DDS ACADEMY

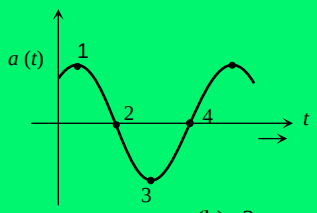
OSCILLATIONS-GRAPHS DPP-3 **JEE MAINS/NEET**

1. A particle is executing S.H.M. Then the graph of acceleration as a function of displacement is

(a) A straight line (b) A circle

(c) An ellipse (d) A hyperbola

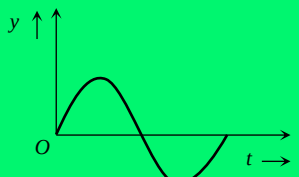
2. The acceleration a of a particle undergoing S.H.M. is shown in the figure. Which of the labelled points corresponds to the particle being at $-x_{max}$



(a) 4 (b) 3

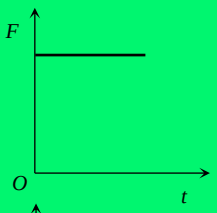
(c) 2 (d) 1

3. The displacement time graph of a particle executing S.H.M. is as shown in the figure

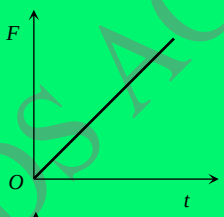


The corresponding force-time graph of the particle is

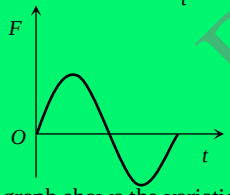
(a)



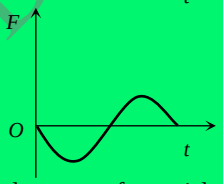
(b)



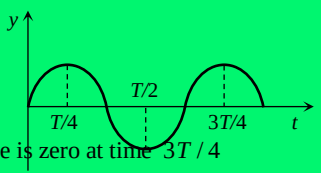
(c)



(d)



4. The graph shows the variation of displacement of a particle executing S.H.M. with time. We infer from this graph that



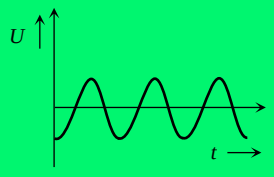
(a) The force is zero at time $3T/4$

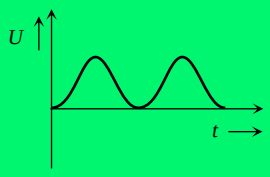
(b) The velocity is maximum at time $T/2$

(c) The acceleration is maximum at time T

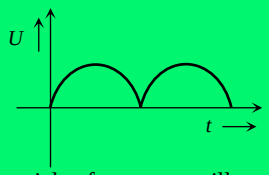
(d) The P.E. is equal to total energy at time $T/2$

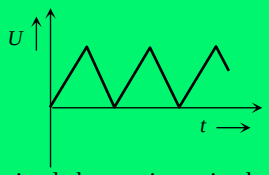
5. As a body performs S.H.M., its potential energy U. varies with time as indicated in



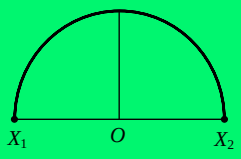


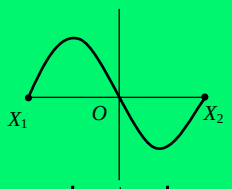
(a) (b)

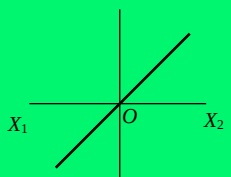
(c) 

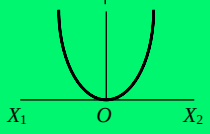
(d) 

6. A particle of mass m oscillates with simple harmonic motion between points x_1 and x_2, the equilibrium position being *O*. Its potential energy is plotted. It will be as given below in the graph

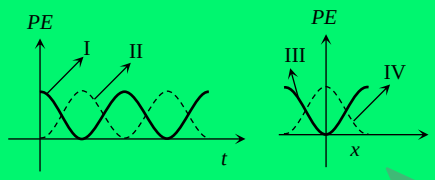
(a) 

(b) 

(c) 

(d) 

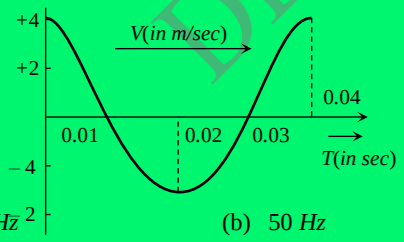
7. For a particle executing S.H.M. the displacement *x* is given by $x = A\cos\omega t$. Identify the graph which represents the variation of potential energy (P.E.) as a function of time *t* and displacement *x*



(a) I, III (b) II, IV

(c) II, III (d) I, IV

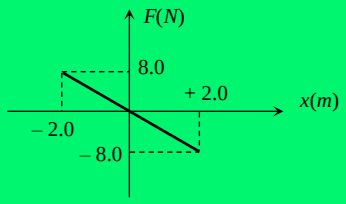
8. The velocity-time diagram of a harmonic oscillator is shown in the adjoining figure. The frequency of oscillation is



(a) 25 *Hz* (b) 50 *Hz*

(c) 12.25 *Hz* (d) 33.3 *Hz*

9. A body of mass 0.01 *kg* executes simple harmonic motion (S.H.M.) about $x = 0$ under the influence of a force shown below : The period of the S.H.M. is



(a) 1.05 *s* (b) 0.52 *s*

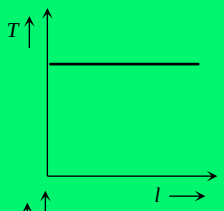
(c) 0.25 *s* (d) 0.30 *s*

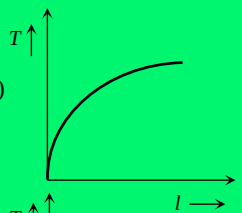
10. For a simple pendulum the graph between *L* and *T* will be.

