1 A mass on a spring undergoes SHM. The maximum displacement from the equilibrium is called?

- A Period
- B Frequency
- C Amplitude
- D Wavelength
- E Speed

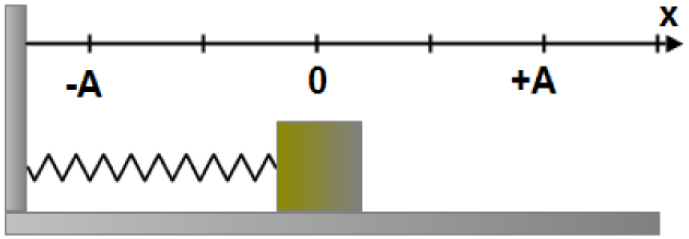
2 In a periodic process, the number of cycles per unit of time is called?

- ○ A Period
- ○ B Frequency
- ○ C Amplitude
- ○ D Wavelength
- ○ E Speed

3 In a periodic process, the time required to complete one cycle is called?

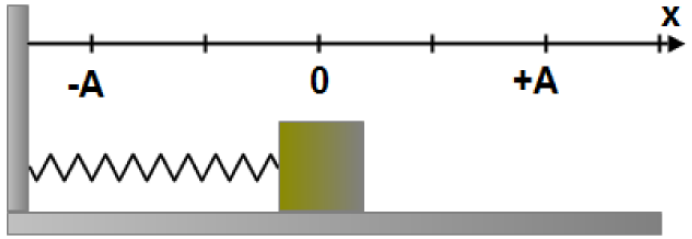
- ○ A Period
- ○ B Frequency
- ○ C Amplitude
- ○ D Wavelength
- ○ E Speed

4 A mass undergoes SHM. When the mass reaches point x = +A its instantaneous velocity is?



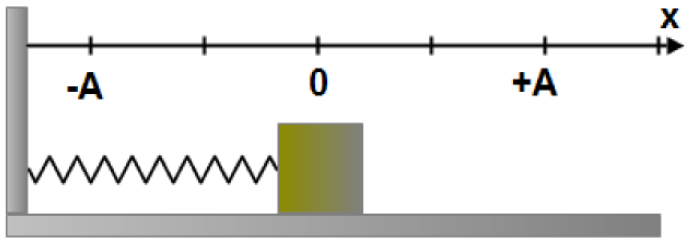
- A Maximum and positive
- B Maximum and negative
- C Zero
- D Less than maximum and positive
- E Less than maximum and negative

5 A mass undergoes SHM. When the mass reaches point x = 0 its instantaneous velocity is?



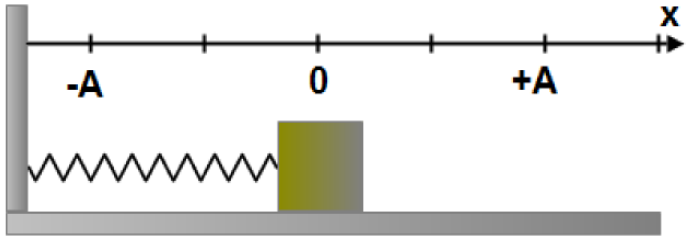
- ○ A Maximum and can be positive or negative
- ○ B Constant and doesn't depend on the location
- ○ C Zero
- ○ D Slightly less than maximum and positive
- ○ E Slightly less than maximum and negative

6 A mass undergoes SHM. When the mass reaches point x = +A its instantaneous acceleration is?



- ○ A Maximum and positive
- ○ B Maximum and negative
- ○ C Zero
- ○ D Slightly less than maximum and positive
- ○ E Slightly less than maximum and negative

7 A mass undergoes SHM. When the mass reaches point x = 0 its instantaneous acceleration is?



A Maximum and positive

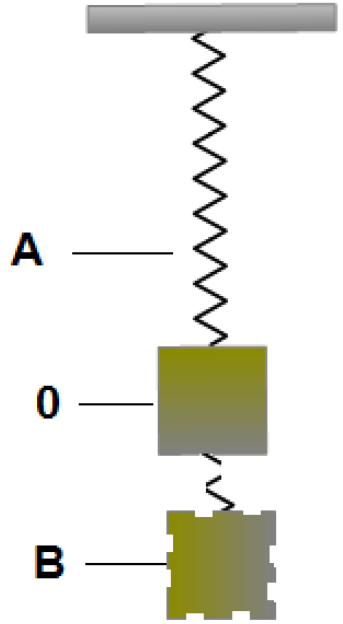
B Maximum and negative

C Zero

D Slightly less than maximum and positive

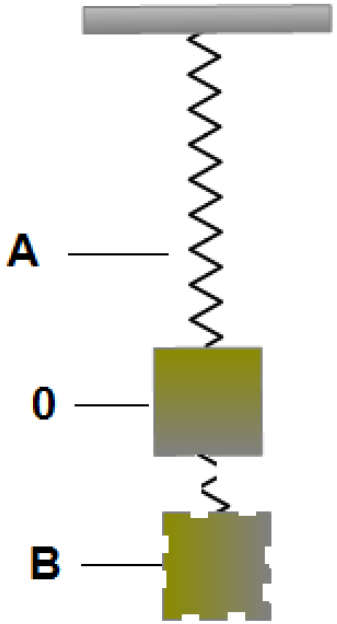
E Slightly less than maximum and negative

8 At which location of the mass the system has the maximum kinetic energy?



- A Only point A
- B Only point B
- C Only point 0
- D Point A and B
- E The kinetic energy remains constant

9 At which location of the mass the system has the maximum elastic potential energy?



- ○ A Only point A
- ○ B Only point B
- ○ C Only point 0
- ○ D Point A and B
- ○ E The potential energy remains constant

10 A mass-spring oscillating system undergoes SHM with maximum amplitude A. If the amplitude is doubled what effect will it produce on the mechanical energy of the system?

