

## NCERT/CBSE PHYSICS CLASS 11 textbook

<http://www.TutorBreeze.com>

Answers to NCERT/CBSE PHYSICS Class 11(Class XI)textbook Exercise and Additional exercise

CHAPTER SIX WORK, ENERGY AND POWER

### EXERCISES

(For simplicity in numerical calculations, take  $g = 10 \text{ m s}^{-2}$ )

6.26 A 1 kg block situated on a rough incline is connected to a spring of spring constant  $100 \text{ N m}^{-1}$  as shown in Fig. 6.17. The block is released from rest with the spring in the unstretched position. The block moves 10 cm down the incline before coming to rest. Find the coefficient of friction between the block and the incline. Assume that the spring has a negligible mass and the pulley is frictionless.

Fig. 6.17

6.26

Solution:

Let mass of block,  $m=1 \text{ kg}$

$k=100 \text{ Nm}^{-1}$

$g=10 \text{ ms}^{-2}$

The displacement of block on release,  $x=0.1 \text{ m}$

angle of incline,  $\theta=37^\circ$

Work by moving by  $x$  in downward direction = Energy stored in spring

$$mg(\sin\theta - \mu\cos\theta)x = \frac{1}{2}kx^2$$

$$\Rightarrow \mu = \frac{2mg\sin\theta - kx}{2mg\cos\theta}$$

Substituting the values and solving,

$$\mu = 0.127$$

©TutorBreeze.com

Please do not copy the answer given here

[Write to us for help in understanding the solution](#)