

Q) The bob of a simple pendulum is a hollow sphere filled with water . How will the period of oscillation change if the water begin to drain of the hollow sphere?

A)
$$T = 2\pi\sqrt{\frac{L}{g}}$$

When water begins to drain out of the hollow sphere, its com begin to shijt below the centre of sphere.

Hence equivalent length of pendulum increases and time period also increases when entire water drains out com agian comes to centre of sphere and time period attains its initial value