71. The diagram below represents a periodic wave.

![Wave Diagram]

Which two points on the wave are out of phase?

1) A and C  
2) B and F  
3) C and E  
4) D and G

72. The diagram below represents a rope along which two pulses of equal amplitude, A, approach point P.

As the two pulses pass through point P, the maximum vertical displacement of the rope at point P will be

1) 0  
2) 2A  
3) A  
4) A/2

73. The diagram below shows two waves traveling in the same medium. Points A, B, C, and D are located along the rest position of the medium. The waves interfere to produce a resultant wave.

![Wave Diagram]

The superposition of the waves produces the greatest positive displacement of the medium from its rest position at point

1) A  
2) B  
3) C  
4) D

74. Maximum constructive interference will occur at points where the phase difference between two waves is

1) 270°  
2) 90°  
3) 0°  
4) 180°

75. The diagram below represents a wave traveling in a uniform medium.

![Wave Diagram]

Which two points on the wave are in phase?

1) A and E  
2) A and C  
3) B and D  
4) B and F

76. The diagram below shows two waves, A and B.

![Wave Diagram]

The phase difference between A and B is

1) 45°  
2) 90°  
3) 0°  
4) 180°

77. The diagram below represents a periodic wave.

![Wave Diagram]

Which two points on the wave are in phase?

1) A and E  
2) D and F  
3) B and D  
4) A and C
78. The diagram below represents two pulses approaching each other.

Which diagram best represents the resultant pulse at the instant the pulses are passing through each other?

1) ![Diagram 1]
2) ![Diagram 2]
3) ![Diagram 3]
4) ![Diagram 4]

79. The diagram below shows two waves traveling toward each other at equal speed in a uniform medium.

When both waves are in the region between points A and B, they will undergo

1) constructive interference  
2) destructive interference  
3) the Doppler effect  
4) diffraction

80. Two wave sources operating in phase in the same medium produce the circular wave patterns shown in the diagram below. The solid lines represent wave crests and the dashed lines represent wave troughs.

Which point is at a position of maximum destructive interference?

1) A  
2) B  
3) C  
4) D

81. The effect produced when two or more sound waves pass through the same point simultaneously is called

1) diffraction  
2) resonance  
3) interference  
4) refraction

82. The diagram below shows a periodic wave.

Which two points on the wave are in phase?

1) A and C  
2) B and D  
3) C and F  
4) E and G
83. Two speakers, $S_1$ and $S_2$, operating in phase in the same medium produce the circular wave patterns shown in the diagram below.

At which two points is constructive interference occurring?

1) $B$ and $D$  
2) $B$ and $C$  
3) $A$ and $D$  
4) $A$ and $B$

84. In the diagram below, two speakers are connected to a sound generator. The speakers produce a sound pattern of constant frequency such that a listener will hear the sound very well at $A$ and $C$, but not as well at point $B$.

Which wave phenomenon is illustrated by this experiment?

1) interference  
2) reflection  
3) polarization  
4) refraction

85. The diagram below represents a periodic wave.

Which two points on the wave are in phase?

1) $B$ and $D$  
2) $A$ and $D$  
3) $A$ and $C$  
4) $B$ and $E$

86. Two pulses, $A$ and $B$, travel toward each other along the same rope, as shown below.

When the centers of the two pulses meet at point $X$, the amplitude at the center of the resultant pulse will be

1) +2 units  
2) +1 unit  
3) −1 unit  
4) 0

87. The diagram below shows a periodic wave.

Which points are in phase with each other?

1) $A$ and $D$  
2) $C$ and $D$  
3) $A$ and $C$  
4) $B$ and $C$

88. Two points on a transverse wave that have the same magnitude of displacement from equilibrium are in phase if the points also have the

1) opposite direction of displacement and the opposite direction of motion  
2) same direction of displacement and the same direction of motion  
3) opposite direction of displacement and the same direction of motion  
4) same direction of displacement and the opposite direction of motion
89. Two pulses traveling in the same uniform medium approach each other, as shown in the diagram below.

Which diagram best represents the superposition of the two pulses?

1)  
2)  
3)  
4)  

90. The diagram below represents two identical pulses approaching each other in a uniform medium.

As the pulses meet and are superposed, the maximum displacement of the medium is

1)  -6 cm  
2)  0 cm  
3)  3 cm  
4)  6 cm  

91. Two waves having the same amplitude and frequency are traveling in the same medium. Maximum destructive interference will occur when the phase difference between the waves is

1)  180°  
2)  0°   
3)  270°  
4)  90°  

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

Which diagram best represents the superposition of the two pulses?

1)  
2)  
3)  
4)  

93. Two waves having the same amplitude and the same frequency pass simultaneously through a uniform medium. Maximum destructive interference occurs when the phase difference between the two waves is

1)  90°  
2)  180°  
3)  360°  
4)  0°  

94. The diagram below shows two pulses of equal amplitude, \( A \), approaching point \( P \) along a uniform string.

When the two pulses meet at \( P \), the vertical displacement of the string at \( P \) will be

1)  \( A \)  
2)  \( 2A \)  
3)  0  
4)  \( \frac{3}{2} \)
95. The diagram below shows two pulses, each of length $l$, traveling toward each other at equal speed in a rope.

Which diagram best represents the shape of the rope when both pulses are in region $AB$?

1) ![Diagram 1]

2) ![Diagram 2]

3) ![Diagram 3]

4) ![Diagram 4]