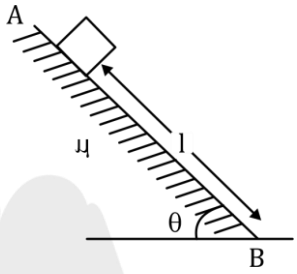
DPP – 3

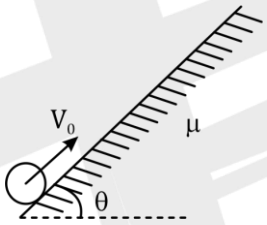
Work power energy

Q.1 Force constant of spring is k. Natural length of spring is 5 m, the work done by spring on both the support if its length changes from 6m to 8 m, is $-NK$ find value of N.

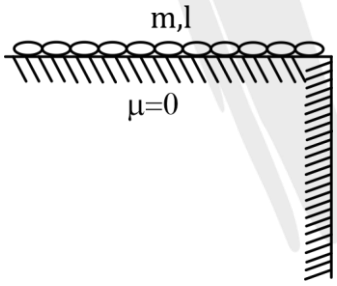
Q.2 A small block is released from point A on rough inclined plane as shown in figure. Speed of block at point B is $\sqrt{Kg(\sin\theta - \mu\cos\theta)\ell}$, find value of K if $[\mu < \tan\theta]$



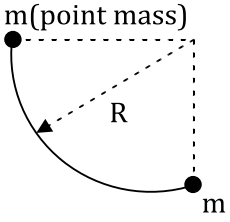
Q.3 A particle is thrown with velocity v_0 on a rough inclined plane as shown in figure. distance travelled by particle during upward motion is $d = \frac{v_0^2}{(k+1)g(\sin\theta+\mu\cos\theta)}$ find value of k is.

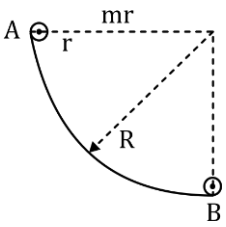


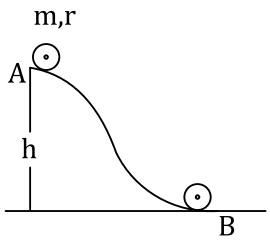
Q.4 The chain is initially at rest on frictionless surface as shown. velocity of chain when it just completely falls from surface, is $v = \sqrt{k-1}g\ell$. value of k =



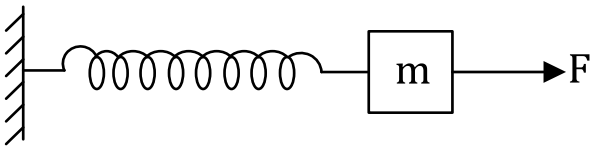
Q.5 find work done by gravity in a, b&c. If particle move from A to B.

(A)


(B)


(C)


Q.6 Initially the block is at rest as shown in figure. A constant force F is applied on block. find maximum extension of spring. Initially spring in natural length.

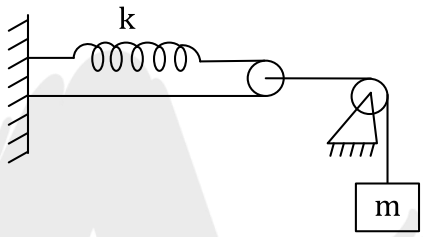


(A) $x_0 = \frac{F}{k}$ (B) $\frac{4F}{k}$ (C) $\frac{2F}{k}$ (D) $\frac{F}{2k}$

Q.7 In the above question find maximum velocity is

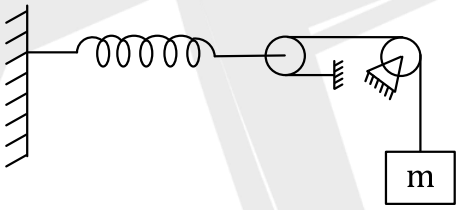
(A) $\frac{F}{\sqrt{km}}$ (B) $\frac{F}{\sqrt{2km}}$ (C) $\frac{2F}{\sqrt{km}}$ (D) $\frac{F}{k\sqrt{m}}$

Q.8 Initially the block is at rest spring is in natural length. find the max downward displacement of the block when system is released.



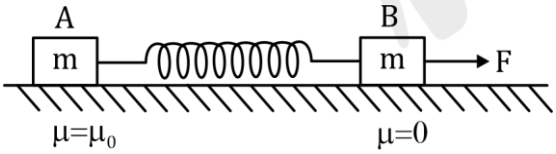
(A) $\frac{mg}{k}$ (B) $\frac{2mg}{k}$ (C) $\frac{4mg}{k}$ (D) $\frac{mg}{2k}$

Q.9 Initially the Spring in in natural length f block is at rest, when system is released the maximum downward displacement of the block.



(A) $\frac{mg}{k}$ (B) $\frac{8mg}{k}$ (C) $\frac{4mg}{k}$ (D) $\frac{mg}{4k}$

Q.10 Initially both the blocks are in rest & spring is in natural length. find the minimum Force F required to move block A.



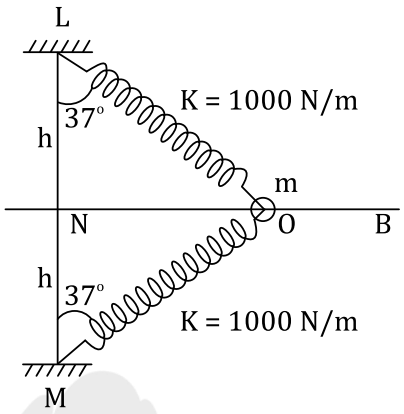
(A) $\frac{\mu_0 mg}{2}$

(B) $\frac{\mu_0 mg}{6}$

(C) $\frac{\mu_0 mg}{12}$

(D) N.O.T.

Q.11 A bead of mass 5 kg is free to slide on the horizontal rod AB. They are connected to two identical springs of natural length h ms. as shown. If initially bead was at O&M is vertically below L then, velocity of bead at point N will be :



(A) 5h m/s (B) 40 h/3 m/s (C) 8hm/s (D) None of these

ANSWER KEY

1.	N = 4	**2.**	K = 4	**3.**	K = 1	**4.**	K = 1
5.	(A) mgR	(B) mg(R − r)		(C) mgh			
6.	(C)	**7.**	(A)	**8.**	(D)	**9.**	(B)
10.	(A)	**11.**	(A)				