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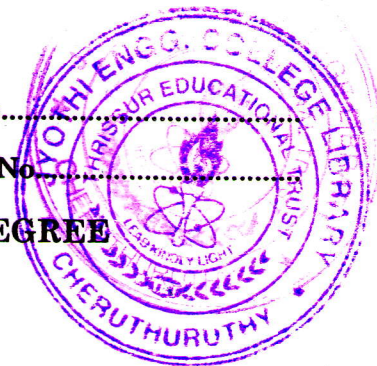
Name.....

Reg. No.....

**THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2008**

ME/AM 04 303—FLUID MECHANICS

(2004 Admissions)



Time : Three Hours

Maximum : 100 Marks

Answer all the questions.

Missing data may be assumed suitably.

1. (a) Develop the expression for the relationship between the gauge pressure P inside a droplet of liquid and the surface tension.
- (b) What are the conditions of equilibrium of a floating body and a submerged body ?
- (c) The diameter of the pipe varies from 10 cm to 15 cm from section 1 to section 2. Find the ratio of velocity at section 1 and 2.
- (d) Discuss the relative merits and demerits of venturimeter with respect to orifice-meter.
- (e) Differentiate the methods of Eulerian and Lagrangian of describing fluid flow.
- (f) Name the minor losses occurring in pipes.
- (g) What do you mean by Prantls mixing length theory ?
- (h) Define :
 - (i) Boundary layer thickness.
 - (ii) Momentum thickness.

(8 × 5 = 40 marks)

2. (a) Derive an expression for metacentric height. (7 marks)
- (b) Find the magnitude and direction of the resultant force due to water acting on a roller gate of cylindrical form of 4 m diameter, when the gate is placed on the dam in such a way that water is just going to spill. Take length of the gate as 8 m.

(8 marks)

Or

3. (a) Define compressibility. Prove that compressibility for a gas undergoing isentropic compression is $\frac{1}{\omega p}$ where ω = specific weight of the gas.

(7 marks)

Turn over