

AMID21 ENVIRONMENTAL CONTROL-I

UNIT-1 NEED TO STUDY ACOUSTICS, METHODS USED FOR GOOD ACOUSTICS.

- 1.1 Basic theory: Generation, propagation, transmission, reception of sound:
- 1.2 Frequency, wave length and velocity of sound, sound intensity, inverse square law, Decibel scale.

UNIT-2 HUMAN EAR, LOUDNESS PERCEPTION, SUBJECTIVE EFFECTS, CHARACTERISTICS OF SOUND IN SPEECH AND MUSIC

- 2.1 Speech privacy and annoyance, background noise.
- 2.2 Communication in open plans, electronic sound systems, loud speakers layout.

UNIT-3 ROOM ACOUSTICS

- 3.1 Behavior of sound in enclosed spaces.
- 3.2 Ray-diagrams, sound paths, effect of geometry and shapes, sound absorption, sound absorption coefficients, Sabine's formula, reverberation and resonant panels.

UNIT-4 ACOUSTIC DESIGN PROCESS AND DIFFERENT TYPES OF BUILDINGS

- 4.1 Auditoriums, concert halls, cinema halls, seminar rooms, lecture halls, classroom and open offices.

UNIT-5 NOISE REDUCTION, SOUND ISOLATION, TRANSMISSION LOSS

- 5.1 TL for walls, sound leaks in doors, noise reduction between rooms, construction details for noise reduction. Noise reduction and built form.
- 5.2 Noise reduction from mechanical equipment.
- 5.3 Rubber mounts, vibration isolation guidelines, characteristics of duct system, noise in AC ducts, vibration isolation of pumps and generators.

UNIT-6 INTRODUCTION

- 6.1 Lighting and vision, basic units, photometry and measurement.
- 6.2 Effects of good lighting, considerations for good lighting, brightness, glare, contrast and diffusion.
- 6.3 Economic issues of lighting.

UNIT-7 QUALITY AND QUANTITY OF DIFFERENT SOURCES OF LIGHT

- 7.1 Daylight, incandescent, fluorescent, halogen, electric gas discharge high discharge, neon, cold cathode, mercury, sodium vapor etc. lighting levels, visual field.
- 7.2 Survey of lamps available in the market with cost and technical specifications.

UNIT-8 DAY LIGHT

- 8.1 Advantages, admitting daylight, controlling daylight – multiple glazing, orientation, window treatments, potentials of day lighting as an energy resource.

8.2 Artificial lighting - color characteristics of artificial lighting, integration of day lighting with artificial lighting, lighting controls, intelligent building systems for lighting, switches, dimmers.

UNIT-9 PLANNING LIGHTING

9.1 General aims, lighting needs, calculation of lighting levels, intensity levels, energy and installation costs and other factors, selection of fixtures, location and placing of fixtures.

UNIT-10 LAMPS AND LIGHTING FIXTURES

10.1 Floor, table and desk, wall mounted, ceiling units, built in lighting,

10.2 Miscellaneous types, decorative lighting, spot lighting, task lighting, underwater lighting etc.

Reference Books:

1. Poella . L. Leslie, Environmental Acoustics.
2. Moore J.E. , Design of good acoustics, The architectural press, London, 1961.
3. Burris, Harold, Acoustics for Architect.
4. Lord, Peter and Tempelton, Duncan, The Architecture of sound,. ; Designing places of Assembly , Architectural press ltd, London, 1986