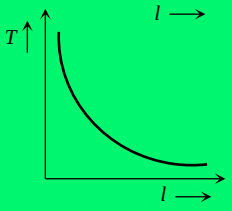
(a) Hyperbola (b) Parabola

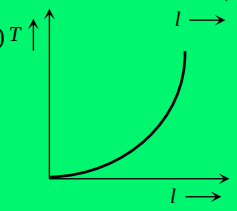
(c) A curved line (d) A straight line

11. In case of a simple pendulum, time period versus length is depicted by

(a) 

(b) 

(c) 

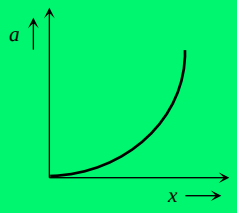
(d) 

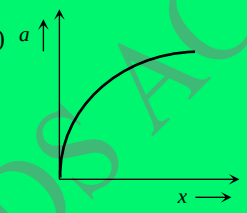
12. Graph between velocity and displacement of a particle, executing S.H.M. is

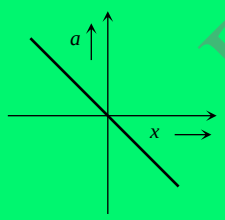
(a) A straight line (b) A parabola

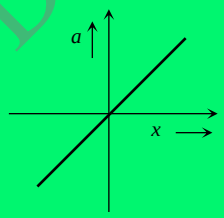
(c) A hyperbola (d) An ellipse

13. The variation of the acceleration *a* of the particle executing S.H.M. with displacement *y* is as shown in the figure

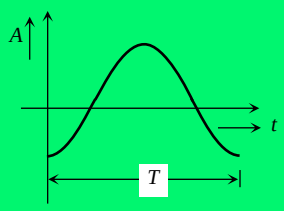
(a) 

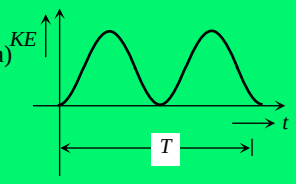
(b) 

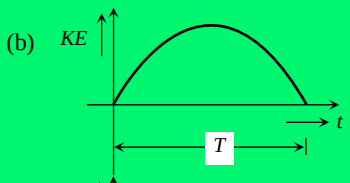
(c) 

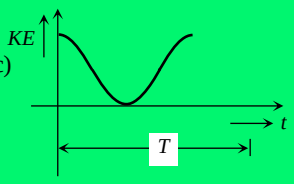
(d) 

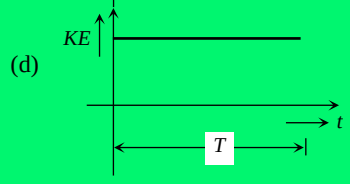
14. Acceleration *A* and time period *T* of a body in S.H.M. is given by a curve shown below. Then corresponding graph, between kinetic energy (K.E.) and time *t* is correctly represented by



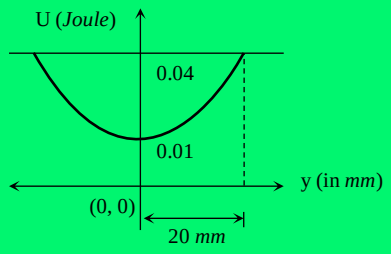
(a) 

(b) 

(c) 

(d) 

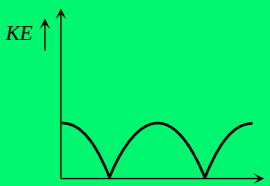
15. The variation of potential energy of harmonic oscillator is as shown in figure. The spring constant is

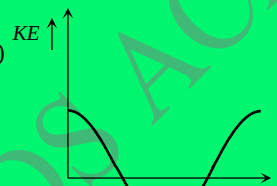


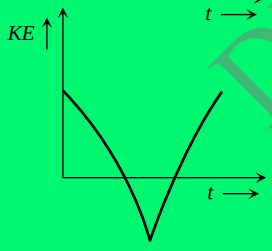
(a) 1×10^2 *N/m* (b) 150 *N/m*

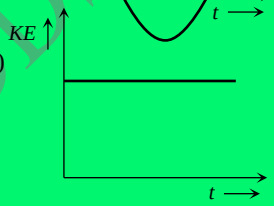
(c) 0.667×10^2 *N/m* (d) 3×10^2 *N/m*

16. A body performs S.H.M. Its kinetic energy *K* varies with time *t* as indicated by graph

(a) 

(b) 

(c) 

(d) 

ANSWER KEY

1	a	2	d	3	d	4	d	5	b
6	d	7	a	8	a	9	d	10	b
11	b	12	d	13	c	14	a	15	b
16	a								