



Sixth Semester B.Arch. Degree Examination, June/July 2025
Building Services - IV (Accoustics and Noise Control)

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain the behaviour of sound in an enclosed space with the relevant sketches. How does the shape and volume of the room affect acoustical performance? (10 Marks)
b. Define reverberation, and Reverberation Time (RT). How is Sabine's equation relevant in this connection? (10 Marks)

OR

- 2 a. Discuss the inverse square law of sound with diagram and labels. Elaborate its applications and limitations. (10 Marks)
b. Answer the following definitions with relevant sketches.
i) Decibel scale ii) Sound masking iii) Flutter Echo vi) Peak – to peak amplitude. (10 Marks)

Module-2

- 3 a. Elaborate Speech Intelligibility (SI), and discuss how it is different from Articulation Index (AI). List the types of Space Where (SI) is necessary. (10 Marks)
b. Differentiate between sound absorption and sound insulation. List materials and methods for both of the above. (10 Marks)

OR

- 4 a. Write in detail the working of A Sound Level Meter (SLM) with sketch and label its components. Discuss its measurement units, range and specific location of usage. (10 Marks)
b. Explain the role of the following with sketches.
i) Functional or space absorbers
ii) Cavity resonators
iii) Isolation Blankets
iv) Noise Reduction Coefficient (NRC). (10 Marks)

Module-3

- 5 a. An educational institution requires design recommendation for acoustics of its proposed 400 capacity auditorium with upper Gallery. Discuss in detail schematic plan, section and thumb rules. (14 Marks)
b. Discuss, briefly measures to control excessive (RT) in a lecture hall. (06 Marks)

OR

- 6 a. Distinguish between ancient Greek and roman theatres with the help of schematic plan, section and views. Discuss how the study and learnings contribute to modern acoustic design. (14 Marks)
b. Sketch any two design details for sound proofing a music recording studios. (06 Marks)

Module-4

- 7 a. Explain how you control noise and Vibrations Generated from mechanical equipment like AC chiller plant, Ahu's Roof Top Units (RTU) Elevators, Plumbing systems, Server generators Etc., Discuss in detail with relevant sketches. (14 Marks)
- b. Differentiate between Air Borne and structure borne noise with sketches. (06 Marks)

OR

- 8 a. Discuss environmental noise control and its importance for peaceful living. Briefly explain and categorize any six sources of infiltration into indoor/outdoor noise with sketches. (14 Marks)
- b. List any four measures to be taken to eliminate "Industrial Noise" in urban or suburban areas with sketches. (06 Marks)

Module-5

- 9 a. Elaborate on any six sites planning and building level strategies for noise control in an education campus along with sketches. (12 Marks)
- b. Discuss any four measures to control road traffic noise in urban areas, with sketches. (08 Marks)

OR

- 10 a. A multi story large hospital building needs to be located on a site abutting a major road. Suggest site planning and building level noise control strategies, with the help of schematic plan and section. (12 Marks)
- b. Explain town/city planning strategies to mitigate noise problems from, Rail, Road, Air industries, Commercial and Rapid urbanization. (08 Marks)

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