6.1 Energy Conservation

Question Paper

Course	CIE A Level Physics (9702) 2019-2021
Section	6. Work, Energy & Power
Topic	6.1 Energy Conservation
Difficulty	Easy

Time allowed: **10**

Score: **/6**

Percentage: **/100**

Question 1

The kinetic energy of a moving vehicle with mass 1000 kg is 4.5×10^5 J. It brakes with a total constant braking force of 6000 N

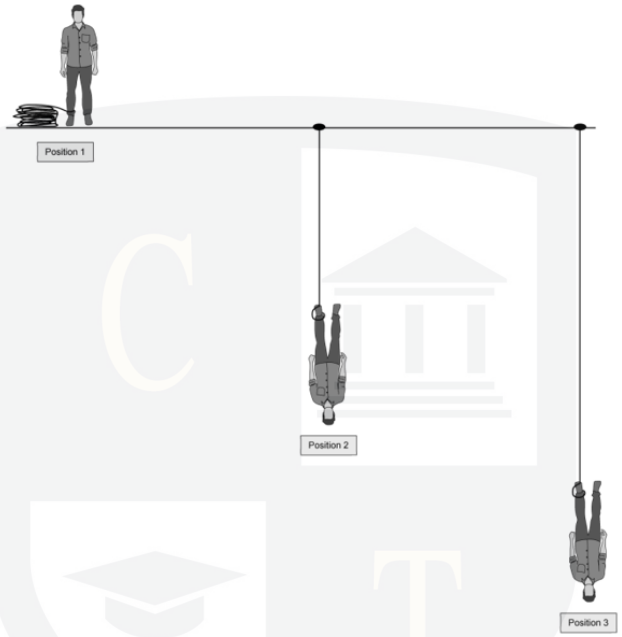
What will be its stopping distance?

A 37 m **B** 75 m **C** 150 m **D** 300 m

[1 mark]

Question 2

When bungee jumping, a student starts with maximum gravitational potential energy (position 1), then falls freely until the rope fully unwinds (position 2), after which the rope starts to stretch until the lowest point of the jump is reached (position 3)



What are the kinetic and elastic potential energies at position 3?

	kinetic energy	elastic potential energy
A	maximum	maximum
B	maximum	minimum
C	minimum	maximum
D	minimum	minimum

[1 mark]

Question 3

An electric motor is required to produce 120 W of mechanical output power. The efficiency of the motor is 80%

Which row is correct?

	electrical power input to motor / W	waste heat output from motor / W
A	120	24
B	120	96
C	150	30
D	150	120

[1 mark]

Question 4

A transformer has the following input and output

	potential difference / V	current / A
input	11 000	28
output	240	1200

What is the efficiency of the transformer?

A 0.94 % **B** 1.0 % **C** 11 % **D** 94 %

[1 mark]

Question 5

The total energy input E_{in} in a process is partly transferred to useful energy output U, and partly to energy that is wasted W

What is the efficiency of the process?

A $\frac{U}{W} \times 100\%$

B $\frac{W}{E_{in}} \times 100\%$

C $\frac{U}{E_{in}} \times 100\%$

D $\frac{U+W}{E_{in}} \times 100\%$

[1 mark]

Question 6

Which of the following is a statement of the principle of conservation of energy?

A energy is the product of force and distance

B energy cannot be created, destroyed or transformed

C the total energy of an isolated system is constant

D the power transmitted by a system is proportional to the rate of transfer of energy

[1 mark]