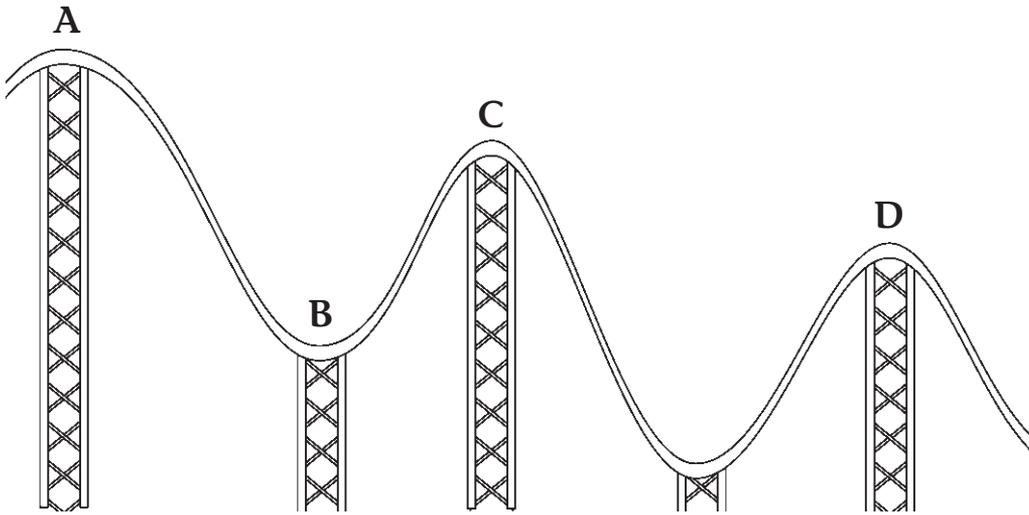


Read each question and choose the best answer.
Then fill in the circle next to the correct answer.

- 1 When you turn on a radio, what type of energy transformation takes place?
 - A sound energy to chemical energy
 - B chemical energy to sound energy
 - C electrical energy to sound energy
 - D sound energy to electrical energy
- 2 A student rolls these four items on the same surface and at the same speed. Which item will have the greatest kinetic energy?
 - F marble
 - G basketball
 - H beach ball
 - I table tennis ball
- 3 When a firecracker explodes, stored chemical energy turns into sound and light energy. What other type of energy is also released during this transformation?
 - A thermal
 - B nuclear
 - C electrical
 - D mechanical
- 4 What type of energy is released when a proton is knocked out of an atom's nucleus?
 - F atomic energy
 - G nuclear energy
 - H chemical energy
 - I potential energy

- 5 Look at the picture below.



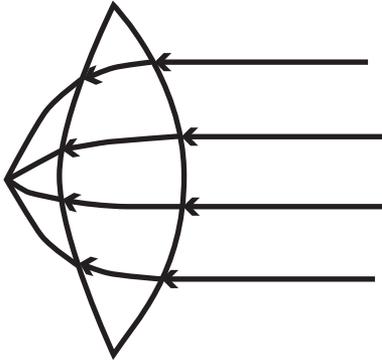
At which point will the roller coaster have the greatest amount of potential energy?

- (A) A
 - (B) B
 - (C) C
 - (D) D
- 6 Choose the words that belong in the sentence.

A sound with greater _____ has a _____ pitch.

- (F) frequency, lower
 - (G) amplitude, lower
 - (H) frequency, higher
 - (I) amplitude, higher
- 7 Which food item has the least amount of energy?
- (A) one bagel with 195 calories
 - (B) an apple with 90 calories
 - (C) one brownie with 160 calories
 - (D) a hot dog with 145 calories

- 8 Look at the illustration below.



What happens to most of the light rays that strike the convex lens shown above?

- Ⓕ They bend and spread out.
 - Ⓖ They bend and focus to a point.
 - Ⓗ They are reflected and spread out.
 - Ⓘ They are reflected and focus on a point.
- 9 Sound waves travel **most** slowly through which of the following?
- Ⓐ an iron pole
 - Ⓑ a block of maplewood
 - Ⓒ a pool of fresh water
 - Ⓓ an area of dry air
- 10 In which substance do the particles move the fastest?
- Ⓕ ice cube
 - Ⓖ apple juice
 - Ⓗ ocean water
 - Ⓘ hot chocolate
- 11 How do currents transfer heat in the ocean?
- Ⓐ by radiation
 - Ⓑ by convection
 - Ⓒ by conduction
 - Ⓓ by evaporation

Write the answers to the questions on the lines.

- 12 Describe what happens to the potential energy and the kinetic energy of a ball as it rolls down a hill from a position of rest at the top of the hill. (2 points)

- 13 Infrared waves have wavelengths that are longer than those of visible light. Compare the frequency and energy of infrared rays to the frequency and energy of visible light. (2 points)

Write your answer to the question on a separate sheet of paper.

- 14 Heat is constantly being transferred between two objects, or parts of two objects.

Part A Describe three methods of heat transfer and give an example of each type of transfer.

Part B Explain the direction that thermal energy naturally flows in. (4 points)