### Assignment 08

The due date for submitting this assignment has passed. **Due on 2019-09-25, 23:59 IST.**

As per our records you have not submitted this assignment.

1) Value of sound energy absorption coefficient ($\alpha$) for a material ______.

   - Increases with increase in frequency of sound wave impinging on the material.
   - Reduces with increase in frequency of sound wave impinging on the material
   - Is invariant to frequency of sound wave.
   - Can increase or decrease depending on the material property.

   No, the answer is incorrect.

   Score: 0
   Accepted Answers:
   *Can increase or decrease depending on the material property.*

2) A spherical source which is propagating sound in all directions has a directivity ($Q$) of _____ and a directivity index (DI) of ____.

   - 0, infinite
   - 1, 0
   - Infinite, infinite
   - 0, 0

   No, the answer is incorrect.

   Score: 0
   Accepted Answers:
   *1, 0*

3) Consider a balloon filled with air kept inside a closed rectangular room. If this balloon is popped using a pin, it would propagate pressure waves (sound waves) in all directions and this can be

   - Lecture 43: Noise Source: Sound Pressure Level due to a noise source located indoors – Part I (unit?unit=69&lesson=70)
approximated as a spherical sound source. Now, rcritical is defined as the distance beyond which the sound power level (Lp) does not depend on distance r from the source. Calculate the value of rcritical?

Room has dimensions of width 10m, length 20m and height 4m. The average sound absorption coefficient value for the room is 0.282 and energy absorption coefficient for air is 0.07 m-1.

- 3.589 m
- 4.135 m
- 4.676 m
- 2.121 m

No, the answer is incorrect.
Score: 0
Accepted Answers:
4.676 m

4) Consider that you are assigned to modify a room with dimensions 20m X 10m X 4m which has an average absorption coefficient of 6.2 % at 500 Hz. If you attach false ceiling of wood with sound absorption coefficient α500 =0.49, paste sound absorbing foam made of polyester urethane on the walls which has a α500 of 0.92 and lay wooden panels on floor, α500 = 0.04, the average absorption coefficient of this room at 500 Hz becomes ____.

- 56 %
- 72 %
- 36 %
- 51 %

No, the answer is incorrect.
Score: 0
Accepted Answers:
51 %

5) Which of the following statement(s) is/are true. A. fL=1.707fc where fL is the lower frequency limit and fc is the central frequency of standard octave B. Lower frequency limit, fL of 3rd band is 1.773 Hz C. central frequency limit, fc of 23rd band is 199.5 Hz

A and B
A and C
B and C
All the statements are true.

No, the answer is incorrect.
Score: 0
Accepted Answers:
B and C

6) A forward curved blade (FCB) centrifugal fan operates at a speed of 15 RPS against a pressure of 190 Pa to deliver 1.80m3/s of air. The fan has 8 blades. The blade pass frequency is ____.

- 60 Hz
- 120 Hz
- 240 Hz
- 480 Hz

No, the answer is incorrect.
Score: 0
Accepted Answers:
120 Hz

7) Transmission loss for a fan is given as 40 dB (at 1000 Hz ). The sound power level at inlet(Lwin) of a pump rotating at 20 RPS is 84.5 dB. The fan has 16 blades and the fan is located outdoors
(30 degreeC) and the fan has both inlet and outlet ducts, so that noise is radiated only through the housing of the fan. The sound power level for sound transmitted through the fan housing \( L_{whousing} \) is _____.

- 81.5 dB
- 78.5 dB
- 66.5 dB
- 44.5 dB

No, the answer is incorrect.
Score: 0
Accepted Answers: 44.5 dB

8) Transmission loss for a fan is given as 40 dB (at 1000 Hz). The sound power level at inlet \( L_{win} \) of a pump rotating at 20 RPS is 84.5 dB. The fan has 16 blades and is located outdoors (30 degreeC) and the fan has both inlet and outlet ducts, so that noise is radiated only through the housing of the fan. The sound power level for sound transmitted through the fan housing \( L_{wout} \) is _____.

- 81.5 dB
- 78.5 dB
- 66.5 dB
- 44.5 dB

No, the answer is incorrect.
Score: 0
Accepted Answers: 81.5 dB