

Central Administration for Curriculum Development

Science development office



Physics

Second Secondary Grade

20
26

Home Work

Week

3

Name:

Class:

School:

إعداد

عبد الله مصطفى - حسن أشرف

مراجعة

محمد عنتر

مكتب مستشار العلوم

عبدالله مصطفى - سعيد محمد

إشراف

د/ عزيزة رجب خليفة
مستشار العلوم

إشراف عام

د/ هالة عبد السلام
رئيس الإدارة المركزية للتعليم العام

- 4) A body of mass **2 kg** is released from rest and falls freely toward the ground from a height of **4 m**. When its speed becomes **5 m/s**, the distance it has fallen equals ..

Given that $g = 10 \text{ m/s}^2$

- (A) 3.5 m
- (B) 2.75 m
- (C) 1.25 m
- (D) 1 m

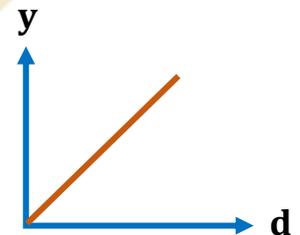
- 5) Two bodies **A** and **B** have the same mass. They are thrown vertically upward from the ground with speeds **v** and **2v**, respectively.

The ratio of the mechanical energy gained by each of them (E_A/E_B) equals

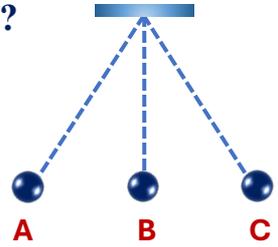
- (A) 4 / 1
- (B) 1 / 1
- (C) 1 / 2
- (D) 1 / 4

- 6) A body falls freely from a height **h** above the ground. The opposite graph represents the relationship between a physical quantity **y** and the distance **d** traveled by the body from the point of release toward the ground. The quantity **y** represents ...

- (A) The mass of the body
- (B) The kinetic energy of the body
- (C) The potential energy of the body
- (D) The mechanical energy of the body



7) The opposite figure shows a simple pendulum oscillating between positions **A** and **C**, passing through position **B**. Which of the following statements is correct?



- (A) The speed of the pendulum at A equals its speed at C
- (B) The kinetic energy at B equals zero
- (C) The potential energy at B is greater than the potential energy at A
- (D) The mechanical energy of the pendulum at A is greater than that at B

8) A ball of mass **1 kg** is thrown vertically upward with an initial speed of **10 m/s**. Neglecting air resistance, and given that the acceleration due to gravity is $g = 10 \text{ m/s}^2$. The maximum height reached by the ball equals

- (A) 2.5 m
- (B) 5 m
- (C) 7.5 m
- (D) 10 m

Second: Essay Questions

9) A cart of mass **500 kg** starts moving from rest from a height of **30 m**. Assuming that there is no friction, calculate its speed when it reaches the bottom of the slope.

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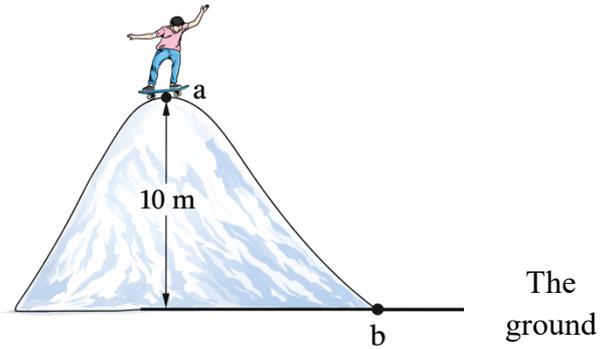
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10) The figure shows a skier of weight **500 N**. If the skier is at rest at point **(a)**, find:

- (a) The gravitational potential energy of the skier at point **a**
- (b) The gravitational potential energy of the skier at point **b**
- (c) The mechanical energy of the skier at point **b**



- The end -



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Weekly Assessment

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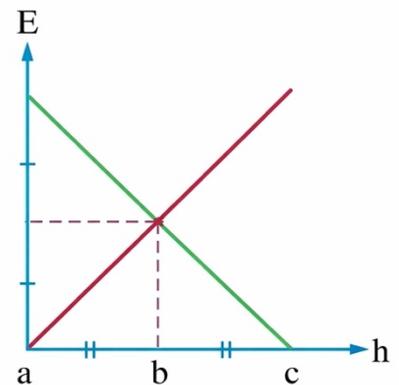
Group (A)

First: Multiple Choice Questions

- 1) The graph shows the relationship between two forms of energy (**E**) for a body of mass **10 kg** and its height (**h**) above the ground, when it is thrown vertically upward until it reaches a maximum height of **20 m**. The mechanical energy of the body during its motion at point (**b**) is equal to:

