the formula.

(10 Marks)

2. **a) What is meant by priming in centrifugal pumps ? (5Marks)**
 b) Why a Pelton Wheel is suitable for high heads only ? (10 Marks)

3. **a) A Pelton Wheel is required to develop 6 MW when working under a head of 300 m. It rotates with a speed of 550 rpm. Assuming jet ratio as 10 and overall efficiency as 85%, find**
 - i) Diameter of wheel**
 - ii) Quantity of water required and**

iii) Number of jets. Assume suitable values for the velocity coefficient and the speed ratio **(10 Marks)**

b) How does power output and torque on the shaft of a Pelton Wheel vary with bucket speed? **(5 Marks)**

PART B

(Answer any two)

4 a) Derive from first principles, Chezy's formula for loss of head due to friction in a pipe. **(10 Marks)**

b) Compare open channel flow and pipe flow. **(5 Marks)**

5. a) A trapezoidal channel has side slopes of 3 horizontal to 4 vertical and the slope of its bed is 1 in 2000. Determine the optimum dimensions (or most economical dimensions) of the channel, if it is to carry water at $0.5 \text{ m}^3/\text{s}$. Take Chezy's constants as 80. **(5 Marks)**

b) Derive the conditions for maximum velocity through circular channels.

(5 Marks)

c) Write down the fundamental equations for uniform flow computations.

(5 Marks)

6. a) Explain uses of hydraulic jump **(5 Marks)**

b) Write a short note on Specific energy & Specific force **(5 Marks)**

c) Define

i) critical depth

ii) Section factor for critical flow.

PART C

(Answer any One two)

- 7** **i)** Explain the characteristics of surface profiles in prismatic **(10 Marks)**
 ii) Explain gradually varied flow dynamic equation **(10 Marks)**
- 8** **i)** Explain Rayleigh method **(10 Marks)**
 ii) Explain Reynold's and Froude model **laws (10 Marks)**
- 9** **i)** Explain the Concepts of distorted and undistorted models **(10 Marks)**
 ii) Explain Buckingham method **(10 Marks)**