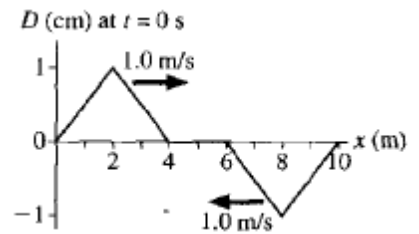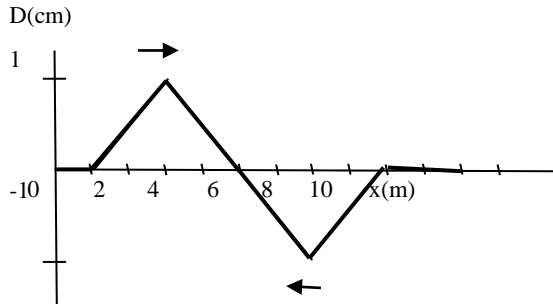Q- Figure bellow is the snapshot graph at t=0 of two waves approaching each other at 1.0 m/s. Draw six snapshot graphs showing the string at 1 s intervals from t=1s to t= 6s.
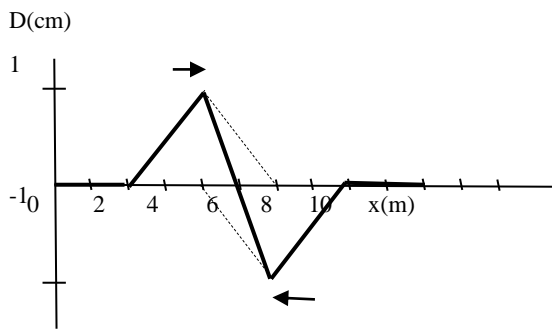

At t = 1 s

At t = 1 s

Both wave pulses are moving with a velocity one m/s towards each other and so that in 1 second each will cover 1 m towards each other and the graph will be as shown.
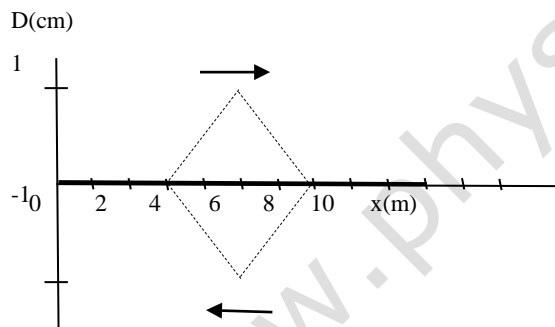
At t = 2 s

At t=2 s

The waves have moved by 2 m the outer parts of the pulses remain same but the inner parts of the waves overlapped and wave displacement D for the inner parts will subtracted (+ and -) and hence the resultant shape is in figure.
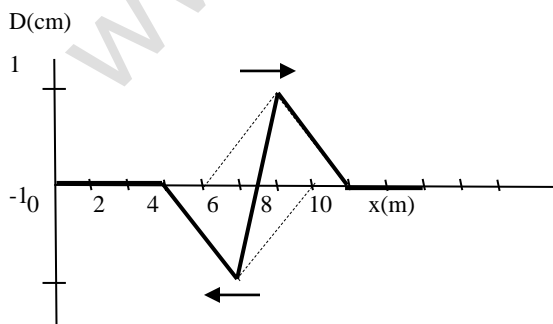
At t = 3 s

At t = 3 sec

The waves have moved by 3 m the total overlapping of waves takes place. Thus wave displacements D for both equal in magnitude but opposite in direction at every point (dotted lines) and hence the resultant D will be zero at all points.
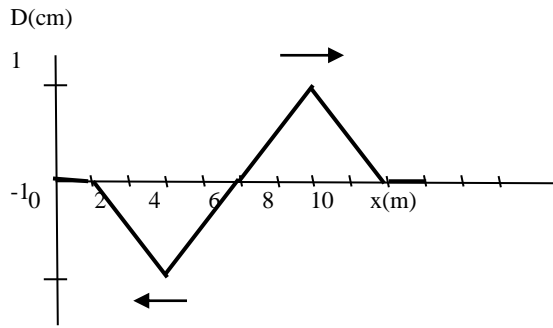
At t = 4 s

At t = 4 s

Both wave pulses further move by 1m away from each other and now their rare halves will overlap and the resulting D will be shown as in figure.
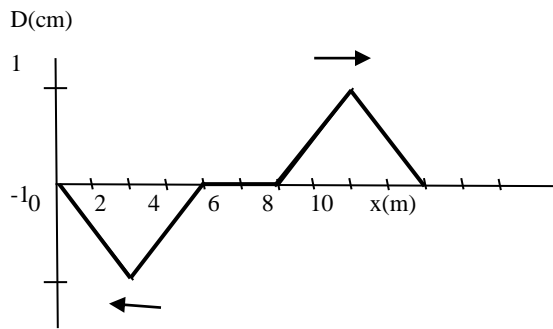
At t = 5 s

D(cm)

1

-1 0   2   4   6   8   10   x(m)

At t=5 s

The waves have moved further by 1m the whole pulses have just crossed each other and hence resultant shape is in figure.

At t = 6 s

D(cm)

1

-1 0   2   4   6   8   10   x(m)

At t = 6 sec

The waves have moved further by 1 m and the wave pulses are completely away from each by a distance of 2m and the wave displacements D can be shown as in figure.