



**JECRC Foundation**



JAIPUR ENGINEERING COLLEGE  
AND RESEARCH CENTRE

## JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTER

Class – 2nd Year - IV Semester: B.Tech. (Civil Engineering)

Subject – Building Planning

Chapter – Orientation- UNIT- 5

Presented by –Hetram Sharma (Assistant Professor)

# VISSION AND MISSION OF INSTITUE

## Vision

To become a renowned centre of outcome based learning, and work towards academic, professional, cultural and social enrichment of the lives of individuals and communities.

## Mission

**M1.** Focus on evaluation of learning outcomes and motivate students to inculcate research aptitude by project based learning.

**M2.** Identify, based on informed perception of Indian, regional and global needs, areas of focus and provide platform to gain knowledge and solutions.

**M3.** Offer opportunities for interaction between academia and industry.

**M4.** Develop human potential to its fullest extent so that intellectually capable and imaginatively gifted leaders can emerge in a range of professions.

# VISSION AND MISSION OF DEPARTMENT

## **Vision**

To become a role model in the field of Civil Engineering for the sustainable development of the society.

## **Mission**

**M1.**To provide outcome base education.

**M2.**To create a learning environment conducive for achieving academic excellence.

**M3.**To prepare civil engineers for the society with high ethical values.

# COURSE OUTCOME

**CO-1** STUDENTS WILL BE ABLE TO UNDERSTAND TYPES OF BUILDING & APPROPRIATE SELECTION OF SITE WITH SUN CONSIDERATION.

**CO-2** STUDENTS WILL BE ABLE TO UNDERSTAND ABOUT BYE-LAW AND NBC REGULATION ALONG WITH ORIENTATION, CLIMATE&COMFORT CONSIDERATION.

**CO-3** STUDENTS WILL BE ABLE TO UNDERSTAND BUILDING PLANNING. STUDENTS WILL ABLE TO USE PRINCIPALS OF OF VASTU SHASTRA

**CO-4** STUDENTS WILL BE ABLE TO UNDERSTAND FUNCTIONAL DESIGN AND ACCOMMODATION REQUIREMENTS OF RESIDENTIAL BUILDING AND NON-RESIDENTIAL BUILDING WITH PROVIDING DIFFERENT SERVICES

# CO-PO MAPPING

Subject Code	COs	Program Outcomes (POs)											
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
4CE4-07	CO-1	3	1	3	3	2	3	3	2	1	1	3	2
	CO-2	3		3	2	2	2	3	2	1	1	2	2
	CO-3	3	1	2	1	1	2	3	2	2	1	3	1
	CO-4	3	2	2	2	2	2	3	1	2	1	2	2

