Energy, Work & Power

Question Paper

Course	CIE IGCSE Physics
Section	1. Motion, Forces & Energy
Topic	Energy, Work & Power
Difficulty	Hard

Time Allowed 10

Score /5

Percentage /100

Question 1

Extended tier only

A large truck of mass 5000 kg is travelling at 5.0 m/s.

A motorbike has a mass of 200 kg. Both the truck and the motorbike have the same kinetic energy.

What is the speed of the motorbike?

A. 25 m/s

B. 10 m/s

C. 125 m/s

D. 2.5 m/s

[1 mark]

Question 2

Extended tier only

A penny is held at the top of Blackpool tower. The penny is released and falls a distance *h* to the ground. It reaches a speed *v* as it falls.

As the penny falls, air resistance causes some of the original energy of the penny to be transferred into the air as heat.

Which of the expressions below gives the work done against air resistance?

A. $\frac{1}{2}mv^2$

B. $mgh + \frac{1}{2}mv^2$

C. $mgh - \frac{1}{2}mv^2$

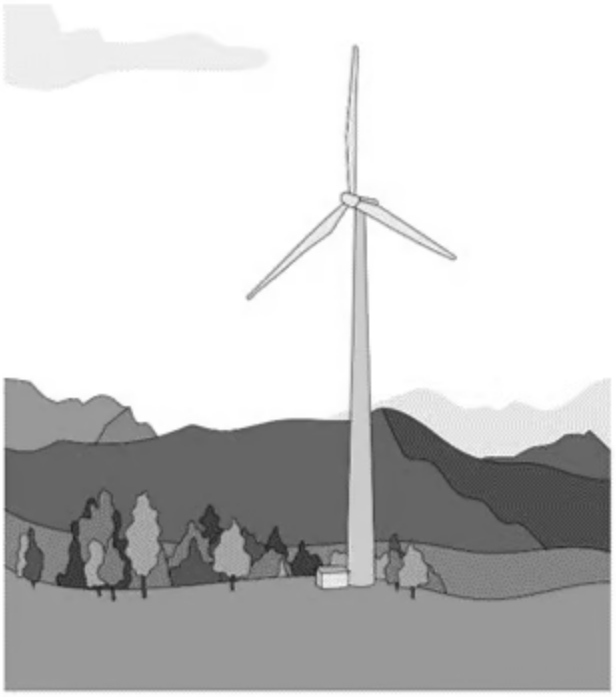
D. mgh

[1 mark]

Question 3

Extended tier only

The diagram below shows a wind turbine.



What is the change in the kinetic energy if the wind speed is reduced by half?

A. $E_K = \frac{1}{8}$

B. $E_K = \frac{1}{4}$

C. $E_K = \frac{1}{2}$

D. No change

[1 mark]

Question 4

A crane lifts four pallets of bricks, each of which weigh 5000 N. The crane lifts each pallet a height of 30m. The crane takes 4 minutes to do this.

How much useful power did the crane produce to lift the bricks?

A. 150 000 W

B. 625 W

C. 2500 W

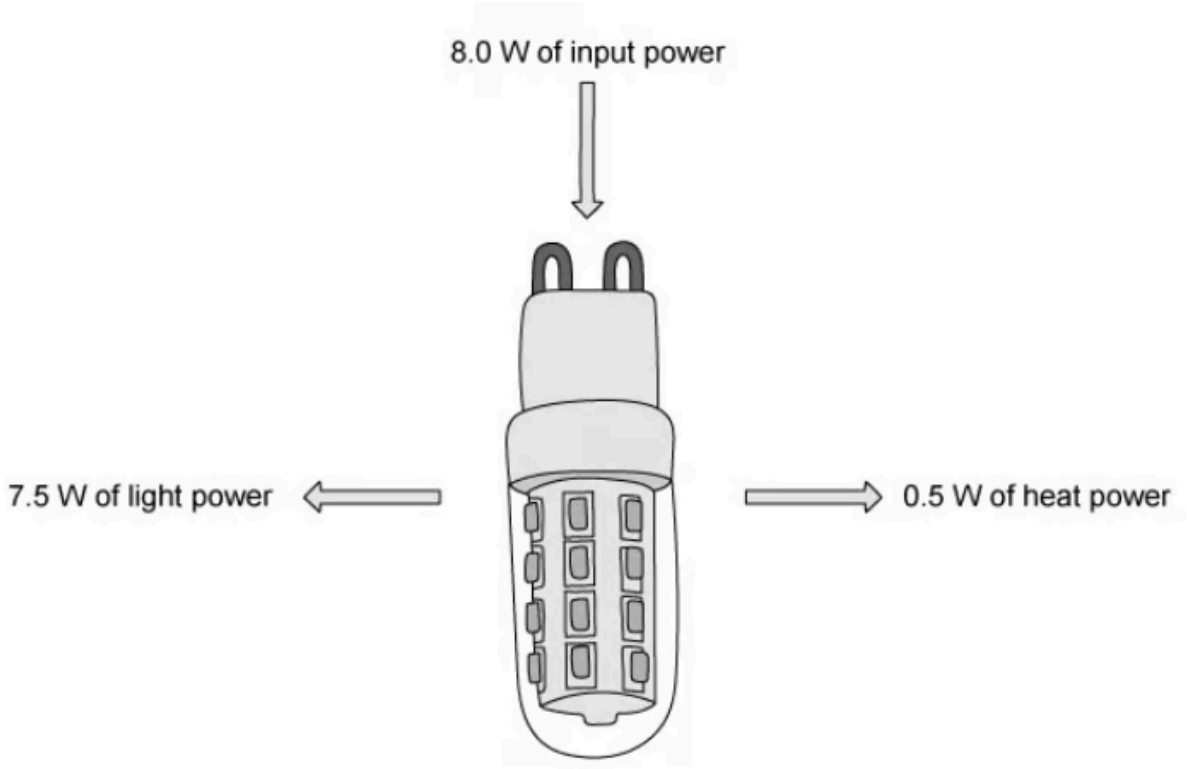
D. 37 500 W

[1 mark]

Question 5

Extended tier only

The diagram shows an LED light bulb.



Which expression gives the efficiency of the bulb?

A. $\frac{8.0}{0.5} \times 100\%$

B. $\frac{7.5}{0.5} \times 100\%$

C. $\frac{0.5}{8.0} \times 100\%$

D. $\frac{7.5}{8.0} \times 100\%$

[1 mark]