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NPTEL

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Courses » **Audio System Engineering**

Announcements   **Course**   Ask a Question   Progress   Mentor

Unit 3 - Week-2:

Course outline

How to access the Portal ?

Week 1

Week-2:

● Lecture 06: Acoustic Wave Equation

● Lecture 07: Acoustic Wave Equation (Contd.)

● Lecture 08: Acoustic Wave Equation (Contd.)

● Lecture 09: Spherical Waves Propagation

● Lecture 10: Perception at Sound

● Lecture 11: Sound Transmission

● Lecture 12: Sound Transmission (Contd.)

○ Assignment 2 Solution

○ Quiz : Assignment - 2

Week 3

Week 4:

Assignment - 2

The due date for submitting this assignment has passed.   **Due on 2016-08-10, 00:50 IST.**

Submitted assignment

1)   *1 point*

A **100 Watt** amplifier has gain of **64 dB**. What input level in **dBm** will drive the amplifier in full power?

- ○ (a) -12 dBm
- ○ (b) -14 dBm
- ○ (c) -16 dBm
- ○ (d) -18 dBm

No, the answer is incorrect.
Score: 0

Accepted Answers:
(b) -14 dBm

2)   *1 point*

An acoustic signal is reflected off of a surface that is **80%** absorptive. The reflect sound will be drop by how much **dB**.

- ○ (a) Range of 4.6 dB to 5.5 dB
- ○ (b) Range of 5.6 dB to 6.5 dB
- ○ (c) Range of 6.6 dB to 7.5 dB
- ○ (d) Range of 7.6 dB to 8.5 dB

No, the answer is incorrect.
Score: 0

Accepted Answers:
(c) Range of 6.6 dB to 7.5 dB

3)   *1 point*

An earth quake wave was traveling through the earth and the intensity detected **100 k** from source was **5.0×10^6 W/m^2**. What is the intensity of the earth quake wave at distance **200 km** from the source?

- ○ (a) 0.25×106 W/m^2
- ○ (b) 2.5×106 W/m^2
- ○ (c) 1.67×106 W/m^2
- ○ (d) 1.25×106 W/m^2

No, the answer is incorrect.
Score: 0

Accepted Answers:
(d) 1.25×106 W/m^2

4)   *1 point*

A **1 kHz** small source of spherical waves in air has produce sound pressure amplitude **100 dB** (P_{ref} = **20μPa**), at a radial distance **1 m** from the source. Find the absolu magnitude of the specific acoustic impedance. Where density of air ρ_0=**1.21kg/m³** a speed of sound in air **c=343m/s**.

    ○ (a) Range of 400 Rayl to 425 Rayl
    ○ (b) Range of 426 Rayl to 450 Rayl
    ○ (c) Range of 451 Rayl to 475 Rayl
    ○ (d) Range of 476 Rayl to 500 Rayl

No, the answer is incorrect.
Score: 0

Accepted Answers:
(a) Range of 400 Rayl to 425 Rayl

5)   *1 point*

Plane wave in water of **100 Pa** effective (rms) pressure are incident normally on a sa bottom. The sand bottom is characterized by ρ_2=**2000kg/m³** and c_2=**1600m/s**. Whe speed of sound in water c_1= **1450 m/s** and density ρ_1=**1000kg/ m³**. Calculate t effective pressure of the wave reflected back into water and the effective pressure the wave transmitted into sand.

    ○ (a) Range of 35 Pa to 40 Pa
    ○ (b) Range of 41 Pa to 45 Pa
    ○ (c) Range of 46 Pa to 50 Pa
    ○ (d) Range of 51 Pa to 55 Pa

No, the answer is incorrect.
Score: 0

Accepted Answers:
(a) Range of 35 Pa to 40 Pa

6)   *1 point*

In an outdoor acoustic the ambient noise level is **70dB** and a sound system generate of **110dB** at **4ft**. How far the sound will travel before it submerged with noise.

    ○ (a) 200 ft
    ○ (b) 300 ft
    ○ (c) 400 ft
    ○ (d) 600 ft

No, the answer is incorrect.
Score: 0

Accepted Answers:
(c) 400 ft

7)   *1 point*

An acoustic pressure wave with an amplitude **P** is incident on a surface of a liquid fro air. If the velocity of sound c_1 in air is **350 m/s** and c_2 liquid is **1000 m/s** find the value the critical angle.

    ○ (a) Range of 20° to 20.99°
    ○ (b) Range of 21° to 21.99°
    ○ (c) Range of 22° to 22.99°
    ○ (d) Range of 23° to 23.99°

No, the answer is incorrect.
Score: 0

Accepted Answers:
(a) Range of 20° to 20.99°

8)   *1 point*

An earth quake wave passes across a boundary in rock where its velocity increases fr
6km/s to **8km/s** if it strikes this boundary at **30^0** calculate the angle of refraction.

- (a) Range of 30° to 34.99°
- (b) Range of 35° to 39.99°
- (c) Range of 40° to 44.99°
- (d) Range of 45° to 49.99°

No, the answer is incorrect.
Score: 0

Accepted Answers:
(c) Range of 40° to 44.99°

9)   *1 point*

If the intensity of a sound in air at **1 kHz** is **12W/m²**. Find out the value of root mean squ
pressure? Where density of air is ρ_0 =**1.21 kg/m³** and sound velocity is **c=350 m/s**

- (a) Range of 70 Pa to 71.99 Pa
- (b) Range of 72 Pa to 72.99 Pa
- (c) Range of 73 Pa to 73.99 Pa
- (d) Range of 74 Pa to 74.99 Pa

No, the answer is incorrect.
Score: 0

Accepted Answers:
(a) Range of 70 Pa to 71.99 Pa

10) Which of the following pair of tones is perceived as louder tone?   *1 point*
(a) **25dB** level at **200Hz** and **25db** at **600 Hz**
(b) **5dB** level at **7 KHz** and **5dB** level at **2 KHz**.

- (a) 25dB level at 200 Hz and 5dB level at 7 KHz
- (b) 25dB level at 200 Hz and 5dB level at 2 KHz
- (c) 25dB level at 600 Hz and 5dB level at 7 KHz
- (d) 25dB level at 600 Hz and 5dB level at 2 KHz

No, the answer is incorrect.
Score: 0

Accepted Answers:
(d) 25dB level at 600 Hz and 5dB level at 2 KHz

Previous Page   End