عرض المعلومات المساعدة عرض التغذية الراجعة عرض جميع الأسئلة

السؤال 1

Fill in the blank with the correct number. (Round the number to obtain an integer, not a decimal.)

Given: $h = 6.63$

$\times$

10^{-34}

A freight train weighs 4.5 million kilograms. Its wavelength is

2.4×10^{-42}

meters.



The train's velocity to the nearest whole number is 61 ✓ meters per second.

السؤال 2

Select the correct answer from the drop-down menu.

An electron moves at a velocity of

5.3×10^{6}

meters per second. Its mass is

9.1×10^{-31}

kilograms.

The electron's wavelength is 1.4×10^{-10} meters.

السؤال 3

Fill in the blank with a correct term from the Word Bank.

Word Bank			
heard	not visible	visible	recorded

The wavelength of a baseball is very short. It is much shorter than the size of an atomic nucleus. It is the reason why the wavelength of the moving baseball is not visible to the naked eye.

السؤال 4

Select the correct answer.

Which of the following is not a variable in the De Broglie equation?

- mass
- velocity
- speed of light

wavelength

السؤال 5

Select the correct answers.

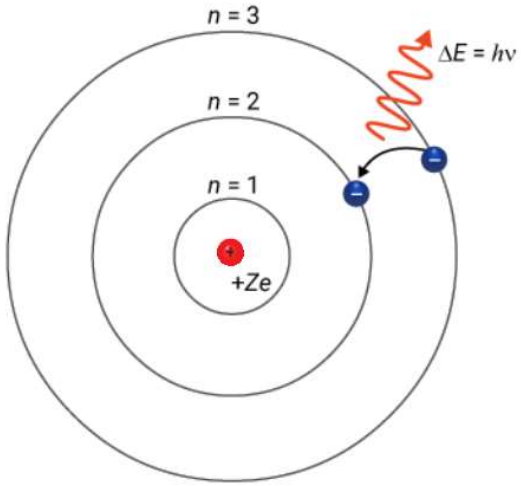
What does the De Broglie equation have in common with Bohr's model of the atom?

De Broglie Equation

$$\lambda = \frac{h}{mv}$$

where:

λ = wavelength
h = Planck's constant
m = mass of a particle
v = velocity of moving particle



- [ ] It treats light as both a wave and a particle.
- [ ] It assumes that electrons can only exist at certain frequencies.
- [ ] It treats an electron as a standing wave with a whole number of wavelengths.
- [x] It assumes that electrons are always the same distance from the nucleus.
- [ ] It relates the wavelength of a particle to the particle's mass.

It restricts electrons to circular orbits around the nucleus. ✓

السؤال 6

Select the correct term from the drop-down menu.

De Broglie predicted that all moving particles have wave-like ✓ properties.

السؤال 7

Fill in the blank with the correct term from the Word Bank.

Word Bank			
volume	distance	size	mass

The wave-like behavior of moving particles cannot be observed due to the size ✓ of the particles' wavelengths.

السؤال 8

Select the correct answer from the drop-down menu.

A proton's wavelength is

1.4×10^{-6}

meters and its mass is

1.7×10^{-27}

kilograms.

The proton's velocity is 2.79 ✓

$\times 10^{-1}$

meters per second.

السؤال 9

Select the correct answer.

An electron has a wavelength of

2.5×10^{-7}

meters. If its mass is

9.1×10^{-31}

kilograms, what is the electron's velocity?

- ○ 2.9×10^{2} m / s
- ○ 2.9×10^{5} m / s
- ✓ 2.9×10^{3} m / s

2.9×10^{4} m / s

السؤال 10

Select the correct answer.

A neutron has a mass of

1.67×10^{-21}

kilograms. It travels at a velocity of

5×10^{3}

meters per second.

What is the neutron's wavelength?

8.35×10^{18} m

7.9×10^{-17} m ✓

8.35×10^{-18} m

7.9×10^{17} m

السؤال 11

Select the correct answer.

An object with a mass of 200 kilograms moves at a velocity of 5 meters per second. What is the object's wavelength?

- 6.63×10^{-37} m ✓
- 6.63×10^{-35} m
- 6.63×10^{-33} m
- 6.63×10^{-31} m

السؤال 12

Select your answer from the drop-down menu.

A car weighs 1,800 kilograms and travels at a speed of 30 meters per second.

The car's wavelength is 1.2×10^{-38} ✓ meters.



السؤال 13

Fill in the blank with the correct number. (Round to the nearest thousandths).



Given: $h = 6.63$

×

10^{-34}

A ball thrown at a speed of 42 meters per second has a wavelength of

2.1×10^{-34}

meters.

The ball's mass, when rounded correctly, is approximately 0.075 ✓

kilograms.

السؤال 14

Select the correct answer.

While playing golf, Mr. Abdullah hits the ball at 94 meters per second. The golf ball's mass is 0.045 kilograms.

What is the golf ball's wavelength as it moves?



- [x] 1.6×10^{-34} m
- [ ] 4.6×10^{-34} m
- [ ] 2.6×10^{-34} m
- [ ] 3.6×10^{-34} m

السؤال 15

Select the correct answer.

Salem weighs 45 kilograms. He jumps into a lake and falls at a speed of 14.6 meters per second.

What is Salem's wavelength as he falls?



1.75×10^{-36}
m

1.25×10^{-36}
m

1×10^{-36}
m

1.5×10^{-36}
m