

## **09ARC 3.7 – CLIMATOLOGY**

Written by Administrator  
Saturday, 31 October 2009 15:01 -

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**CONTACT PERIODS: 4 (LECTURE) PER WEEK**

**DURATION OF EXAM : 3 HRS**

**THEORY MARKS: 100**

**PROGRESSIVE MARKS : 50**

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**Objective:**

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To develop the knowledge required for understanding the influence of climate on architecture.

### Outline:

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Introduction – Elements of climate, measurement and representations of climatic data.  
Classifications of tropical climates, Major climatic zones of India.

Thermal comfort: Effect of climatic elements on thermal comfort environment. Body's heat exchange with surrounding environment. Thermal comfort indices viz., Effective temperature, bio-climatic chart etc., Kata-thermometer and globe thermometer.

Thermal performance of building elements: effect of thermo-physical properties of building materials and elements on indoor thermal environment. Thermal properties. Conductivity, resistivity, diffusivity, thermal capacity and time lag and 'U' value. Construction techniques for improving thermal performance of walls and roofs. Natural ventilation: Functions of natural ventilation, Design considerations, effects of openings and external features on internal air flow.

Site Climate: Effect of landscape elements on site/micro climate.

Day Lighting: Advantages and limitations, Day light factor, components of Day light factor, design considerations.

Shading devices – Sun-path diagram, use of solar charts in climatic design. Types of shading devices. Procedure of designing shading devices.

Design considerations for buildings in tropical climates with special reference to hot-dry, warm-humid and composite climates

### References:

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- 1) “Manual of Tropical Housing & Buildings (Part-II)” by Koenigsberger
- 2) “Housing, Climate and Comfort” by Martin Evans
- 3) “Buildings in the tropics” by Maxwell Fry
- 4) Climate Responsive Architecture “by Arvind Kishan, Baker & Szokolay”.

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