Sample Exam: Waves and Vibration

1. The distance traveled by a wave in one time period is called,
   a. frequency    b. amplitude    c. vibration    d. wavelength

2. What is the time period for the periodic motion of the second hand of a watch?
   a. 3600 seconds  b. 100 seconds  c. 60 seconds  d. 1 second

3. A pendulum swings 10 times in 20 seconds. What is the frequency?
   a. 0.5 Hz      b. 2 Hz      c. 20 Hz      d. 10 Hz

4. How many vibrations per second are represented in a radio wave of 101.7 MHz?
   a. 101,700,000  b. 101.7  c. 1,017,000  d. 0.0001017

5. Two waves having amplitudes of 5 cm and 3 cm are completely out of phase when they overlap at some point in space. What will be the amplitude resulting from their interference?
   a. 5 cm  b. 2 cm  c. 3 cm  d. 8 cm

6. Doppler effect is the apparent change in the frequency of a wave resulting from
   a. interference effects  b. a defective source  c. relative motion between the source and the observer

7. In a standing wave pattern, you notice that the “nodes” are 5 cm apart. What is the wavelength of the component waves?
   a. 5 cm  b. 2.5 cm  c. 10 cm  d. 20 cm

8. On a keyboard, you strike middle C, which has a frequency of 256 Hz. If sound travels with a speed of 340 m/s, what is the wavelength?
   a. 1.33 m  b. 256 m  c. 0.75 m  d. 87040 m

9. Two similar waves will interfere constructively when they are
   a. out of phase  b. in phase  c. equal in amplitude  d. sound waves

10. What kind of waves exhibit interference effects?
    a. sound  b. radio waves  c. water waves  d. all of the above

Answers: 1d, 2c, 3a, 4a, 5b, 6c, 7c, 8a, 9b, 10d