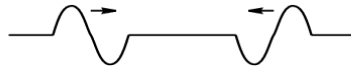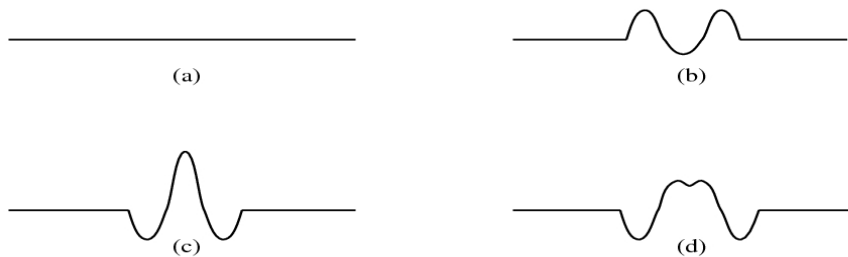Part I

1. Two wave pulses of symmetrical shape approach one another on a string, as shown in the diagram.

Which one of the following diagrams could not be observed at a later time?

(a)   (b)

(c)   (d)

Answer (b). The displacement in the middle of the combined pulse is half rather than double the two individual displacements.

2. A wave of frequency 5.0 Hz travels along a string with a speed of 20 m/s. The phase difference between the oscillations of the string separated by 1.0 m along the wave is

(a) $\pi/4$ (b) $\pi/2$ (c) π (d) 2π

Answer (b). The wavelength is $20/5 = 4$ m. 1 m separation is one quarter of a wavelength which is 90^0 or $\pi/2$ out of phase.

3. Two strings, one thick and the other thin, are connected to form one long string. A wave travels along the string and passes the point where the two strings are connected. Which of the following does not change at that point:

(a) frequency

(b) propagation speed

(c) amplitude

(d) wavelength