

Kingdom Saudi Arabia

Riyadh

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College of science

101 phys (General Physics)



المملكة العربية السعودية

الرياض

جامعة الامام محمد بن سعود الاسلامية

كلية العلوم الطبيعية

١٠١ فيز (فيزياء عامة)

الاسم: الرقم الجامعي رقم الشعبة

Write your final answer in the table

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Answer														

تعليمات هامة:

- ١) يمنع استخدام القاموس الإلكتروني (المترجم أو ما يسمى بالأطلس)
- ٢) الكتابة بالحبر و ليس القلم الرصاص
- ٣) يمنع استخدام الجوال او الاجهزة اللوحية كألة حاسبة
- ٤) يجب كتابة الإجابة النهائية في الجدول أعلاه

Question	1	2	3	4	total
degree					

مع تمنياتنا لکن بالتوفيق

Part I: Choose the correct answer:

1 - The unit of force called the newton is:

- A. $9.8\text{kg} \cdot \text{m/s}^2$
- B. $1\text{ kg} \cdot \text{m/s}^2$
- C. defined by means of Newton's third law
- D. 1 kg of mass

2 - Which of the following is NOT a correct unit for work?

- A. joule
- B. $\text{ft} \cdot \text{lb}$
- C. watt
- D. $\text{newton} \cdot \text{meter}$

3 - A watt is:

- A. $\text{kg} \cdot \text{m/s}^3$
- B. $\text{kg} \cdot \text{m}^2/\text{s}$
- C. $\text{kg} \cdot \text{m}^2/\text{s}^3$
- D. $\text{kg} \cdot \text{m/s}$

4 - A horizontal force of 5.0 N accelerates a 4.0-kg mass, from rest, at a rate of 0.50 m/s^2 in the positive direction. What friction force acts on the mass?

- A. 2.0 N
- B. 3.0 N
- C. 4.0 N
- D. 5.0 N

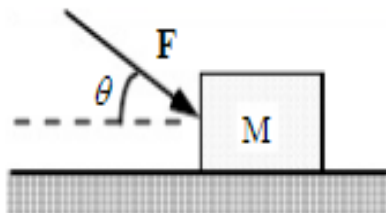
5 - An object with a mass m slides down a rough 37° inclined plane where the coefficient of kinetic friction is 0.20. What is the acceleration of the object?

- A. 4.3 m/s^2
- B. 5.9 m/s^2
- C. 6.6 m/s^2
- D. 7.8 m/s^2

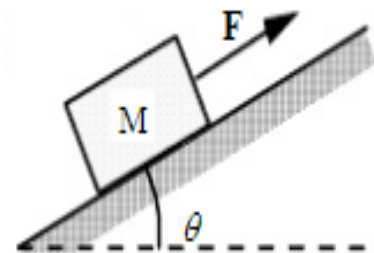
6 - 10. When the net force that acts on a hockey puck is 10 N, the puck accelerates at a rate of 50 m/s^2 . Determine the mass of the puck.

- A. 0.2 kg
- B. 5 kg
- C. 50 kg
- D. kg
- E. 10 kg

7- Note the following situations:



Case 1



Case 3

In which case will the magnitude of the normal force on the block be equal to $(Mg + F \sin \theta)$?

- (a) case 1 only
- (b) case 2 only
- (c) case 3 only
- (d) cases 1 and 2
- (e) cases 1, 2, and 3

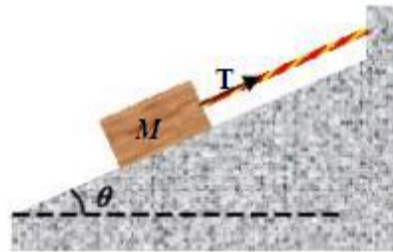
8- If the coefficient of kinetic friction, μ_k , between the block and the surface is 0.30 and the magnitude of the frictional force is 80.0 N, what is the weight of the block?

- A. 1.6 N
- B. 160 N
- C. 410 N
- D. 4.0 N
- E. 270 N

9 - A block of mass M is held motionless on a frictionless inclined plane by means of a string attached to a vertical wall as shown in the drawing.

What is the magnitude of the tension in the string?

