

Question 1

How many significant figures are in 576,000?

- A) 3
- B) 4
- C) 5
- D) 6
- E) ambiguous

Answer: <https://biology-forums.com/index.php?topic=568458>

Question 2

How much energy is needed to change the speed of a 1600 kg sport utility vehicle from 15.0 m/s to 40.0 m/s?

- A) 1.10 MJ
- B) 10.0 kJ
- C) 20.0 kJ
- D) 40.0 kJ
- E) 0.960 MJ

Answer: <https://biology-forums.com/index.php?topic=568968>

Question 3

The banking angle for a properly banked curve does not depend on the mass of the car going over it.

Answer: <https://biology-forums.com/index.php?topic=568853>

Question 4

The ratio of electrical force, F_e , to the gravitational force F_g , between two electrons is

- A) 2.1×10^{42}
- B) 4.2×10^{42}
- C) 6.3×10^{42}
- D) 8.4×10^{42}
- E) 9.8×10^{42}

Answer: <https://biology-forums.com/index.php?topic=570098>

Question 5

A circular coil of copper wire is lying flat on a horizontal table. A bar magnet is held with its south pole downward, vertically above the center of the coil. The magnet is released from rest and falls toward the coil. As viewed from above, you can say that, as it falls, the magnet induces

- A) counterclockwise current in the loop.
- B) clockwise current in the loop.
- C) no current in the loop.
- D) an emf but no electric current in the loop.
- E) Not enough information is provided.

Answer: <https://biology-forums.com/index.php?topic=570398>

Question 6

You are driving along a highway at 35.0 m/s when you hear the siren of a police car approaching you from behind and you perceive the frequency as 1310 Hz. You are relieved that he is in pursuit of a different speeder when he continues past you, but now you perceive the frequency as 1240 Hz. What is the frequency of the siren in the police car? The speed of sound in air is 343 m/s.

- A) 1300 Hz
- B) 1320 Hz
- C) 1270 Hz
- D) 1360 Hz
- E) 1370 Hz

Answer: <https://biology-forums.com/index.php?topic=569637>

Question 7

Light of wavelength 687 nm is incident on a single slit 0.75 mm wide. At what distance from the slit should a screen be placed if the second dark fringe in the diffraction pattern is to be 1.7 mm from the center of the screen?

- A) 0.39 m
- B) 0.93 m
- C) 1.1 m
- D) 1.5 m

E) 1.9 m

Answer: <https://biology-forums.com/index.php?topic=570910>

Question 8

If the acceleration vector of an object is directed perpendicular to the velocity vector,

- A) the object is turning.
- B) the object is speeding up.
- C) the object is slowing down.
- D) the object is not moving.
- E) this situation would not be physically possible.

Answer: <https://biology-forums.com/index.php?topic=568653>

Question 9

A satellite is in a circular parking orbit 6.98×10^6 m from the center of Earth. To initiate a Hohmann transfer, a rocket gives it an accelerating thrust so that its speed is increased to 8300 m/s. How far from the center of Earth will the satellite be when it reaches its apogee? The mass of Earth is 5.97×10^{24} kg and $G = 6.67 \times 10^{-11} \text{ N}\cdot\text{m}^2/\text{kg}^2$.

- A) 3.12×10^7 m
- B) 2.48×10^7 m
- C) 1.06×10^7 m
- D) 6.73×10^7 m
- E) 4.75×10^7 m

Answer: <https://biology-forums.com/index.php?topic=569456>

Question 10

The transmitted intensity of an unpolarized beam of light passing through a polarizer is one half of the value of the original intensity.

Answer: <https://biology-forums.com/index.php?topic=570558>

Question 11

The equation of continuity is a statement of the

- A) conservation of linear momentum.
- B) conservation of mass.
- C) conservation of energy.
- D) conservation of kinetic energy.
- E) conservation of angular momentum.

Answer: <https://biology-forums.com/index.php?topic=569694>

Question 12

Hydraulicists often express rainfall in acre-feet. This is the amount of water required to cover an area of one acre to a depth of one foot. There are 640.0 acres in a square mile, and 5280 feet in one mile. How many cubic feet are there in one acre-foot?

Answer: <https://biology-forums.com/index.php?topic=568441>

Question 13

A coil with a self-inductance of 6.0 H is connected to a dc source through a switch. As soon as the switch is closed at $t = 0$ s, the rate of change of current is 2.0 A/s. What is the emf induced in this coil at $t = 0$ s?

- A) 6.0 V
- B) 3.0 V
- C) 12 V
- D) $1/3$ V
- E) 0 V

Answer: <https://biology-forums.com/index.php?topic=570438>

Question 14

The competition between the electrostatic force between the protons in a nucleus and the strong nuclear force determines whether a nucleus is stable.

Answer: <https://biology-forums.com/index.php?topic=571222>

Question 15

Conductor A has 16 electrons and conductor B has 32 electrons. The ratio of the valence electrons of conductor A and conductor B is given as

- A) 1:2.
- B) 2:1.

- C) 1:3.
- D) 3:1.
- E) 3:2.

Answer: <https://biology-forums.com/index.php?topic=570083>

Question 16

An asteroid approaches Earth so that when it is very far away it is traveling with a speed of 6500 m/s along a line that would miss the center of Earth by 8,500,000 m. Because of the gravitational attraction of Earth, it departs from this straight line and curves towards Earth, colliding with it. In what direction, below the local horizontal, is the asteroid traveling when it hits Earth? The mass of Earth is 5.97×10^{24} kg and $G = 6.67 \times 10^{-11} \text{ N}\cdot\text{m}^2/\text{kg}^2$.

- A) 48°
- B) 58°
- C) 68°
- D) 78°
- E) 88°

Answer: <https://biology-forums.com/index.php?topic=569447>

Question 17

A wave pulse traveling to the right along a thin cord reaches a discontinuity where the rope becomes thicker and heavier. What is the orientation of the reflected and transmitted pulses?

- A) Both are right side up.
- B) The reflected pulse returns right side up while the transmitted pulse is inverted.
- C) The reflected pulse returns inverted while the transmitted pulse is right side up.
- D) Both are inverted.
- E) It is impossible to predict.

Answer: <https://biology-forums.com/index.php?topic=569568>