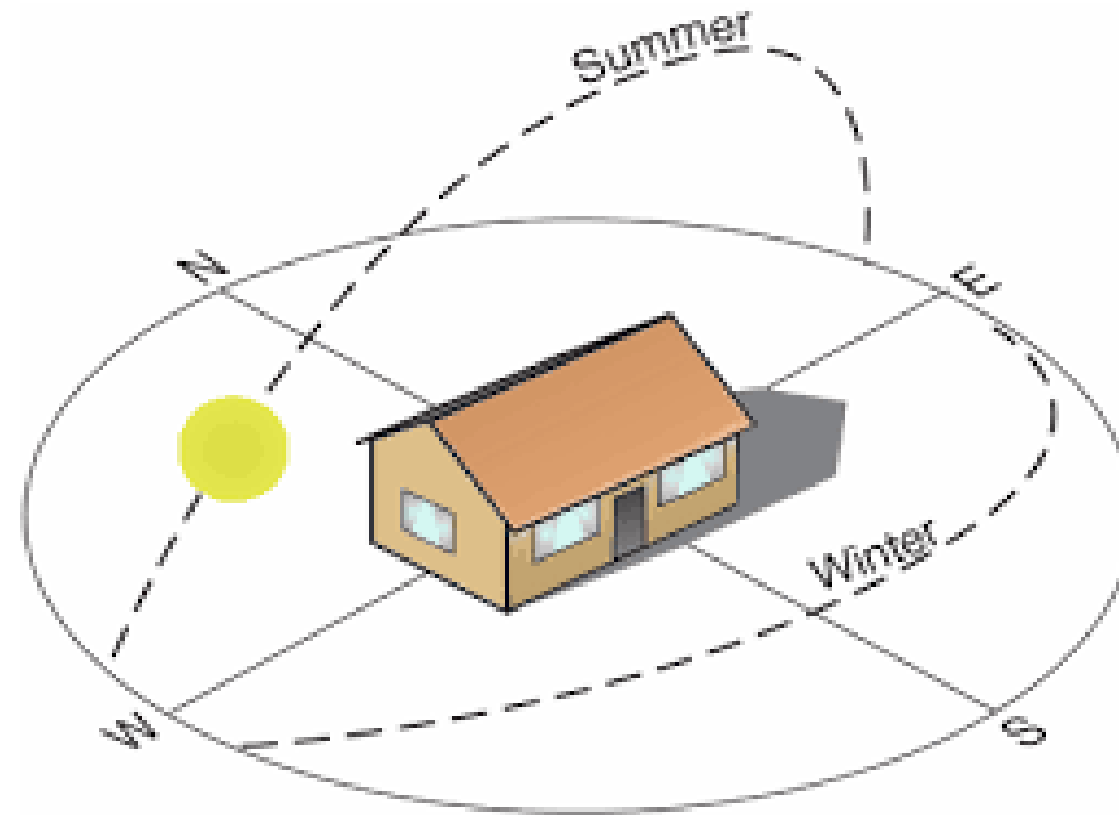
# CONTENTS

## **Orientation:**

1. Meaning,
2. Factors affecting orientation,
3. Orientation criteria for tropical climate.

## Orientation:-

Building orientation is the practice of facing a building so as to maximize certain aspects of its surroundings, such as street appeal, to capture a scenic view, for drainage considerations, etc.



## **Objectives of Building Orientation:-**

The orientation of a building is done for the following purposes:

- (i)** To give the correct direction to the building according to the surroundings.
- (ii)** To Provide natural light and air to the inhabitants.
- (iii)** To save the inhabitants from dust and smoke.
- (iv)** To save the inhabitants from noise.
- (v)** To provide privacy to the inhabitants.
- (vi)** To save the building from damages due to rain.
- (vii)** To save the inhabitants from the bad effects of the worst weather.
- (viii)** To add beauty to the building



## **Factors Affecting Orientation of Building:**

The following factors affect the orientation of a building:

### **1. Sun Path:**

The orientation of building should be fixed in such a way that the sunlight should enter all parts of the building through doors, windows, and [ventilators](#).

Various germs take birth in those rooms where sunlight does not enter.

These germs become the cause of various diseases.

### **2. The direction of Road/Street:**

Orientation is also much affected by the direction of the road or street.

If some plot is situated between two paths, then the front view of the building should be to the side of the major path.

### **3. Surroundings:**

Surroundings should also be considered in the orientation of building. It also includes the method of their construction, ways of living of the neighbors.

### **4. Wind Direction:**

The direction of wind blowing throughout the year should also be kept in mind. Favorable and unfavorable winds should also be taken into account.

### **5. Nature of Rainfall:**

Humidity affects a building very much. Therefore, the direction of rainfall should be assessed.

So, in the building orientation, it should be kept in mind that the smaller part of the building should be affected as far as possible.

## Orientation OF Rooms:-

Different rooms of a building require Suitable natural light.  
Some room needs much sunlight while the other needs less of it.

### For example:-

The drawing room and the common room need much light whereas the store does not need much light.

In this case, the rotation of the sun has much importance.

The rooms which need much light are arranged to the **East and South** direction like the kitchen, bathroom, drawing room, etc.

Following things should be kept in mind while arranging the rooms:

- (i)** The kitchen should be given the direction between North East and South East.
- (ii)** The drawing room should be given the direction between South East and South West.
- (iii)** The drawing room and the T. V. Lounge should be in the extreme of South East direction because much light is available there.
- (iv)** The bed room should be given the direction between South East and North West.
- (v)** The suitable place for store and staircase is between North-East and North-West because less time is spent there and they need less light.
- (vi)** The verandas are constructed in the direction of South West because the Sunlight is severe in summer in this direction.

## **Building Orientation Criteria Under Indian Climate Condition:-**

Under Indian climate for design purpose is two zones for generally classified either hot-arid or non-humid. Accordingly, India can be divided into two zones for climate point of view:-

**A) Hot-arid zones (or day-arid zone)**

**B) Hot-humid zone (or wet zone)**

**A) Hot-arid zones**

Such zones having hot dry climate are found mostly in the interior of the country away from.

