

## Chapter 14 Waves. (Revision Questions page 406). Multiple Choice Answers

Q	Ans	Explanation
1	B	The wave is heading towards the right so in an instantaneously (or very short) period of time the particle will be higher up the wave. We can say the particle is moving in the direction of B.
2	A	As a pulse travels through a medium in a longitudinal fashion, particles of the medium move back and forth in the direction of the pulse (energy transport) in the medium.
3	A	Amplitude is from the equilibrium position (along the 'rest' line) and the crest or trough of the wave. This will be one-half of the total wave height of 5 cm.
4	C	<p>Reflected pulse: if the boundary is between a light incident medium and a heavy transmitted medium, the reflected pulse will change phase and thus go back on the bottom. Transmitted pulse: these do not change phase so the wave pulse will still be on top in the pink medium to the right. So, we can rule out Option (D).</p> <p>Let's consider the other 3 options.</p> <p>Option (A) has a reflected pulse that is phase inverted so the boundary must be between light to heavy. If this is the case the velocity of the wave in the transmitted medium would be slower and thus not move as far in the same time. This is not occurring in Option (A) where it appears to be travelling further in the transmitted medium. It can't be Option (A).</p> <p>Option (B) has a reflected pulse that is not phase inverted so the boundary must be between heavy to light. If this is the case the velocity of the wave in the transmitted medium would be faster and thus move further in the same time. This is not occurring in Option (B) where it appears to be travelling a shorter distance in the transmitted medium. It can't be Option (B).</p> <p>Option (C) has a reflected pulse that is phase inverted so the boundary must be between light to heavy. If this is the case the velocity of the wave in the transmitted medium would be slower and thus not move as far in the same time. This is occurring in Option (C) where it appears to be travelling a shorter distance in the transmitted medium. It must be Option (C).</p> <p>What a great question.</p>
5	D	Node is Latin for 'knot' so represents a position of zero amplitude. This is a position where destructive interference has occurred.

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