Unit 4 - Week 3

Course outline

How to access the Portal ?

Week 1

Week-2:

Week 3

- Lecture 13: The Acoustic Environment
- Lecture 14: Room Acoustics - I
- Lecture 15: Room Acoustics - II
- Lecture 16 : Large Room Acoustics and Small Room Acoustics
- Lecture 17 : Large Room Acoustics and Small Room Acoustics (Contd.)
- Lecture 18: Auditorium Acoustics
- Assignment 3 Solution
- Quiz : Revised Assignment 3

Week 4:

Revised Assignment 3

The due date for submitting this assignment has passed. **Due on 2016-08-13, 23:30 IST.**

Submitted assignment

A room has dimensions ***8 m x 16 m x 10 m*** and average absorptivity of the surfaces is ***a = 0.5*** If a ***5x10^{-8}*** W average output acoustic source is placed in the front wall. [Where ρ_0 = 1.21 kg/m^3 and c=343 m/s] (Data for question no. 1 to 4)

1) Calculate the steady state reverberant sound pressure level (SPL) in dB. *1 point*

- (a) Range of 18 dB to 20 dB
- (b) Range of 21 dB to 25 dB
- (c) Range of 26 dB to 30 dB
- (d) Range of 31 dB to 35 dB

No, the answer is incorrect.
Score: 0

Accepted Answers:
(c) Range of 26 dB to 30 dB

2) The total power in dB at a distance of ***5 m*** from the source *1 point*

- (a) Range of 22 dB to 24 dB
- (b) Range of 24.01 dB to 26 dB
- (c) Range of 26.01 dB to 28 dB
- (d) Range of 28.01 dB to 30 dB

No, the answer is incorrect.
Score: 0

Accepted Answers:
(d) Range of 28.01 dB to 30 dB

3) The critical distance of the room *1 point*

- (a) Range of 1.1m to 2.0m
- (b) Range of 2.1m to 3.0m
- (c) Range of 3.1m to 4.0m
- (d) Range of 4.1m to 5.0m

No, the answer is incorrect.
Score: 0

Accepted Answers:
(c) Range of 3.1m to 4.0m

4) *1 point*

If the room absorptivity Change to ***800 Sabin's***. What is the change in reverberant sound power in dB?

- (a) Range of 1.0 dB to 2.0 dB
- (b) Range of 2.1 dB to 4.0 dB
- (c) Range of 4.1 dB to 6.0 dB
- (d) Range of 6.1 dB to 8.0 dB

No, the answer is incorrect.
Score: 0

Accepted Answers:
(b) Range of 2.1 dB to 4.0 dB

A room has dimensions 12 m x 16 m x 10 m and average absorptivity of the surfaces is a = 0.4
(Data for question no. 5 to 7)

5) Is the volume of the room is sufficient for large room acoustic for speech system? *1 point*

- (a) Yes
- (b) No

No, the answer is incorrect.
Score: 0

Accepted Answers:
(a) Yes

6) Find out the total number of reflection during RT_{60} *1 point*

- (a) 32 Nos
- (b) 34 Nos
- (c) 36 Nos
- (d) 38 Nos

No, the answer is incorrect.
Score: 0

Accepted Answers:
(b) 34 Nos

7) If two loudspeakers are placed in the front wall find out the ***%ALCONS*** at ***3 m***. *1 point*

- (a) 1.15%
- (b) 1.75%
- (c) 2.25%
- (d) 2.75%

No, the answer is incorrect.
Score: 0

Accepted Answers:
(a) 1.15%

8) *1 point*

If an acoustic room has the dimension 12 m x 14 m x 6 m find out lowest 2 axial standing wave frequencies? [where c = 343 m/s]

(a) 10 Hz, 12 Hz
(b) 12 Hz, 14 Hz
(c) 13 Hz, 16 Hz
(d) 14 Hz, 18 Hz

No, the answer is incorrect.
Score: 0

Accepted Answers:
(b) 12 Hz, 14 Hz

9) ***2 points***

An auditorium has the following specification. Design the auditorium acoustic treatment by selecting proper material from the table-1 in proper position. Calculate the reverberation time of the auditorium when 70% seat is full.

Total number of Seat =160
Approximate acoustic volume=723.9 m^3

The area of different part is as given below

S/I	Location	Quantity	Write the material name	Absorption [in Sabin's]
1	People on Upholstered seat			
2	Vacant Seat			
3	Wall in diffusive module and space between modules and ceiling	17.48 m^2		
4	Area of floor without seat	104.18 m^2		
5	Rear interior wall	45.33 m^2		
6	Rear ceiling	31 m^2		
7	Absorptive ceiling on the side wall	37.50 m^2		
8	Ceiling reflectors	144.96 m^2		
9	Stage front wall	19.15 m^2		
10	Diffusive side wall	52.08 m^2		
11	Stage floor	38.10 m^2		
12	Stage side wall	36.40 m^2		

Table-1
List of material and absorption coefficient

S/I	Material	Absorption *coefficient*
1	People on Upholstered seat	0.4
2	Vacant Seat	0.3
3	Wood fiber board	0.75
4	Acoustic blanket	0.80
5	Cork with fabric cover	0.4
6	Carpet	0.4
7	Fiber cement board	0.05
8	Hard wood	0.10
9	Painted concrete	0.06

(a) Range of 0 sec to 1 sec
(b) Range of 1.1 sec to 2 sec
(c) Range of 2.1 sec to 2.5 sec
(d) Range of 2.6 sec to 3 sec

No, the answer is incorrect.
Score: 0

Accepted Answers:

(a) Range of 0 sec to 1 sec

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