Physics Formula Sheet

Chapter by chapter, topic by topic. Written by the PadhoNa team for quick revision.

Unlock the full PadhoNa Test Series
Every chapter-wise JEE Main test on the real exam screen, with full solutions and automatic analysis. Plans from ₹99 a month.
padhona.com/go/test-series →

CHAPTER 12

Mechanical Properties of Fluids

Pressure and buoyancy

$$P = P_0 + \rho g h, \qquad F_B = \rho_{\text{fluid}} V_{\text{sub}}\, g$$

FLOATING

$$\frac{V_{\text{sub}}}{V} = \frac{\rho_{\text{body}}}{\rho_{\text{fluid}}}$$

ACCELERATING CONTAINER

$$\tan\theta = \frac{a}{g} \ (\text{free surface, horizontal } a)$$

Fluid dynamics and Bernoulli's theorem

CONTINUITY

$$A_1 v_1 = A_2 v_2$$

BERNOULLI

$$P + \tfrac{1}{2}\rho v^2 + \rho g h = \text{constant}$$

TORRICELLI

$$v = \sqrt{2gh}; \qquad \text{range} = 2\sqrt{h(H-h)}$$

Viscosity

$$F = \eta A \frac{dv}{dx}, \qquad F_{\text{Stokes}} = 6\pi\eta r v$$

TERMINAL VELOCITY

$$v_t = \frac{2r^2(\rho - \sigma)g}{9\eta}$$

POISEUILLE

$$Q = \frac{\pi \, \Delta P \, r^4}{8 \eta l}$$

REYNOLDS NUMBER

$$R_e = \frac{\rho v D}{\eta}$$

Surface tension and capillarity

$$T = \frac{F}{L}, \qquad W = T \, \Delta A$$

EXCESS PRESSURE

$$\text{drop } \frac{2T}{r}; \qquad \text{soap bubble } \frac{4T}{r}$$

CAPILLARY RISE

$$h = \frac{2T \cos \theta}{r \rho g}$$

Unlock the full PadhoNa Test Series

Every chapter-wise JEE Main test on the real exam screen, with full solutions and automatic analysis. Plans from ₹99 a month.

padhona.com/go/test-series →

Keep going with PadhoNa

Unlock the full PadhoNa Test Series

Every chapter-wise JEE Main test on the real exam screen, with full solutions and automatic analysis. Plans from ₹99 a month.

padhona.com/go/test-series →

PadhoNa Pro Physics notes

Complete, exam-focused Physics notes by the PadhoNa team: ₹99 for a year.

padhona.com/go/notes/physics →

Physics, Chemistry and Maths notes together

PadhoNa Pro · JEE: all three subjects for ₹249 a year, for JEE Main and Advanced.

padhona.com/go/pro →

© PadhoNa · padhona.com · This sheet is for personal study.