

B. Tech Degree V Semester Examination, November 2009

CE 505 FLUID MECHANICS II (1999 Scheme)

(All Questions carry *EQUAL* marks)

Time : 3 Hours

Maximum Marks : 100

- I. a. Define Steady, Un Steady, Uniform and Non Uniform flow in open channel.
b. Explain Chezy's formula. What modification to this formula is done to obtain Manning's formula?

OR

- II. a. Define specific energy and critical depth in flow through open channel.
b. What depth is required for $4 \text{ m}^3/\text{s}$ flow in a rectangular planed-wood channel 2m wide with a bottom slope of 0.002?

- III. a. Explain gradually varied flow.
b. At section (1) of a canal the cross section is Trapezoidal $b_1=10\text{m}$, $m_1=2$, $y_1=7\text{m}$ and at section (2) down stream 200m the bottom is 0.08m higher than at section (1), $b_2=15\text{m}$ and $m_2=3$, $Q=200\text{m}^3/\text{s}$, $n=0.035$. Determine the depth of water at section (2).

OR

- IV. a. Explain Back water curve?
b. Write notes on (i) Graphical integration method (2) Chow method.

- V. a. Explain Hydraulic jump?
b. A rectangular channel 6m wide has a flow rate of $18\text{m}^3/\text{s}$. The depth of water on the down stream side of the hydraulic jump is 1.5m. Calculate the depth of water upstream and loss in energy and power dissipated per unit width?

OR

- VI. a. Write short notes on
(i) Shallow water wave
(ii) Gravity waves
(iii) Translatory waves
(iv) Capillarity waves
(v) Solitary waves
b. Differentiate between rapidly varied flow and Tranquil flow.

- VII. a. Obtain expression for force of jet on fixed and moving plate.
b. How the Turbines are classified?

OR

- VIII. a. What is specific speed of a Turbine?
b. Explain different types of Draft Tubes.
c. Explain Governing of Turbine.

- IX. A centrifugal pump works against a head of 30m and discharges $0.25 \text{ m}^3/\text{s}$ while running at 1000 rpm. The velocity of flow at the outlet is 3m/s and Vane angle at outlet is 30° . Determine the diameter and width of the impellor at outlet if the hydraulic efficiency is 80%.

OR

- X. a. Explain selection of pump for various purposes?
b. Write notes on (i) Volute casing (ii) Multi stage pumps

