CBCS SCHEME

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15ARC73

Seventh Semester B.Arch. Degree Examination, Aug./Sept.2020
Building Services – IV

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Discuss in detail the defects in room Acoustics. **(10 Marks)**

b. Define Reverberation Time. Calculate the reverberation time of a room of size 10m × 15m and height of 4.5m. The room have two wooden doors of size 1m × 2.1m and four glazed windows of size 1.5m × 1.2m. All walls, floor and ceiling are plaster finished.
The absorption coefficients of
Plaster surface – 0.02
Glazed window – 0.18
Wooden door – 0.1. **(10 Marks)**

OR

2 a. Define wavelength, velocity and frequency of sound. Explain the relationship between these three using the formula. **(08 Marks)**

b. Find out the frequency of sound wave given in Fig.Q2(b) below. Consider the speed of sound in air as 340 m/s.

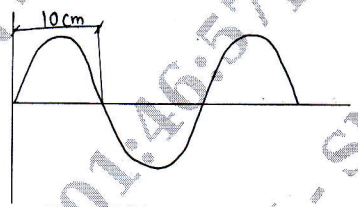

Fig.Q2(b) **(04 Marks)**

c. What is meant by sound reflection? Explain sound reflection from plane, concave and convex surfaces. **(08 Marks)**

Module-2

3 a. What is Speech Intelligibility? What are the factors that effect Speech Intelligibility? **(10 Marks)**

b. What type of materials and methods should be adopted for the absorption low frequency range sounds? Illustrate with appropriate sketches. **(10 Marks)**

OR

4 a. Explain the following term with proper sketches :
(i) Baffles and Banners
(ii) Area effect
(iii) Anechoic Wedges
(iv) Cavity Absorbers. **(12 Marks)**

b. Explain the following terms:
(i) Noise Reduction Coefficient (NRC)
(ii) Articulation Index **(08 Marks)**

Module-3

5 a. As per IS code 2526-1963 give two specification of design of the following elements of Auditorium :
(i) Stage
(ii) Side Walls
(iii) Balcony
(iv) Floor
(v) Size and shape of Auditorium (10 Marks)

b. How did Greeks and Roman designed their open air theatres to achieve acoustical balance? (10 Marks)

OR

6 a. Give acoustical design features of an open planned office to achieve good privacy. (07 Marks)

b. Discuss in detail the ways to achieve maximum speech intelligibility in a Lecture Hall. (07 Marks)

c. Differentiate between Microphone and Loud speaker sensitivity. (06 Marks)

Module-4

7 a. State the significance of surface mass and frequency of sound on the transmission loss. (08 Marks)

b. What are barriers? What are the factors which influence the noise control level by using barriers? (06 Marks)

c. What is the significance of STC (Sound Transmission Class) value? (06 Marks)

OR

8 a. Outline the types of passive vibration isolation techniques. (10 Marks)

b. Draw a section explaining the construction of floating floors. Also enumerate its advantages. (10 Marks)

Module-5

9 What are various types of Urban Noise? Describe each in detail. (20 Marks)

OR

10 a. Enlist site planning considerations to mitigate noise in a Hospital. (10 Marks)

b. What are various methods of controlling traffic noise along its path of propagation? (10 Marks)

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