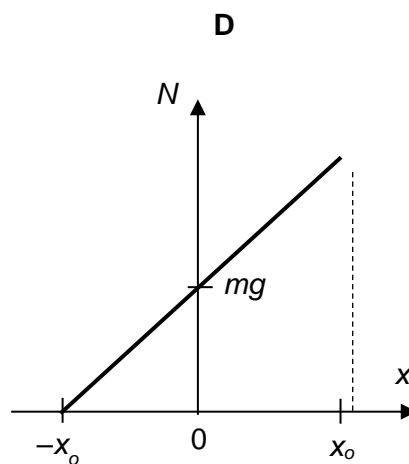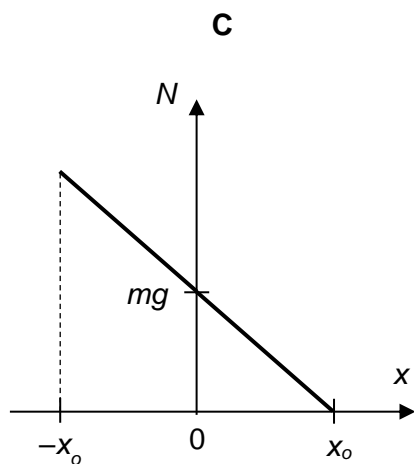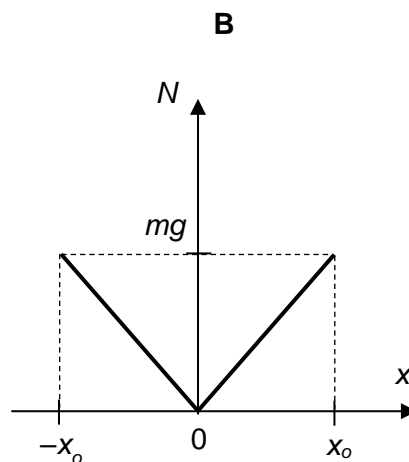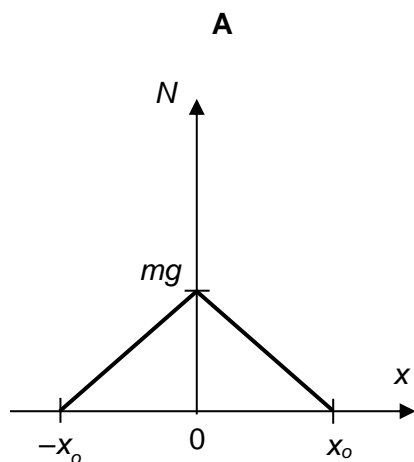14 Some sand is placed on a flat horizontal plate and the plate is made to oscillate with simple harmonic motion in a vertical x-direction, as shown. The amplitude of oscillation x_o of the plate is such that the maximum acceleration is equal to the acceleration of free fall.

Which of the following graphs correctly describes the variation of the normal contact force N that the plate exerts on a grain of sand of mass m, with respect to the vertical displacement x of the plate?

A

B

C

D