- A. zero newtons
- B. Mg
- C. $g \cos\theta$
- D. $g \sin\theta$
- E. $g \tan\theta$



10- Joule = 1 _____

- A. N m^2
- B. Kg m/s^2
- C. N m
- D. $\text{N}^2 \text{m}^2$

11 - A 1 kg mass has a kinetic energy of 1 joule when its speed is

- A. 0.45 m/s
- B. 1 m/s
- C. 1.4 m/s
- D. 4.4 m/s

12- A 800-Kg car is traveling at 12m/s along a horizontal road when the brakes are applied. The car skids to a stop in 4.0 s. How much kinetic energy does the car lose in this time?

- A. $4.8 \times 10^4 \text{ J}$
- B. $5.9 \times 10^4 \text{ J}$
- C. $1.2 \times 10^5 \text{ J}$
- D. $5.8 \times 10^5 \text{ J}$

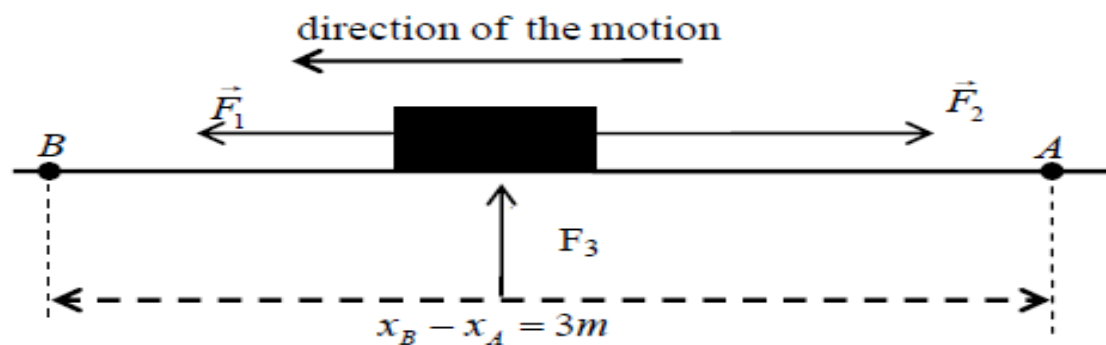
13 - A force of 80 N at an angle of 30.0° with the horizontal pushes a 50 kg object for 8 m across a level floor. The work done on the object is:

- A. 4000 J
- B. 640 J
- C. 400 J
- D. 10 J

14 – Acceleration is always in the direction:

- A. of the displacement
- B. of the initial velocity
- C. of the final velocity
- D. of the net force

Part II: Answer the following questions:



- 1- The figure shows three forces applied to a crate of mass $m=3\text{kg}$. The crate moves leftward by 3m over a frictionless horizontal surface. The force magnitudes are $\vec{F}_1=5\text{N}$, $\vec{F}_2=9\text{N}$, and $\vec{F}_3=3\text{N}$

A. Determine the work done by \vec{F}_1

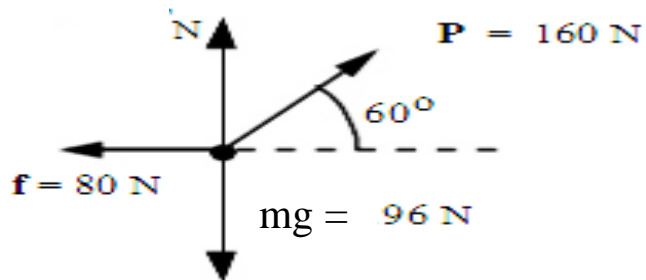
B. Determine the work done by \vec{F}_2

C. Determine the work done by \vec{F}_3

D. Determine the network (work done by \vec{F}_1 , \vec{F}_2 and \vec{F}_3)

E. If the crate at point A is at rest, determine its speed at point B by using work-energy theorem.

- 2- A force P pulls on a crate of mass m that is in contact with a rough surface. The figure shows the magnitudes and directions of the forces that act on the crate in this situation. W represents the weight of the crate. N represents the normal force on the crate, and f represents the frictional force. What is the magnitude of the normal force N , on the crate?



- 3- A particle moves $(3\hat{i} + 2\hat{j} - 5\hat{k})$ meter while being acted upon by a constant force $(\vec{F} = 4\hat{i} + 2\hat{j} - 4\hat{k})$ Newton. Calculate the work done on the particle by this force is?

Draft

Best wishes