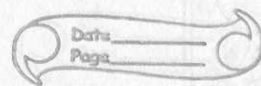


16/06/17
Friday

[15MT/PC/FD 34]



Fluid Dynamics

Unit - 1

CA

The kinematics of Fluids in Motion

- 1.1 Real Fluids and Ideal Fluids - Velocity of a Fluid at a Point
- 1.2 Stream Lines and ^{2m}Path Lines - Velocity Potential - Vorticity
- 1.3 Local and Particle Rates of Change
- 1.4 Equation of Continuity
- 1.5 Acceleration of a Fluid - Conditions at a Rigid Boundary.

7.30 - 10.00

Unit - 2

CA

Equations of Motion of a Fluid

- 2.1 Pressure at a Point in a Fluid at Rest
- 2.2 Pressure at a Point in a Moving Fluid - Conditions at a Boundary of Two Inviscid Immiscible Fluids
- 2.3 Euler's Equation of Motion - Bernoulli's Equation
- 2.4 Steady Motion under Conservative Body Forces
- 2.5 Kelvin's Circulation Theorem

10.00 - 1.00

Unit - 3

Some Two & Three - Dimensional Flows

CA

- 3.1 Some flows involving Axial Symmetry - Irrotational Stationary Sphere in a

After lunch

26th

[12MT/PC/ED31]

Date _____
Page _____

Uniform Stream - Sphere moving with constant velocity in liquid which is otherwise at Rest.

3.2 Sources, Sinks and Doublets

3.3 Axisymmetric Flows - Stoke's Stream fn Spec forms of the stream fn for Axis-symmetric Irrotational Motions.

3.4 Meaning of Two-Dimensional force flows

Unit - 4

Complex Velocity Potential

4.1 Complex Velocity Potential for standard

4.2 Two Dimensional Flows

4.2 Milne-Thomson Circle theorem - Extension of the Circle Theorem

4.3 Theorem of Blasius

Unit - 5

Viscous Flow

5.1 Stress Components in a Real Fluid - Coefficient of Viscosity and Laminar Flow

5.2 Navier-Stokes Equation of Motion of a Viscous Fluid

5.3 Some Solvable Problems in Viscous Flow

5.4 Steady Viscous Flow in Tubes of Uniform Cross-section

10/11/17
After sleep

before tea

5:00-7:00

Text Book:

Chorlton. F. "Text book of Fluid Dynamics.
1st ed. New Delhi: Shadara, 1985.

Chapters Sections

2 2.1 - 2.10

3 3.1 - 3.7, 3.12, 3.9

4 4.1, 4.2, 4.5

5 5.1^{5.4} - 5.6, 5.8, 5.9

8 8.8 - 8.11

After dinner
Problems

Books for Reference:

1. Duncan W. J., Thom. A. S. and Young A. D.,
Mechanics of Fluid. Great Britain: The
English Language book society, 1975.

2. Joseph H. Spurk, Fluid Mechanics:
Problems and Solutions. Springer-Verlag,
2003.

3. Thomson Milne L. M., Theoretical Hydro
Dynamics. (IV Edition), New York.:
Macmillan and co., 1960