SOUTHERN ILLINOIS UNIVERSITY
Department of Civil and Environmental Engineering

CE 370- Fluid mechanics
Summer 2009

Assignment-5
Date Assigned: July 22, 2009
Date Due: July 29, 2009

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1. From Engineering Fluid Mechanics, Crowe and Roberson, 8th Edition: Problem 7.7

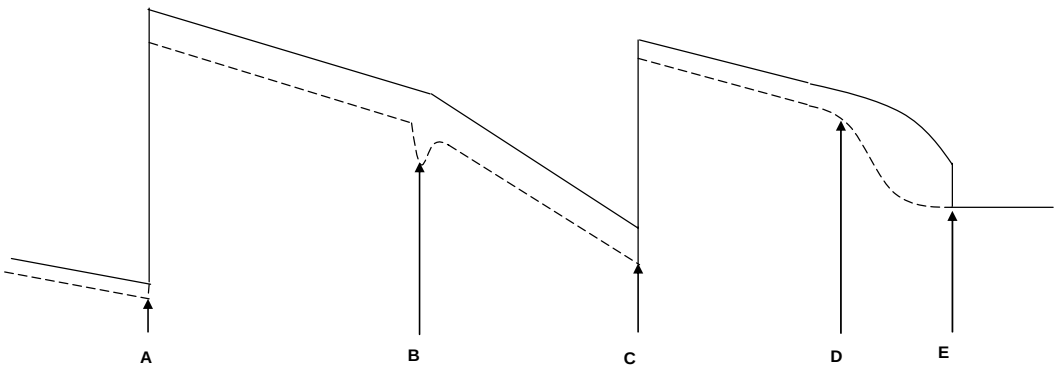
2. From Engineering Fluid Mechanics, Crowe and Roberson, 8th Edition: Problem 7.26

3. From Engineering Fluid Mechanics, Crowe and Roberson, 8th Edition: Problem 7.31

4. From Engineering Fluid Mechanics, Crowe and Roberson, 8th Edition: Problem 7.71

5. Water from behind a dam flows through a turbine that is 85% efficient. The discharge is 12 m^3/s, the headloss is 5 m and velocity correction factor is unity. Determine the power output from the turbine. The elevation difference between the reservoir and tailwater surface is 25 m.

6. Shown below are the HGL and EGL for a particular flow system. Assuming a steady flowrate, answer the following questions.
    a. Is there any hydraulic machinery in the system? If so, where and what type?
    b. Is the pipe prior to A larger or smaller than that immediately after A?
    c. Is there a free surface, such as a reservoir in the system? If so where?
    d. Is the pipe between B and C rougher or smoother than that between A and B?
    e. Which of the following is most likely to be located between D and E? A gradual contraction, an abrupt contraction, a gradual expansion, or an abrupt expansion?
    f. What likely exist at B?


A
B
C
D
E