CBCS SCHEME

USN | | | | | | | | | | |

18ARC73

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)**

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)**

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