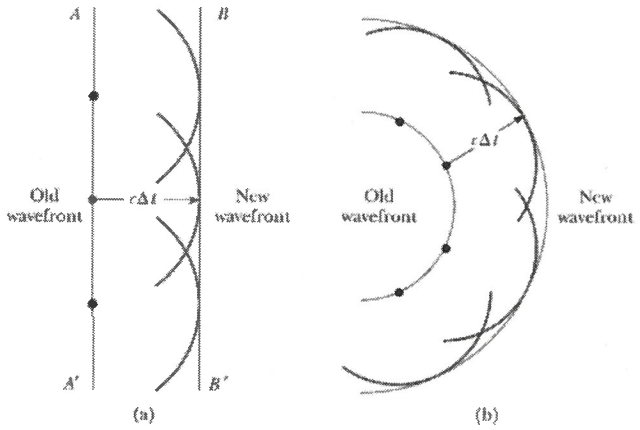
KEY

First Name:_____ Last Name:_____

L07 – FQ – Double-Slit Diffraction

Use the following information to answer Q1:

Every point on a wave is a source of wavelets.



Q1: The concept diagrammed above is known as:

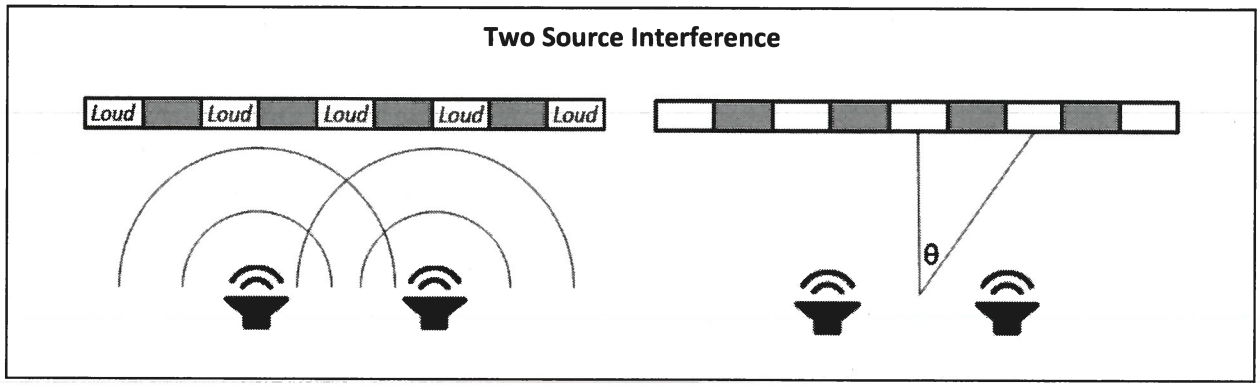
a. The Hyugen-Fresnel principle
b. The Hadoken-Fresnel principle
c. The Shoryuken-Fresnel principle
d. The Wave Dispersion principle

Q2: Destructive interference occurs when two waves meet

a. Crest to crest
b. Crest to trough
c. Trough to trough
d. At an anti-node

KEY

Use the following information to answer Q3:



Q3: Two *Smart Board* speakers, located 2.2 meters apart, are playing a 350 Hz pure tone. If the speed of sound is 343m/s, what is the angle of diffraction to the second antinode? *(2 marks)*

*(Record your **three digit** answer in the Numerical Response boxes below)*

$\lambda = \frac{d\sin\theta}{n}$ $\quad v = f\lambda$

$d = 2.2\,m$
$\theta = ?$
$n = 2$
$f = 350\,Hz$
$v = 343\,m/s$

$v = f\lambda$
$343 = (350)\lambda$
$\lambda = 0.98m$

$\Rightarrow$

$\lambda = \frac{d\sin\theta}{n}$
$0.98 = \frac{(2.2)\sin\theta}{2}$
$\sin\theta = 0.8\overline{90}$
$\theta = \sin^{-1}(0.8\overline{90})$
$\theta = 62.9877^\circ$
$\theta \approx 63.0^\circ$

MARKING:

Beginning	0 – 1.5
Progressing	2 – 2.5
Competent	3 – 3.5
Exemplary	4