AMSD03 FUNDAMENTALS OF SOUND

UNIT-1 AUDIO PRINCIPLES

1.1 The physics of sound
1.2 Wavelength
1.3 Periodic and aperiodic signals
1.4 Sound and the ear
1.5 The cochlea
1.6 Mental processes
1.7 Level and loudness
1.8 Frequency discrimination
1.9 Frequency response and linearity
1.10 The sine wave
1.11 Root mean square measurements
1.12 The deciBel
1.13 Audio level metering

UNIT-2 MEASUREMENT

2.1 Concepts Underlying the Decibel and Its Use in Sound Systems
2.2 Measuring Electrical Power
2.3 Expressing Power as an Audio Level
2.4 Conventional Practice
2.5 The Decibel in Acoustics—LP, LW, and LI
2.6 Acoustic Intensity Level (LI), Acoustic Power Level (LW), and Acoustic Pressure Level (LP)
2.7 Inverse Square Law
2.8 Directivity Factor
2.9 Ohm's Law
2.10 A Decibel Is a Decibel Is a Decibel
2.11 Older References
2.12 The Equivalent Level (LEQ) in Noise Measurements
2.13 Combining Decibels
2.14 Combining Voltage
2.15 Using the Log Charts
2.16 Finding the Logarithm of a Number to Any Base
2.17 Semitone Intervals
2.18 System Gain Changes
2.19 The VU and the VI Instrument
2.20 Calculating the Number of Decades in a Frequency Span
2.21 Deflection of the Eardrum at Various Sound Levels
2.22 The Phon
2.23 The Tempered Scale
2.24 Measuring Distortion

2.25 The Acoustical Meaning of Harmonic Distortion
2.26 Playback Systems in Studios
2.27 Decibels and Percentages
2.28 Summary

UNIT-3 ACOUSTIC ENVIRONMENT

3.1 The Acoustic Environment
3.2 Inverse Square Law
3.3 Atmospheric Absorption
3.4 Velocity of Sound
3.5 Temperature-Dependent Velocity
3.6 The Effect of Altitude on the Velocity of Sound in Air
3.7 Typical Wavelengths
3.8 Doppler Effect
3.9 Reflection and Refraction
3.10 Effect of a Space Heater on Flutter Echo
3.11 Absorption
3.12 Classifying Sound Fields
3.13 The Acoustic Environment Indoors
3.14 Conclusion

Reference Books:

1. Computational Thinking in Sound: Teaching the Art and Science of Music and Technology by Gena R. Greher and Jesse M. Heines
2. Dhwani Aur Sangeet by Lalit Kishore Singh