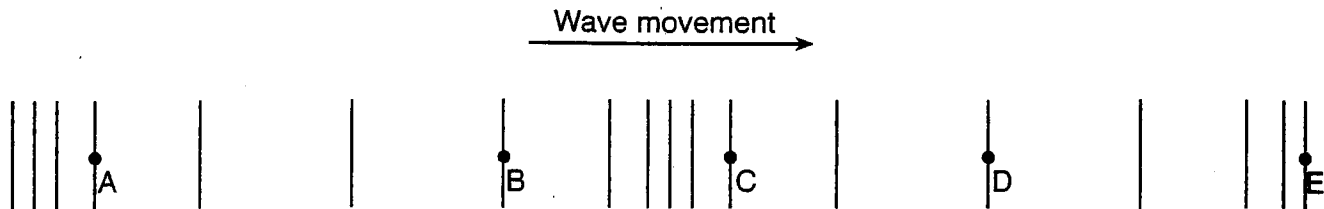


1 to 4

Base your answers to questions 1 through 4 on the information and diagram below.

A longitudinal wave moves to the right through a uniform medium, as shown below. Points A, B, C, D, and E represent the positions of particles of the medium.



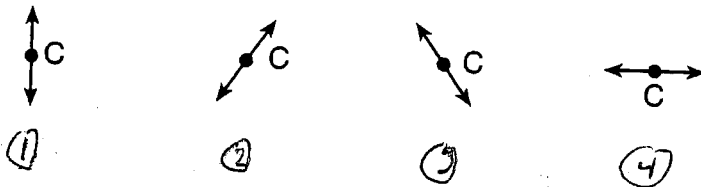
1

What type of wave is shown -

- 1) Transverse 2) Longitudinal 3) Circular 4) Linear

2

24 Which diagram best represents the motion of the particle at position C as the wave moves to the right?



3

25 The wavelength of this wave is equal to the distance between points

- 1) A and B 2) A and C 3) B and C 4) B and E

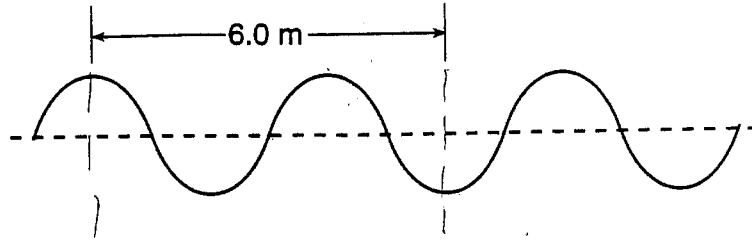
4

26 The energy of this wave is related to its

- 1) amplitude 2) period 3) speed 4) wavelength

5 to 7

The diagram below represents a periodic wave traveling through a uniform medium.



5) What is the wavelength of the wave shown? *

- 1) 12 meters 2) 6 meters 3) 4 meters 4) 3 meters

6) What type of wave is shown - *

- 1) Transverse 2) Longitudinal 3) Circular 4) Linear

7) If the frequency of the wave is 2.0 hertz, the speed of the wave is

- ① 6.0 m/s ③ 8.0 m/s
② 2.0 m/s ④ 4.0 m/s

8). In a vacuum, all electromagnetic waves have the same

- ① speed
- ② phase
- ③ frequency
- ④ wavelength

9 to 10

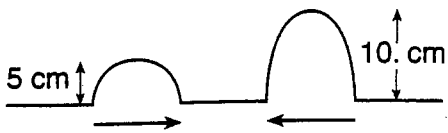
A certain color of light has a wavelength of 5.0×10^{-7} meter in air?

