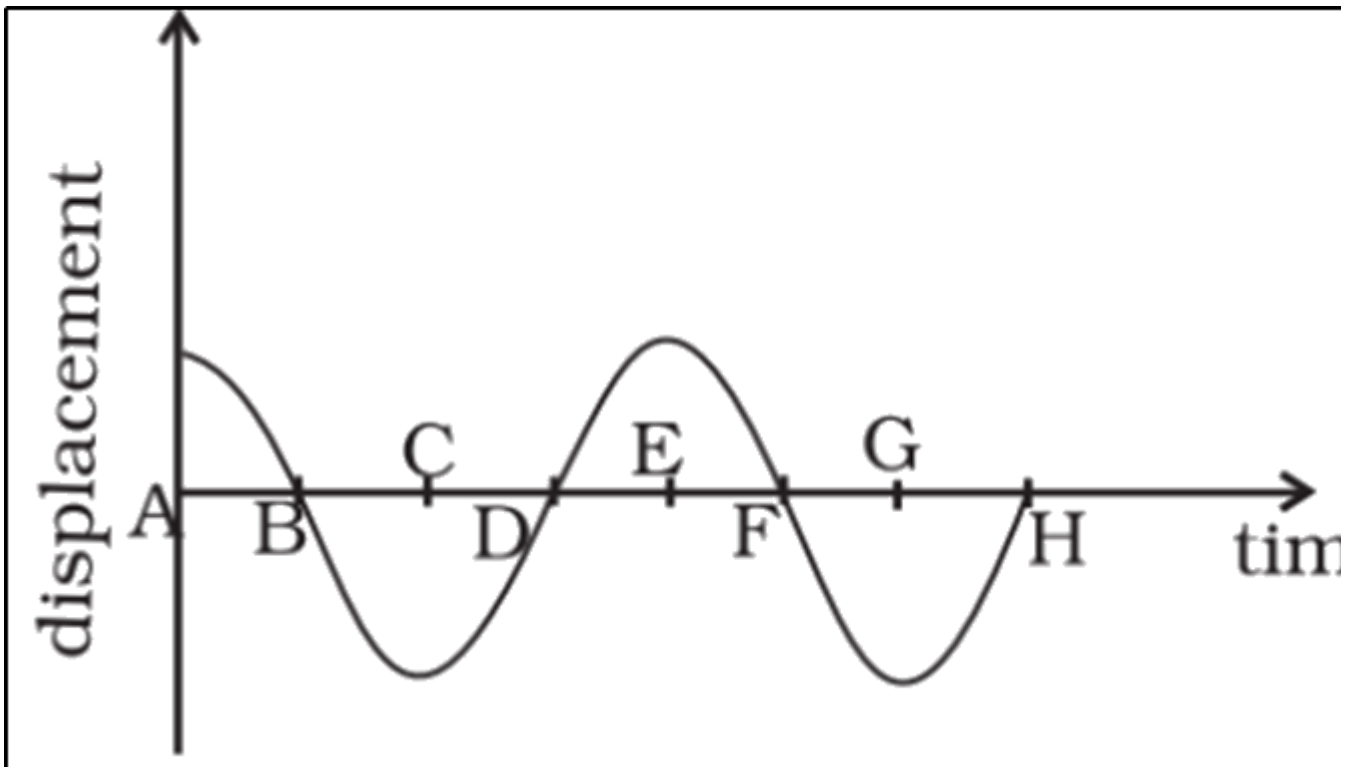


**FlexiPrep****NCERT Physics Class 11 Exemplar Ch 14 Oscillations Part 3**

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19. Displacement versus time curve for a particle executing S.H.M. is shown in Fig. 7. Identify the points marked at which (i) velocity of the oscillator is zero, (ii) speed of the oscillator is maximum.

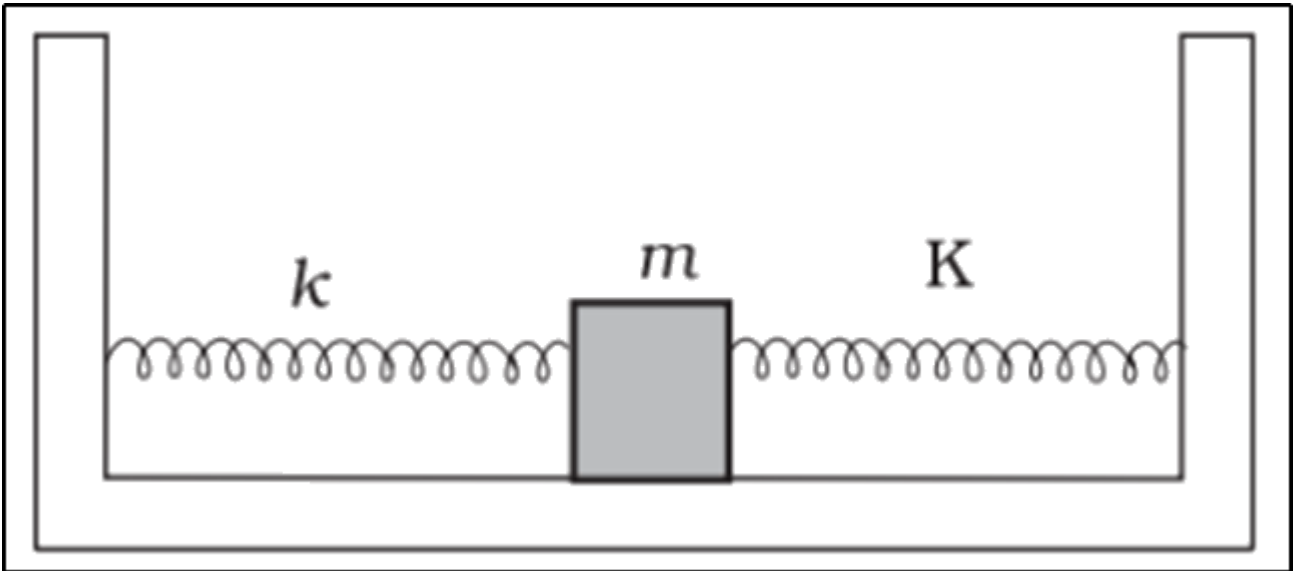


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Ans: (i) (A), (C), (E), (G)