Given that $g = 10 \text{ m/s}^2$

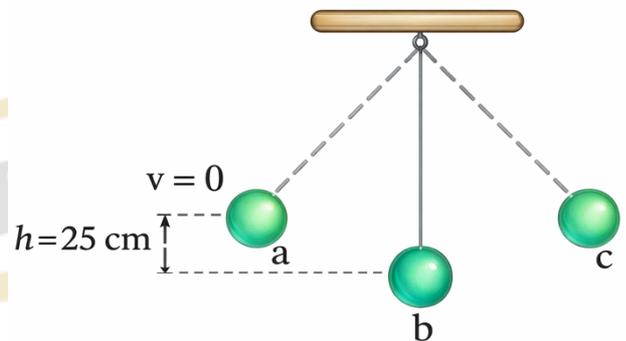
- (A) 500 J
- (B) 1000 J
- (C) 2000 J
- (D) 3000 J



- 2) The figure shows a ball suspended by a string and swinging freely in a vertical plane. The maximum speed reached by the ball during its motion is:

Given that $g = 9.8 \text{ m/s}^2$

- (A) 1.1 m/s
- (B) 2.2 m/s
- (C) 3.3 m/s
- (D) 4.4 m/s

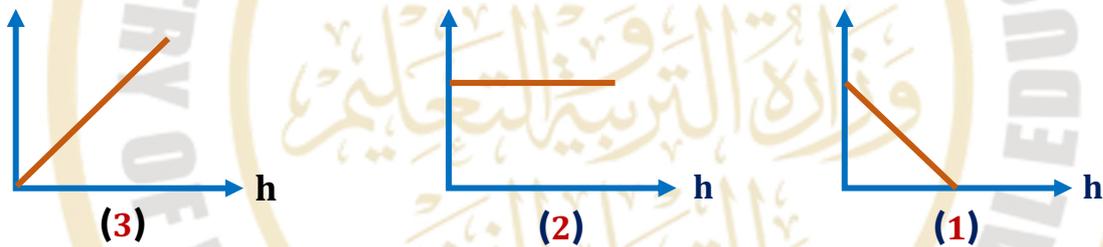


3) In all of the following systems, energy is transformed from potential energy to kinetic energy except:

- (A) An arrow when it is released from a bow
- (B) Water falling from a dam
- (C) A cart while moving up a hill
- (D) A long jump athlete during landing

Second: Essay Questions

4) A body is thrown vertically upward. Three graphs (1), (2), and (3) show how certain physical quantities of the body vary with its height (h) above the ground. Determine which graph represents the relationship between:

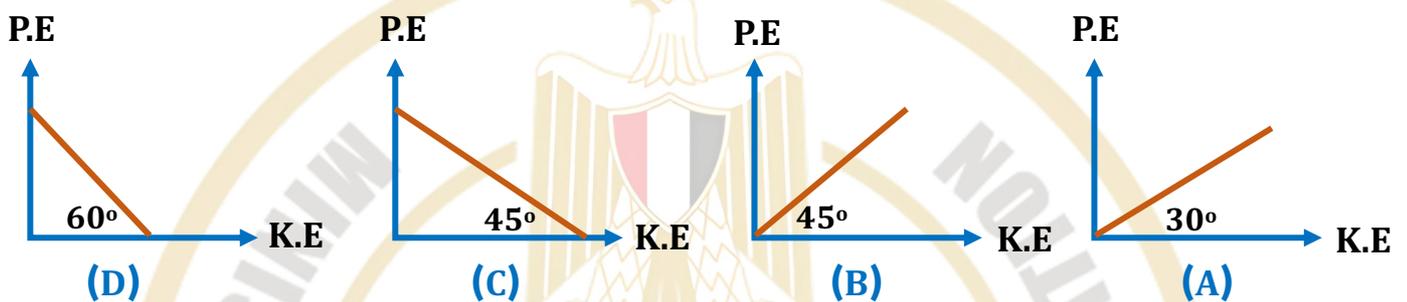


1. The gravitational potential energy (**PE**) of the body and its height (**h**)
2. The kinetic energy (**KE**) of the body and its height (**h**)
3. The mechanical energy (**E**) of the body and its height (**h**)

Group (B)

First: Multiple Choice Questions

- 1) The graph that represents the variation of kinetic energy (K.E) with potential energy (P.E) for a body in free fall in the Earth's gravitational field from a certain height, when both quantities are plotted using the same scale, is



- 2) A tennis ball and a bowling ball are dropped together from the same height inside an evacuated chamber (vacuum). When they reach half of the vertical height, they have the same:

- (A) Speed
- (B) Potential energy
- (C) Kinetic energy
- (D) Mechanical energy

- 3) A body starts to fall freely. At the instant when its potential energy decreases by **100 J**. From its initial value at the beginning of the fall, its kinetic energy is:

- (A) 50 J
- (B) 100 J
- (C) 200 J
- (D) 400 J

- 3) When a ball is thrown vertically downward in air, neglecting air resistance, during its downward motion:
- (A) Kinetic energy increases, potential energy increases, and their sum remains constant
 - (B) Kinetic energy increases, potential energy decreases, and their sum remains constant
 - (C) Kinetic energy decreases, potential energy decreases, and their sum decreases
 - (D) Kinetic energy decreases, potential energy increases, and their sum remains constant

Second: Essay Questions

- 4) A body of mass **2 kg** is released from rest and falls freely from a height of **4 m** above the ground. Calculate the height of the body above the ground when its speed becomes **5 m/s**. Given that $g = 10 \text{ m/s}^2$

- The end -