

Q10. In the figure, the ball's velocity is 6 m/s, and the height of the ramp is 1 m. The ball's velocity at the top of the ramp is: Ignore friction.

- a) 2 m/s      b) 3 m/s      c) 5 m/s  
e) The ball won't make it to the top of the ramp.

d) 4 m/s



Q11. The power it takes to lift a 1000 N load 10 m in 20 s is:

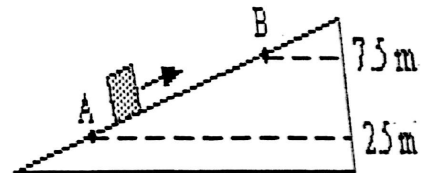
- a) 5 W      b) 500 W      c) 2000 W      d) 20000 W      e) 5000 W

Q1. A small motor is used to operate a lift that raises a load of bricks weighing 500 N to a height of 10 m in 20 s at constant speed. The lift weighs 300 N. the power output of the motor is

- a) 100 W      b) 200 W      c) 120 W      **d) 400 w**      e) 490 w

Q2. As shown in the figure, a 12 kg box is pushed up from point A to Point B. The change in the gravitational potential energy of the box is

- a)  $4 \times 10^4$  J    b)  $5 \times 10^2$  J    **c) 588 J**    d)  $8 \times 10^3$  J    e)  $1.4 \times 10^4$



Q3. A person of mass 75 kg starts from rest to ski down a rough hill of 40 m high, the person's speed at the bottom of the hill is 20 m/s. The work done by the frictional force is

- a) 12150 J    **b) -14400 J**    c)  $15 \times 10^4$  J    d) -12150 J    e)  $13 \times 10^5$  J

Q4. An electron is accelerated from rest by electron gun to an energy of  $2.5 \times 10^{-18}$  J over a distance of 2.5 cm. The force on the electron is

- a)  $1.6 \times 10^{-16}$  N    b)  $2 \times 10^{-18}$  N    c)  $2.5 \times 10^{-14}$  N    **d)  $10^{-16}$  N**    e)  $1.2 \times 10^{-15}$  N

Q8. Two blocks are released from the top of a building. One falls straight down while the other slides down a smooth ramp. If all friction is ignored, which one is moving faster when it reaches the bottom?

- a) The block that went straight down.    b) The block that went down the ramp.  
 c) They both will have the same speed.    d) Insufficient information to work the problem.

Q9. A weightlifter, is able to lift 250 kg 2.00 m in 2.00 s. His power output is

- a) 500 W     b) 2.45 kW    c) 4.90 kW    d) 9.80 kW    e) 1kW

Q10. A ball rolls down on an incline surface starting at 3.77 m/s. At the bottom of the slope its speed is 14.4 m/s. The height (in m) of the slope

- a) 9.85 m    b) 4.76 m    c) 2.90 m    d) 7.21 m    e) 10.65 m

Q1. A man pushes an 80-N crate a distance of 5.0m upward along a frictionless slope that makes an angle of  $30^\circ$  with the horizontal. The force he exerts is parallel to the slope. If the speed of the crate is constant, then the work done by the man is:

a) 200 J

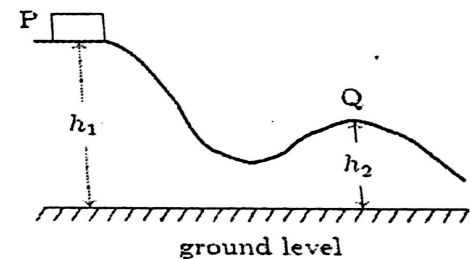
b) 61 J

c) 140 J

d) -200 J

e) 260 J

Q2. A block is released from rest at point P and slides along the frictionless track shown. At point Q, its speed is:



a)  $2g\sqrt{h_1 - h_2}$

b)  $2g(h_1 - h_2)$

c)  $\sqrt{2g(h_1 - h_2)}$

d)  $(h_1 - h_2)/2g$

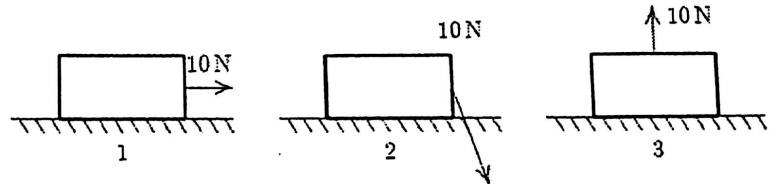
e)  $(h_1 - h_2)2/2g$

Q10. A person holds an 80-N weight 2m above the floor for 30 seconds. The power required to do this is:

