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Seventh Semester B. Arch. Degree Examination, June/July 2023 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. Explain Auditory Range and Sensitivity Range of Human Hearing. (08 Marks)
b. Analyse the behavior of sound in following spaces, Suggest corrective measures if there are defects.
i) Long rectangular Hall
ii) Lecture Hall with a concave wall
iii) Classroom with a dome ceiling (12 Marks)

OR

- 2 a. How does Sabine's law assist in assessing the acoustic environment of an enclosed space? (12 Marks)
b. Analyse the human perception of loudness of sound with respect to intensity of sound. (08 Marks)

Module-2

- 3 a. A community Hall would be used for lecture sessions and music performance. Suggest suitable acoustic strategy. Give reason and explain. (10 Marks)
b. Explain the functioning of sound level meter. Elaborate the significance of weighing network in a sound level meter. (10 Marks)

OR

- 4 a. What is NRC? How does NRC assist in identifying the appropriate acoustic material? (08 Marks)
b. Recommend suitable acoustic materials for the following conditions. Justify and explain.
i) Absorption at low frequencies sound
ii) Equal/Even distribution of sound
iii) Absorption of sound in a specific frequency range
iv) Absorptive material for a curvilinear wall (12 Marks)

Module-3

- 5 a. What are the considerations to achieve favorable sightlines in an auditorium? (10 Marks)
b. Enumerate considerations and suggest acoustic strategies for
i) Indoor swimming pool
ii) Home theatre (10 Marks)

OR

- 6 a. What are the considerations for halls of speech? (06 Marks)
b. Enumerate the important design parameters to achieve favorable acoustic environment for an open air theatre. (06 Marks)
c. Explain the concept of speech privacy and its significance in an open office plan. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-4

- 7 a. Analyse transmission of noise through a three storied framed structure. (10 Marks)
b. What is STC? Suggest one construction detail for floors and walls to avoid transmission of sound through them. (10 Marks)

OR

- 8 a. A school is located on a highway. What are the various sources of noise in the school? Analyse the nature of these noises. (08 Marks)
b. What is Mass Law? Recommend suitable details (atleast 3) to reduce noise from the ventilation system. (12 Marks)

Module-5

- 9 a. Suggest methods to reduce noise in an industrial building due to following :
i) friction ii) Air turbulence (10 Marks)
b. What are the strategies which may reduce noise at town planning level and site planning level? (10 Marks)

OR

- 10 a. A railway line and a highway pass through a residential community. Suggest suitable strategies to avoid noise from the railway line and the highway. (12 Marks)
b. Elaborate the role played by architects/urban planner in shaping the urban soundscape. (08 Marks)