- A The energy is increased by factor two
- B The energy is increased by factor four
- C The energy is decreased by factor two
- D The energy is decreased by factor four
- E It doesn't affect the energy

11 A mass-spring oscillating system undergoes SHM with maximum amplitude A. If the spring constant is doubled what effect will it produce on the mechanical energy of the system?

- A The energy is increased by factor two
- B The energy is increased by factor four
- C The energy is decreased by factor two
- D The energy is decreased by factor four
- E It doesn't affect the energy

12 An object with a mass M is suspended from an elastic spring with a spring constant k. The object oscillates with maximum amplitude A. If the amplitude of oscillations is doubled, how it will change the period of oscillations?

- A The period is increased by factor two
- B The period is increased by factor four
- C The period is decreased by factor two
- D The period is decreased by factor four
- E The period remains the same

13 An object with a mass M is suspended from an elastic spring with a spring constant k. The object oscillates with period T. If the mass of oscillations is quadrupled, how it will change the period of oscillations?

A The period is increased by factor two

B The period is increased by factor four

C The period is decreased by factor two

D The period is decreased by factor four

E The period remains the same

14 An object with a mass M is suspended from an elastic spring with a spring constant k. The object oscillates with period T on the surface of Earth. If the oscillating system is moved to the surface of Moon, how it will change the period of oscillations?

- A The period is increased by factor $\sqrt{6}$
- B The period is increased by factor four
- C The period is decreased by factor $\sqrt{6}$
- D The period is decreased by factor four
- E The period remains the same

15 A mass M suspended from a string L undergoes SHM. Which of the following is true about the period of oscillations?

- ○ **A** The period increases with increasing amplitude
- ○ **B** The period increases with increasing mass
- ○ **C** The period increases with decreasing length
- ○ **D** The period increases with increasing length
- ○ **E** The period doesn't depend on acceleration due to gravity

16 A simple pendulum is moved from the Earth to the Moon. How does it change the period of oscillations?

(Acceleration due to gravity on moon= 1.6 m/s^2)

- **A** The period is increased by factor $\sqrt{6}$
- **B** The period is increased by factor four
- **C** The period is decreased by factor $\sqrt{6}$
- **D** The period is decreased by factor four
- **E** The period remains the same

17 The length of a simple pendulum oscillating with a period T is quadrupled, what is the new period of oscillations in terms of T?

- A 2 T
- B 4 T
- C T
- D $\frac{1}{2}$ T
- E $\frac{1}{4}$ T

18 A simple pendulum has a period of 1 s. What is the length of the string?

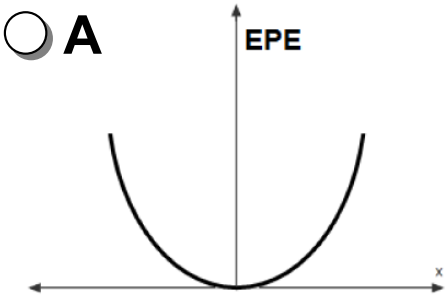
- A 1 m
- B 2 m
- C 4 m
- D $\frac{1}{2}$ m
- E $\frac{1}{4}$ m

19 A simple pendulum with a length of 1 m oscillates on the surface of a hypothetical planet X. What is the surface gravity on the planet if the period of oscillations is 4 s?

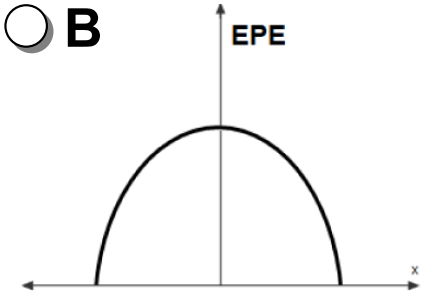
- A $1.6\ m/s^2$
- B $3.7\ m/s^2$
- C $11.2\ m/s^2$
- D $2.5\ m/s^2$
- E $9.8\ m/s^2$

20 A mass-spring oscillating system undergoes SHM. Which of the following graphs represents the elastic potential energy as a function of position?

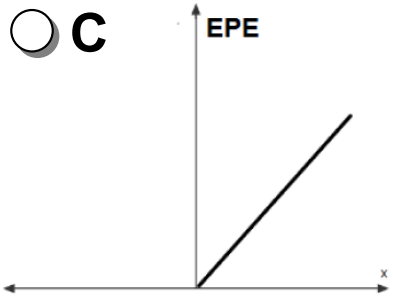
○ **A**



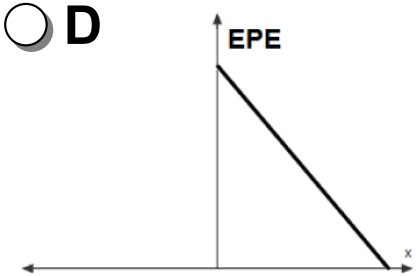
○ **B**



○ **C**



○ **D**



○ **E**