- a) 80W      b) 40W      c) 20W      d) 10W

e) none of these

Q11. A crate moves 10m to the right on a horizontal surface as a woman pulls on it with a 10-N force. Rank the situations shown below according to the work done by her force, least to greatest



a) 1, 2, 3

b) 3, 2, 1

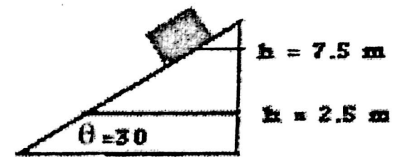
c) 2, 3, 1

d) 1, 3, 2

e) 2, 1, 3

Q8

A 12kg block is pushed from rest up a rough incline from 2.5m to 7.5m height. If its speed becomes 5m/s and the total work is 1038J, the energy lost due to friction is:



a) 700 J

b) 300 J

c) 945 J

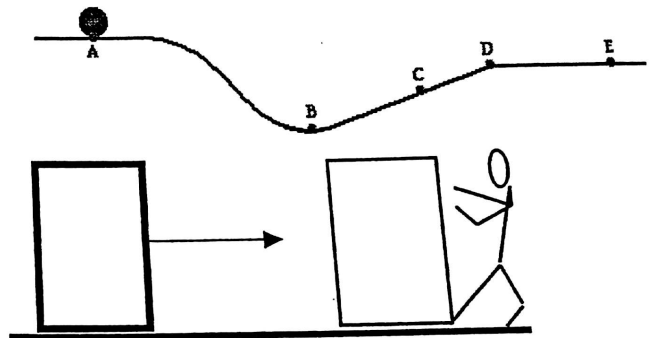
d) 288 J

e) 438 J

- Q9 Approximately  $6 \times 10^4$  kg of water falls down each minute from a height of 100m. If one half of the gravitational energy of water were converted to electrical energy, the power generated is:
- a)  $98 \times 10^3$  w      b)  $4.52 \times 10^4$  w      c)  $1 \times 10^4$  w      d)  $3.9 \times 10^3$  w      e)  $4.9 \times 10^5$  w

Q8. The object in the figure will have a minimum gravitational potential energy at point.

- a) D    b) E    c) C    **d) B**    e) A



Q9. A 10 Kg block is initially at rest is pulled to the right along a horizontal frictionless surface by a constant horizontal force of 15 N as shown in the figure. Using the work energy theorem, the speed of the block after it has moved 5.0 m is :

- a) 3.87 m/s**    b) 2.52 m/s    c) 4.56 m/s    d) 1.78 m/s    e) 6.48 m/s

Q10. An 60 kg man runs up a flight of stairs 6 m high in 2s. The average power in Watt done by the gravity force is :

- a) 2100    b) 2700    c) 3000    **d) 1764**    e) 3500



Q9. The work done in (J) by a person lifting a 4.0-kg object from the bottom of a well at a constant speed of 3.0 m/s for 5.0 s is



a) 588J

b) 300 J

c) 100 J

d) 250J

e) 150J

Q10. A 90 kg man runs up a flight of stairs 6m high in 2s. The average power done by the gravity force in (W) is

(a) 2125

(b) 3245

(c) 3150

(d) 2435

e) 2646

**Q5** A 100 g toy car initially at rest is pushed forward by a child for a distance of 1 m. If the child exerts a constant force  $F = 5 \text{ N}$ , the work done on the car and its final kinetic energy in Joule is

a) (3,5)

b) (4,4)

c) (5,5)

d) (6,10)

e) (8,2)

**Q6** A woman skis from rest a down hill of 20 m high. If the friction is neglected, her speed in m/s at bottom of the slope is

a) 16.8

b) 15.7

c) 21.5

d) 19,8

e) 12.6