Two identical discs of same radius R are rotating about their axes in opposite directions with the same constant angular speed ω. The discs are in the same horizontal plane. At time $t = 0$, the points P and Q are facing each other as shown in the figure. The relative speed between the two points P and Q is v_r. In one time period (T) of rotation of the discs, v_r as a function of time is best represented by

[2012]

(a)

(b)

(c)

(d)
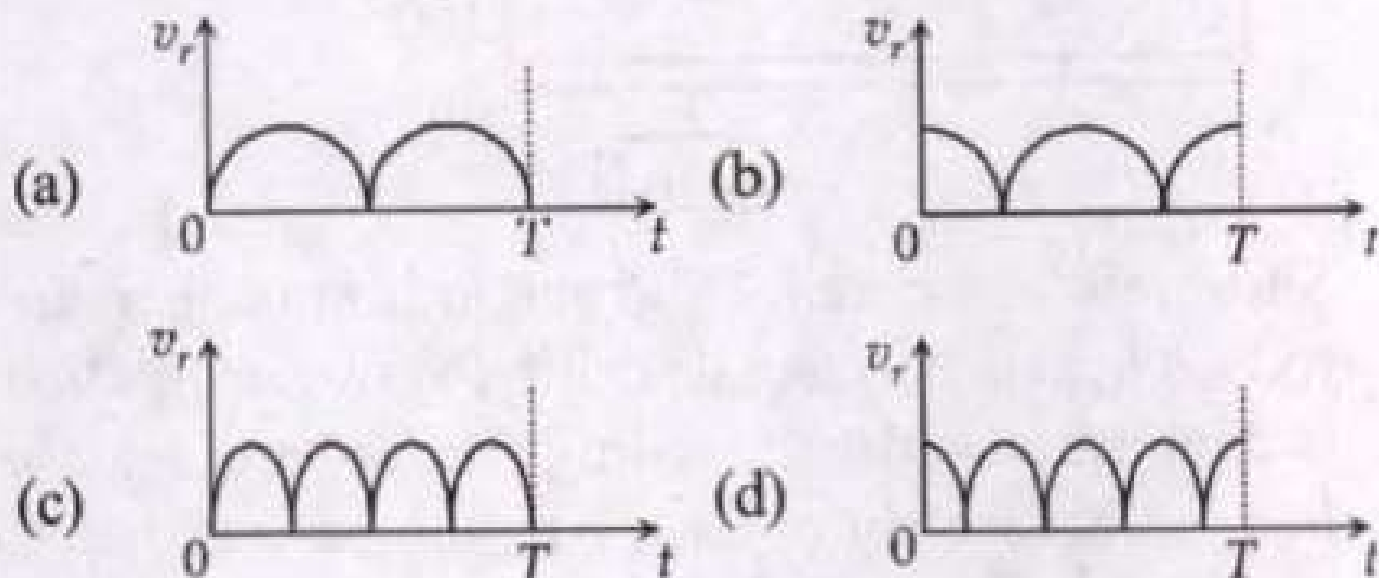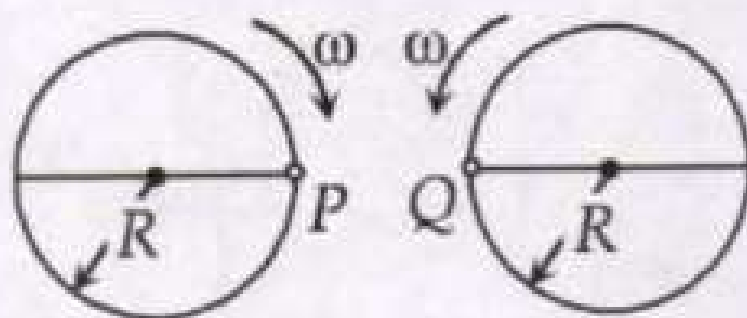
(a) At $t = 0$, $t = \dfrac{T}{2}$ and $t = T$ the relative velocity will be zero.

At $t = \dfrac{T}{4}$ and $t = \dfrac{3T}{4}$, the relative velocity will be maximum in magnitude