SHM : parameters

Questions

1. Is displacement of particle always positive?
2. Is velocity of the particle always positive?
3. What is the average displacement of the body in one full oscillation?
4. What is the displacement of the particle when its velocity is maximum?
5. What is the velocity of the particle when its acceleration is maximum?
6. What is the phase difference between displacement and acceleration?
7. What is the phase difference between velocity and acceleration?
8. What is the total distance covered by the particle in one oscillation?

Note :

Questions given above may be visualized and solved using the simulations, obtaining a mathematical solution is to be always treated as the final answer. Such a mathematical solution implies that one is able to understand and apply the concept.