9) What is the frequency of this wavelength light wave? *

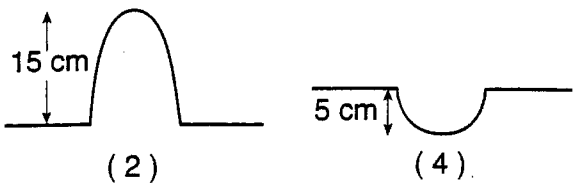
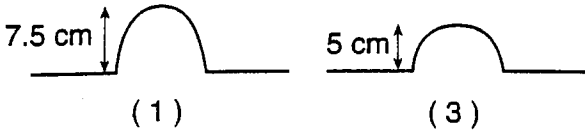
- 1) 6.6×10^8 Hz
- 2) 6.0×10^{14} Hz
- 3) 5.5×10^8 Hz
- 4) 5.0×10^{14} Hz

- 10)
- (1) blue
 - (2) green
 - (3) orange
 - (4) violet

11) The diagram below shows two pulses approaching each other in a uniform medium.

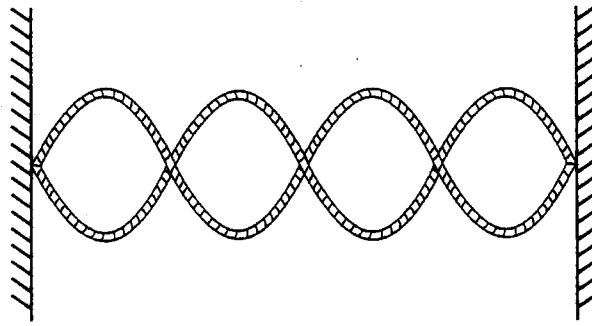


Which diagram best represents the superposition of the two pulses?



13

The diagram below shows a standing wave in a string clamped at each end.



What is the total number of nodes and antinodes in the standing wave?

- ① 3 nodes and 2 antinodes
 - ② 2 nodes and 3 antinodes
 - ③ 5 nodes and 4 antinodes
 - ④ 4 nodes and 5 antinodes
-

14) Playing a certain musical note on a trumpet causes the spring on the bottom of a nearby snare drum to vibrate. This phenomenon is an example of

- ① resonance
 - ② refraction
 - ③ reflection
 - ④ diffraction
-

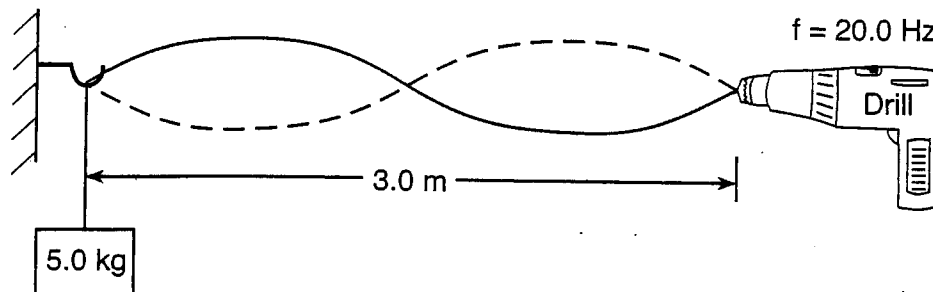
15) As viewed from Earth, the light from a star has lower frequencies than the light emitted by the star because the star is

- ① moving toward Earth
- ② moving away from Earth
- ③ stationary

Long Problem (1)

Base your answers to questions 66 and 67 on the information below.

One end of a rope is attached to a variable speed drill and the other end is attached to a 5.0-kilogram mass. The rope is draped over a hook on a wall opposite the drill. When the drill rotates at a frequency of 20.0 Hz, standing waves of the same frequency are set up in the rope. The diagram below shows such a wave pattern.



- (A) 66 Determine the wavelength of the waves producing the standing wave pattern. [1]
- (B) 67 Calculate the speed of the wave in the rope. [Show all work, including the equation and substitution with units.] [2]

(A) $\lambda =$ _____ meters

(B)

Answer Sheet
Wave Basics

Name _____

1 _____
2 _____
3 _____
4 _____

5 _____
6 _____
7 _____

8 _____
9 _____
10 _____
11 _____

12 X (Free one)

13 _____

14 _____

15 _____

(Long Prob.)

(A) $\lambda =$ _____ meters

(B)