## **B) Hot-humid zones**

### **1. West coast of regions (like Bombay)**

Orientation should be along the direction south-east and north-west facing south-west.

### **2. East coast regions (like Madras)**

Orientation should be along the direction south-east and north-west facing south-east.

### **3. Bengal**

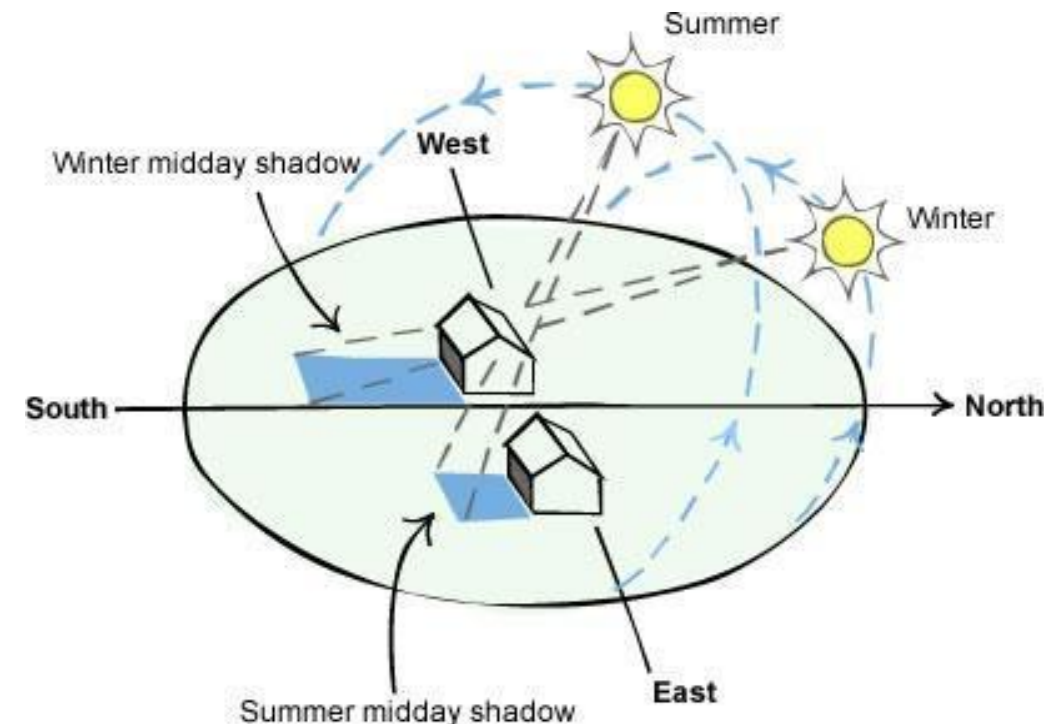
The best direction for orientation is considered to be along the east and west-facing south.

## Building Orientation Based On Climatology In India:-

The placement of any object on earth's surface is like placing a ball on a slope. Now where to direct this slope or where the ball should end its movement and hit on target, is what we call proper orientation according to the function or surroundings.

In this way, orientating the buildings along with the micro climate is what helps to make a building sustainable enough and not a burden on the environment around.

Orienting buildings is an important criteria but another aspect to keep the interiors also climate friendly is the orientation of the voids that are the fenestrations and openings on the structure.



