



Q2: Solve the following problem. Don't forget to write the laws and the units. [3]

A 100-g block connected to a light spring for which the force constant is 10 N/m is free to oscillate on a horizontal, frictionless surface. The block is displaced 10 cm from equilibrium and released from rest, as in Figure.



Find the period of its motion.

Q3: Solve the following problem. Don't forget to write the laws and the units. [3]

A point source emits sound waves with an average power output of 80.0 W

(A) Find the intensity 3.00 m from the source

(B) Find the distance at which the intensity of the sound is $1.00 \cdot 10^{-6} \text{ W/m}^2$

05:28

-18:32



3- A 325kg motorcycle is moving at 140km/h ,south, find its momentum

a-1246.89kgm/s

b-10500kgm/s

c-12638.88kgmls

d-20000kgm/s

4-The maximum displacement from equilibrium of an element of the medium is called theof the wave

a-wavelength

b-period time

c-amplitude ●

d-frequency

5-60 kg archer stands at rest on frictionless ice and fires a 0.50kg arrow horizontally in 50m/s at with what velocity the archer move on the ice after firing the arrow?

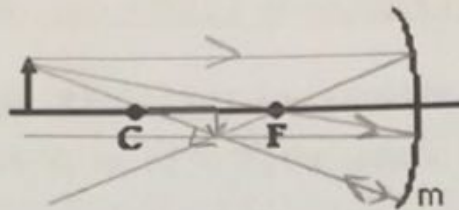
a-4.2m/s

b-0.42m/s

c- -0.42m/s

d- -4.2m/s

2. Using the sketch below:



a. Draw the image of the object (\uparrow) formed by a concave mirror.

b. Is the image virtual or real.

real

c. Is the image up right or inverted.

inverted

d. Is the image smaller or larger or the same size of the object.

smaller

e. If the object is 12 cm from mirror and the mirror focal length $f = 5$ cm, find the image distance (q) from mirror. (don't forget the unit)

$P = 12$, $F = +5$, $q = ?$?

$\frac{1}{q} = \frac{1}{f} - \frac{1}{p} = \frac{1}{5} - \frac{1}{12} = \frac{12-5}{60} = \frac{7}{60} = 0.12$ → نقسم الباقين على 7

$\frac{1}{q} = 0.12$
 نقابلي $\rightarrow q = \frac{1}{0.12}$

The Four Kinematic Equations

Table 2.2

Kinematic Equations for Motion of a Particle Under Constant Acceleration

Equation	Information Given by Equation
① $v_{xf} = v_{xi} + a_x t$	Velocity as a function of time
② $x_f = x_i + \frac{1}{2}(v_{xi} + v_{xf})t$	Position as a function of velocity and time
③ $x_f = x_i + v_{xi}t + \frac{1}{2}a_x t^2$	Position as a function of time
④ $v_{xf}^2 = v_{xi}^2 + 2a_x(x_f - x_i)$	Velocity as a function of position

Note: Motion is along the x axis.

Handwritten notes and equations:

- $x_f = x_i + \frac{1}{2}(v_{xi} + v_{xf})t$
- $v_{xf} = v_{xi} + a_x t$
- $x_f = x_i + v_{xi}t + \frac{1}{2}a_x t^2$
- $v_{xf}^2 = v_{xi}^2 + 2a_x(x_f - x_i)$
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- $v_{xf}^2 = v_{xi}^2 + 2a_x(x_f - x_i)$

	Q	1	2	3	4	5	6	7	8	9	10	11	12
	Grade												

Q1: Choose the correct answer and write your answer in the table below. [12]

1- The ----- measures pressure in an enclosed fluid.
 a- Manometer b- Thermometer c- Barometer d- none of them

2- Pascal's principle states that
 a- $A_1 V_1 = A_2 V_2$ b- $P = \frac{F_1}{A_1} = \frac{F_2}{A_2}$ c- $P = P_0 + \rho g h$ d- $P = \rho g h$

3- A 325kg motorcycle is moving at 140km/h, south, find its momentum
 a- 1246.89kgm/s b- 10500kgm/s c- 12638.88kgmls d- 20000kgm/s

4- The maximum displacement from equilibrium of an element of the medium is called the of the wave
 a- wavelength b- period time c- amplitude d- frequency

