

**O Level Pure Physics MCQs**

**Energy, Work and Power Test 1.0**

Q1

A 2.0 kg box moves at a constant speed of 7.2 km/h. What is the kinetic energy of the box?

- A 1.0 J                      B 2.0 J                      C 4.0 J                      D 8.0 J

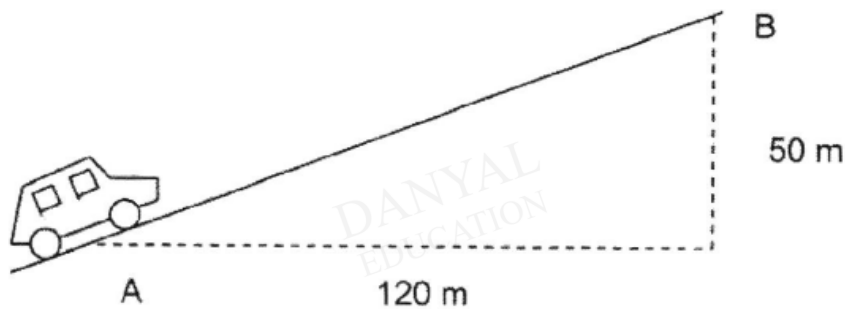
Q2

The power of an electric motor is 20 W. How long does it take to lift a 2.0 kg box through a height of 5.0 m? The gravitational field strength  $g$  is 10 N/kg.

- A 5.0 s                      B 10 s                      C 15 s                      D 20 s

Q3

A 2000 kg car is travelling on a hill at a constant speed of 10 m/s.



If the frictional force along AB remains constant at 1000 N, what is the work done against friction when the vehicle travels from A to B?

- A 100kJ                      B 130kJ                      C 1000kJ                      D 1230kJ

Q4

Four persons climbed up four different staircases. Their weights, vertical heights of the staircases and times are recorded in the table.

Which person develops the least power?

	weight / N	height / m	time / s
A	590	13	7
B	720	9	6
C	850	11	8
D	940	6	5

Q5

Water flows at a rate of  $6.25 \times 10^8$  kg per minute over a waterfall. The height of the waterfall is 10.8 m.

The total power delivered by the water in falling through the 10.8 m is

A  $1.13 \times 10^9$  W.

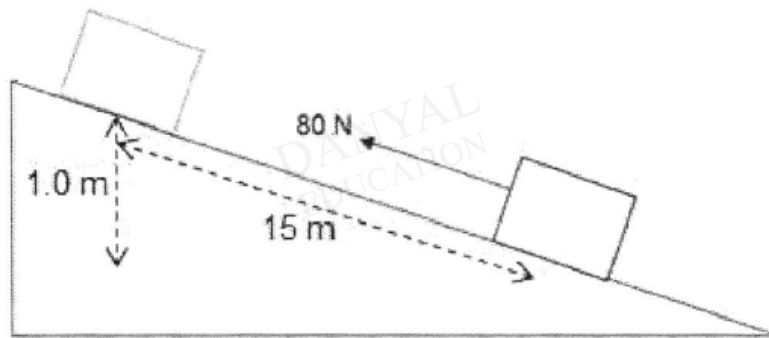
B  $1.10 \times 10^{10}$  W.

C  $6.62 \times 10^{11}$  W.

D  $4.05 \times 10^{12}$  W.

Q6

A wooden block of mass 10 kg is pulled up a rough inclined plane at a uniform speed by a force of 80 N parallel to the plane. When the distance moved along the plane is 15 m, the increase in height is 1.0 m.



What is the frictional force of the inclined plane?

A 73 N

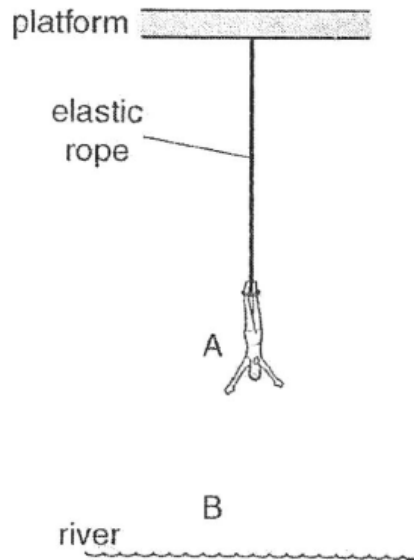
B 80 N

C 87 N

D 1200 N

Q7

The diagram shows a man making a bungee jump. He starts from a platform above a river. The elastic rope tied to his feet becomes tight when the man reaches point A. The lowest point he reaches is B.

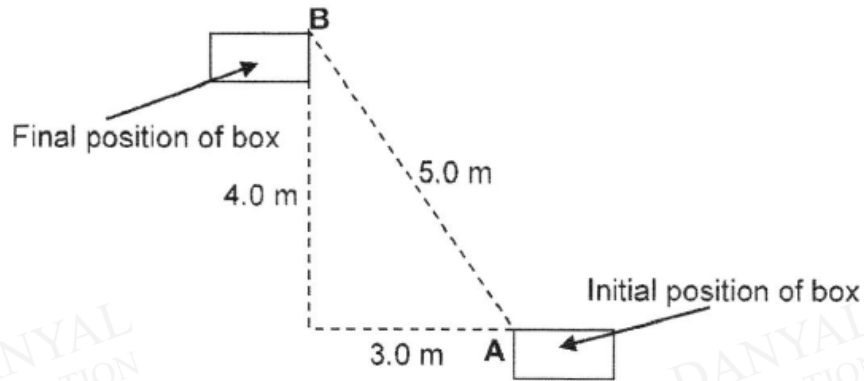


Which statement best describes the conversion of energy of the man when he travels from A to B?

- A Decrease in kinetic energy of the man is converted to elastic potential energy of the rope.
- B Decrease in elastic potential energy of rope and gravitational potential energy of man is converted to kinetic energy of the man.
- C Decrease in gravitational potential energy of man is converted to elastic potential energy of rope and kinetic energy of man.
- D Decrease in gravitational potential energy and kinetic energy of man is converted to elastic potential energy of rope.

Q8

A box of mass 500 grams is lifted diagonally from point **A** to point **B** as shown.



Given that the acceleration of free fall is  $10 \text{ m/s}^2$ , what is the gravitational potential energy gained by the box?

- A 20 J
- B 25 J
- C 20000 J
- D 25000 J

Q9

A stone is dropped from a cliff. After some time, the stone falls at constant velocity. Which of the following shows the overall energy change of the stone when it is falling at constant velocity?

- A chemical potential energy to kinetic energy
- B chemical potential energy to thermal energy
- C gravitational potential energy to kinetic energy
- D gravitational potential energy to thermal energy

Q10

A car, of mass 1000 kg, is slowly going down a steep hill. The brakes fail and the driver uses a horizontal sand-filled safety road at the bottom of the hill to stop the car. The car enters the sand at a speed of 10 m/s and is subjected to a stopping force of 2500 N. How far does the car travel before coming to rest?

- A 2.0 m
- B 4.0 m
- C 20 m
- D 40 m

**Answers**

**Energy, Work and Power Test 1.0**

Q1 C

Q2 A

Q3 A

Q4 B

Q5 A

Q6 A

Q7 D

Q8 A

Q9 D

Q10 C

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