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.

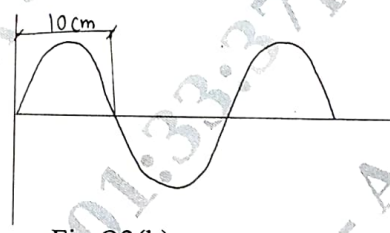

Fig.Q2(b) **(04 Marks)**

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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