5- 60 kg archer stands at rest on frictionless ice and fires a 0.50kg arrow horizontally in 50m/s at with what velocity the archer move on the ice after firing the arrow?
 a- 4.2m/s b- 0.42m/s c- -0.42m/s d- -4.2m/s

6- The wavelength of the tuning fork of frequency 512 Hz which is set to vibrate the velocity of sound in air is 320m/s
 a- 0.625m b- 0.625mm c- 1.6 m d- 6.25m

7- the speed in m/s of the waves of frequency 125MHz and the wavelength of 2.40m is
 a- 3×10^8 b- 30×10^8 c- 0.3×10^8 d- 300×10^8

8- An antinode occurs when the string vibrates with the
 a- largest amplitude b- smallest amplitude c- constant amplitude d- zero amplitude

9- A sinusoidal wave of wave number $k=0.2\text{rad/cm}$ and an angular frequency $\omega = 55\text{rad/s}$ travels on a string to the right with an amplitude of $A=20\text{cm}$ and a phase constant of $\phi = \pi/2$
 This wave can be represented by the following sinusoidal wave function
 a- $y = 20\sin(0.2t + 55x - \pi/2)$ b- $y = 20\sin(0.2x - 55t + \pi/2)$ c- $y = 20\cos(0.2x + 55t)$ d- $y = 20\cos(55f + 0.2\lambda)$

10- The distance the wave travels between successive crests
 a- Quarter wavelength $(\frac{\lambda}{4})$ b- one wavelength (λ) c- half wavelength $(\frac{\lambda}{2})$ d- two wavelengths 2λ

Q3

$$I = \rho / A$$

$$\rho = I A$$

$$\textcircled{a} \quad I = \frac{\rho}{A} = \frac{80}{4\pi(3)^2} = \square$$

$$\textcircled{b} \quad r = \sqrt{\frac{\rho}{4\pi I}} = \sqrt{\frac{80}{4\pi \times 1 \times 10^8}}$$

06/26

DELL

Q 2: $\frac{100g}{1000} = 0.1 \text{ kg}$ تحويل

$\frac{10cm}{100} = 0.1$ تحويل إلى متر

$x = 0.1$

معدنية

$m = 0.1$

$k = 10$

$\omega = \sqrt{\frac{k}{m}} = \sqrt{\frac{10}{0.1}} = 10 \text{ rad/s}$

$T = \frac{2\pi}{\omega} = \frac{2\pi}{10} = \boxed{0.6}$

$f = \frac{1}{\frac{T}{s}} = \frac{5}{\pi} \text{ Hz}$

إذا
طلب

$f = \frac{1}{T}$

التردد

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$f = \frac{1}{T}$

التردد

Name:	Class:	Student ID:
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Q	1	2	Total
Grade	/12	/3	/15

Q1: Choose the correct answer and write your answer in the table below. [12]

Q	1	2	3	4	5	6	7	8	9	10	11	12
A												

1. The fact that a water drop is spherical is described in terms of			
a. Gravitation.	b. Archimedes' principle.	c. Surface tension. ●	d. Pascal's principle.
2. The linear momentum has a unit of:			
a. kg.m	b. kg/m	c. kg. m/s ●	d. N/s
3. The ideal fluids is ...			
a. Non viscous ●	b. viscous	c. known for weak cohesive forces.	d. none of mentioned
4. "The buoyant force is equal to the weight of the replaced liquid or gas" is the law of:			
a. Archimedes . ●	b. Pascal.	c. Bernoulli.	d. Torricelli.
5. Two objects with masses m_1 and m_2 have equal kinetic energy. How do the magnitudes of their momentum compare?			
a. $p_1 < p_2$	b. $p_1 = p_2$	c. $p_1 > p_2$	d. not enough information is given ●
6. (32 Pascal) is equal to			
a. 3.2 N	b. $32 \text{ N} \cdot \text{m}^2$ ●	c. $32 \text{ N} \cdot \text{s}^2$	d. 0.32 dyne
7. Which of the ranges below human ear can hear sound?			
a. in the audible range ●	b. below the audible range .	c. above the audible range.	d. none of them
8. If at some instant of time there is two waves of the same amplitude and frequency were traveling through the same region of space, the interference of the two waves produces:			
a. destructive interference.	b. beat.	c. Doppler's Effect.	d. constructive interference. ●
9. In standing waves at the point of node, the amplitude (A) of wave is:			