CHAPTER-10

MECHANICAL PROPERTIES OF FLUIDS

FORMULAE:

(1) Pressure : $P = \frac{F}{A}$

(2) Pressure : $P = \rho gh$

(3) Variation in pressure : $P_1 - P_2 = \rho gh$

(4) Viscous Force : $F = -A\frac{dv}{dx}$

(5) Stoke's law : $F = 6\pi \eta r \nu$

(6) Terminal velocity : $V_t = \sqrt{\frac{2mg}{\rho AC_d}}$

(7) Poiseiulle's equation : $V = \frac{\pi}{8}\frac{Pr^4}{\eta l}$

(8) Equation of continuity : $A_1V_1 = A_2V_2$

(9) Bernoulli's thermo : $P + \frac{1}{2}\rho v^2 + \rho g y = \text{constant}$

(10) Rate of flow : $V = A_1V_1 = A_1A_2\sqrt{\frac{2gh}{A_1^2 - A_2^2}}$

(11) Velocity of efflux : $V = \sqrt{2gh}$

(12) Surface tension : $T = \frac{F}{l}$

(13) Ascent formula : $h = \frac{T\cos\theta}{rpg}$

(14) Reynolds Number : $R_e = \rho\nu d / \eta$