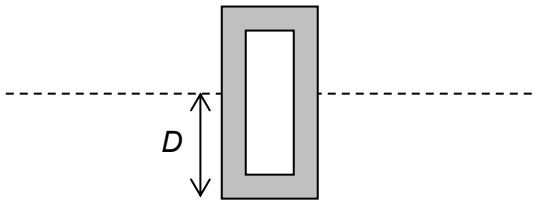
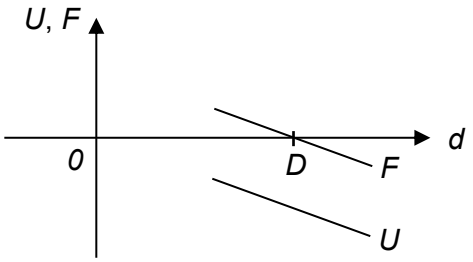
14 A hollow metal cylinder floats upright in a body of water with the bottom of the cylinder at a depth *D* below the water surface as shown.



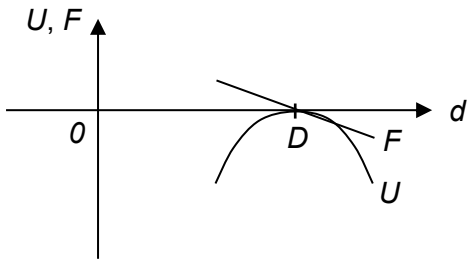
The cylinder is pressed further down into the water and upon release, performs simple harmonic motion.

Which of the following graphs (all drawn to scale) shows how the upthrust *U* and resultant force *F* acting on the cylinder vary with the depth *d* of the bottom of the cylinder below the water surface?

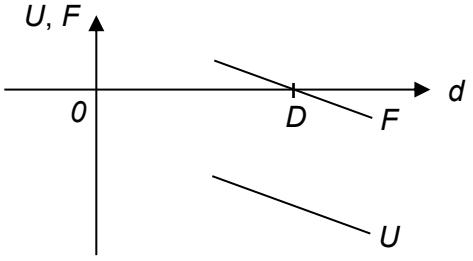
A



B



C



D