(ii) (B), (D), (F), (H)

20. Two identical springs of spring constant  $K$  are attached to a block of mass  $m$  and to fixed supports as shown in Fig. When the mass is displaced from equilibrium position by a distance  $x$  towards right, find the restoring force



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Ans:  $2kx$  towards left.

21. What are the two basic characteristics of a simple harmonic motion?

Ans: (a) Acceleration is directly proportional to displacement.

(b) Acceleration is directed opposite to displacement.

22. When will the motion of a simple pendulum be simple harmonic?

Ans: When the bob of the pendulum is displaced from the mean position so that  $\sin\theta \cong \theta$

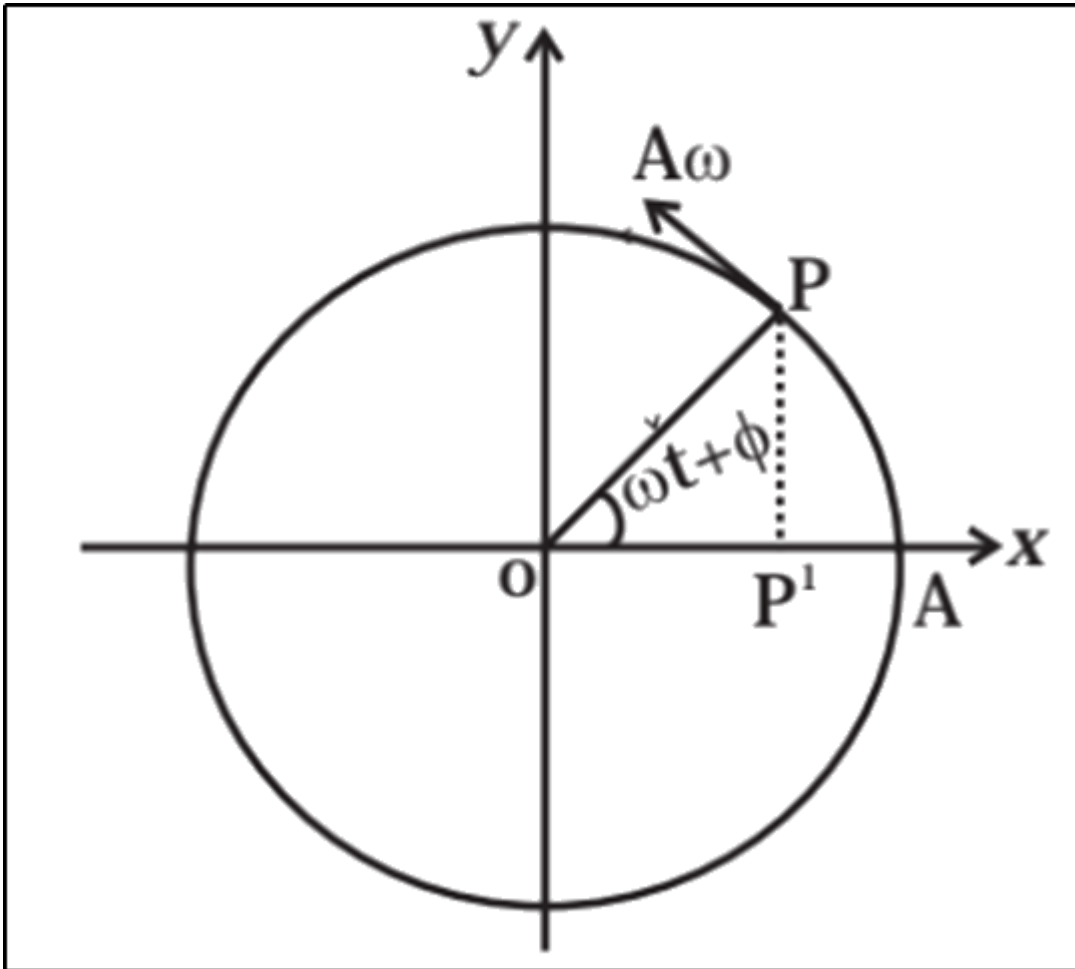
23. What is the ratio of maximum acceleration to the maximum velocity of a simple harmonic oscillator?

Ans:  $+\omega$

24. What is the ratio between the distance travelled by the oscillator in one time period and amplitude?

Ans: Four

25. In Fig, what will be the sign of the velocity of the point P', which is the projection of the velocity of the reference particle P. P is moving in a circle of radius R in anticlockwise direction?



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Ans: -ve

26. Show that for a particle executing S.H.M, velocity and displacement have a phase difference of  $\frac{\pi}{2}$  .

27. Draw a graph to show the variation of P.E., K.E. and total energy of a simple harmonic oscillator with displacement.

Ans:

