AMBE11 CLIMATE AND BUILT ENVIRONMENT

UNIT-1 CLIMATE AND HUMAN COMFORT

1. Factors that determine climate of a place
2. Components of Climate- Climate classifications for building designers in tropics
3. Climate characteristics. Human body heat balance
4. Human body heat loss
5. Effects of climatic factors on human body heat loss
6. Effective temperature- Human thermal comfort
7. Use of C.Mahony's tables.

UNIT-2 DESIGN OF SOLAR SHADING DEVICES

2.1 Movement of sun
2.2 Locating the position of sun- Sun path diagram
2.3 Overhead period- Solar shading- Shadow angles
2.4 Design of appropriate shading devices

UNIT-3 HEAT FLOW THROUGH BUILDING ENVELOPE CONCEPTS

3.1 The transfer of heat through solids
3.2 Definitions- Conductivity, Resistivity, Specific heat,
3.3 Conductance, Resistance and Thermal capacity
3.4 Surface resistance and air cavities
3.5 Air to air transmittance (U value)
3.6 Time lag and decrement- Types of envelops with focus on glass.

UNIT-4 AIR MOVEMENT DUE TO NATURAL AND BUILT FORMS

5.1 The wind- The effects of topography on wind patterns
5.2 Air currents around the building
5.3 Air movement through the buildings- The use of fans
5.4 Thermally induced air currents
5.5 Stack effect, Venturi effect- Use of court yard.

UNIT-5 CLIMATE AND DESIGN OF BUILDINGS

5.1 Design strategies in warm humid climates, hot humid climates,
5.2 Hot and dry climates and cold climates
5.3 Climate responsive design exercises

References Books:

1. Martin Evans, "Housing Climate and Comfort", Architectural Press, London, 1980
2. B. Givoni, "Man, Climate and Architecture", Architectural Sciences Series Applied Science Publishers Ltd., London, 1981.
3. B. Givoni, "Passive and Low Energy Cooling of building", Van Nortrand Reinhold New York, USA, 1994.