## **Orientation Of The Solids (Built) And Voids (Fenestration):**

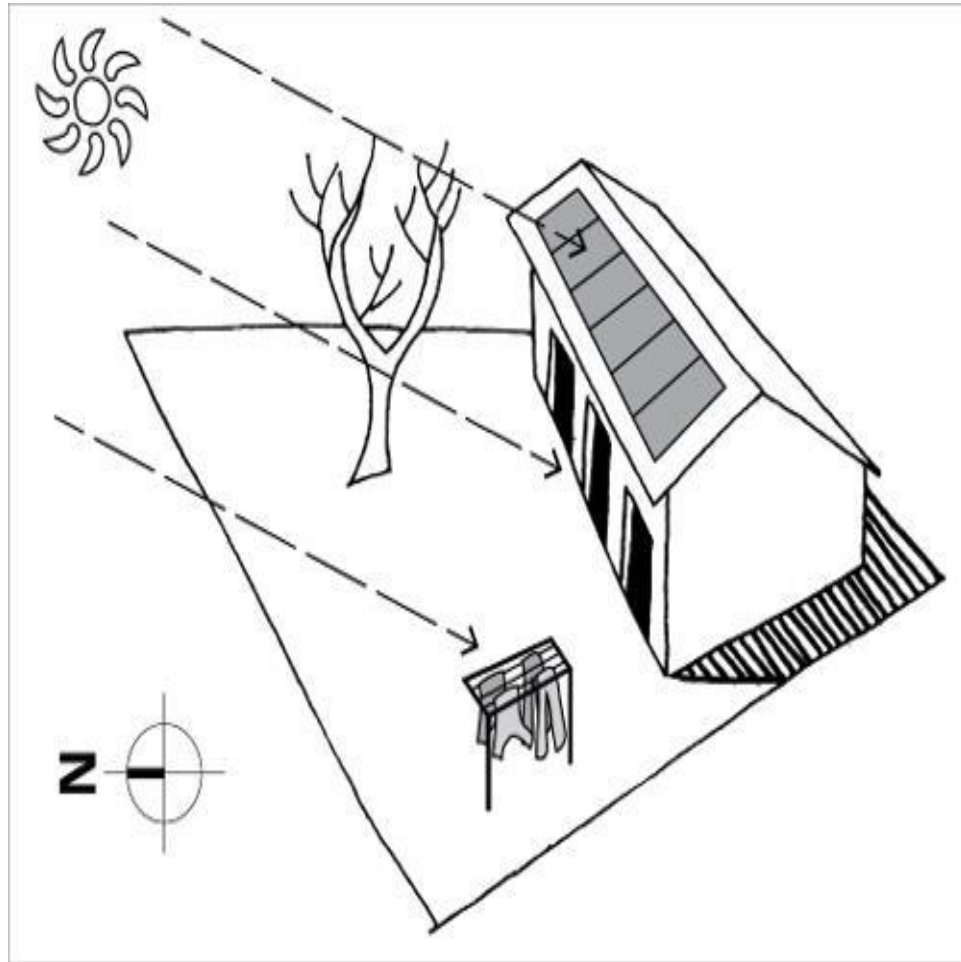
The building should respond well with the surroundings and in order to achieve this it is planned and oriented on site so that it resists various climatic changes around. The main four climatic zones of India are:

1. Hot and Dry
2. Warm and Humid
3. Moderate
4. Cold

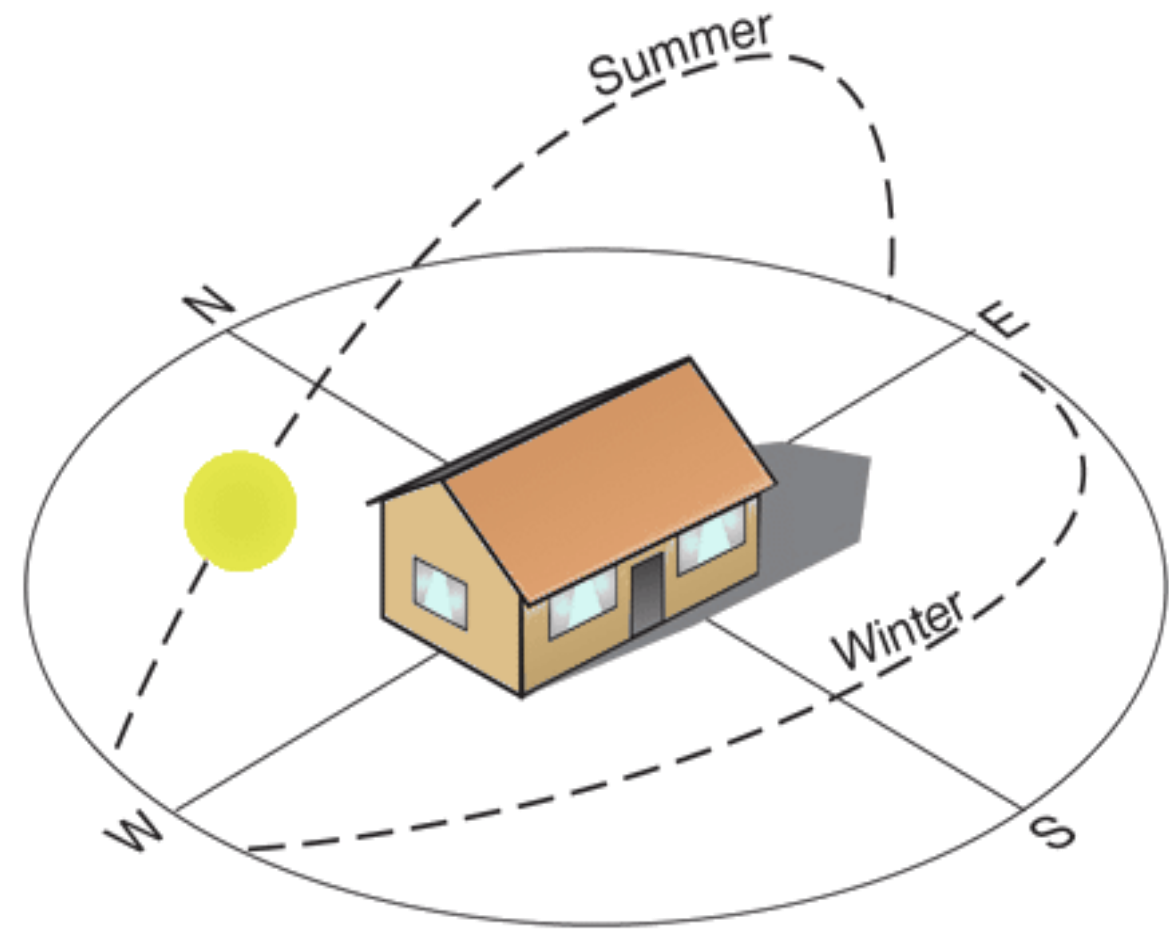


# 1. Hot And Dry Climate Zone:-

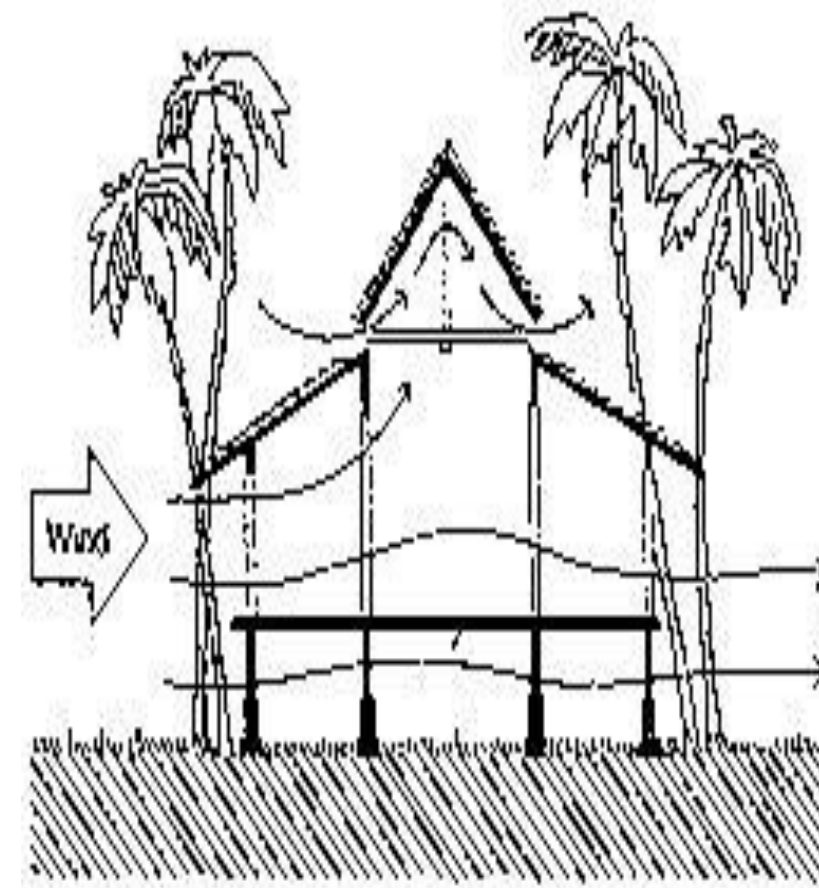
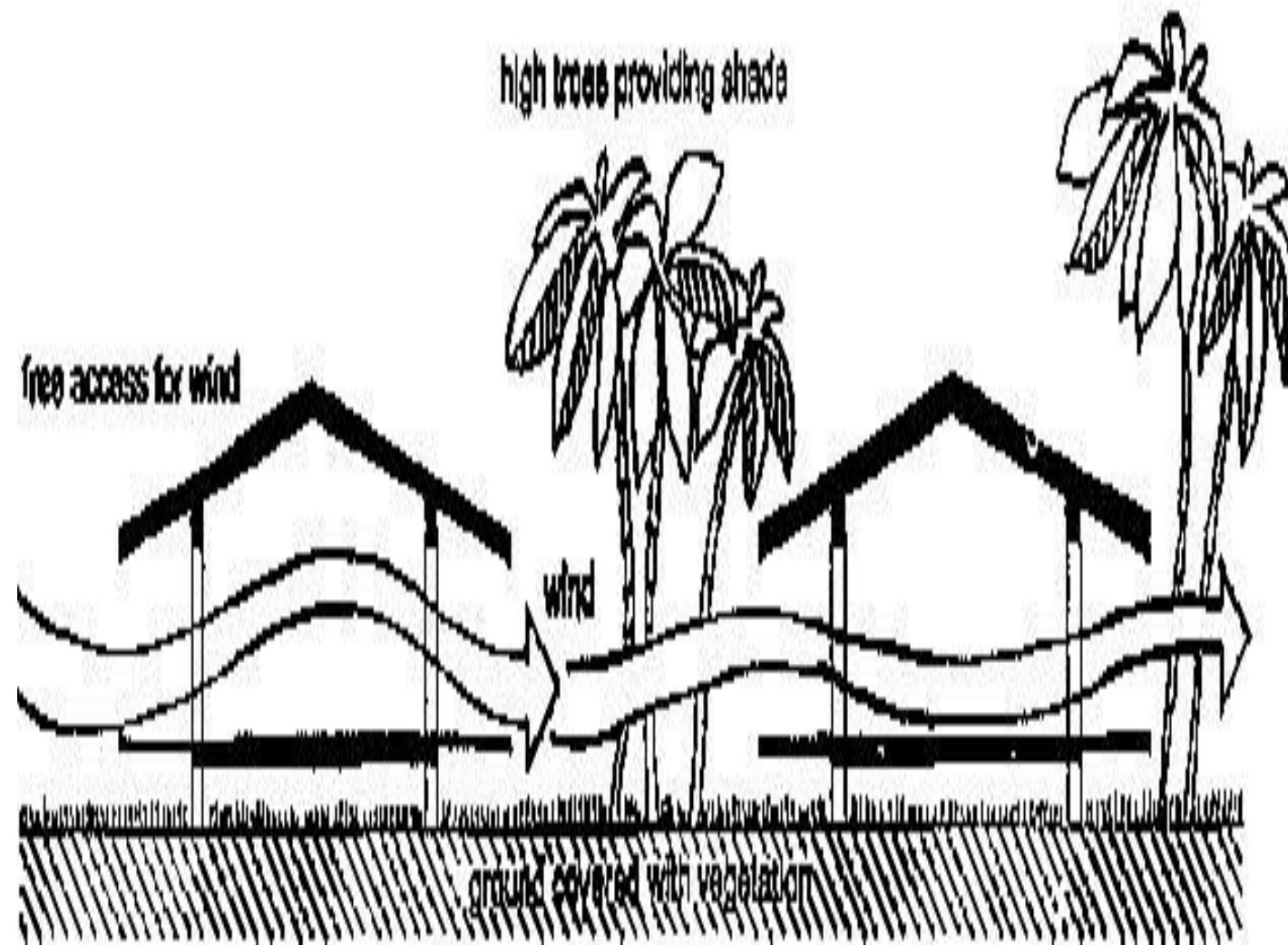
## Exterior Orientation



## Interior Orientation



## 2. Warm And Humid Climatic Zones:-



### **3. Moderate Climate Zones Or Regions**

A building reacts with the environment through its external façades such as walls, windows, projections, and roofs, referred to as the building envelope. The envelope acts as a thermal shell that actually decides the temperature intake from the exterior.

In moderate climate, the temperature difference is not that drastic and climate is average that is it does not reach peak levels or extreme conditions. Thus, the design can be flexible enough to suite the climatic conditions and well thought on how to reduce heat gain and maintain thermal comfort at a major level.

### **4. Cold Climatic Zones Or Regions**

In these regions it is preferred to plan and orient houses on the top of the slope and not at the bottom to avoid the katabatic flow of air.

It should be made sure that there is proper cut off ventilation provided to restrict the cold breezes.

Vegetation can be provided like evergreen type of foliage but they will also block the sun radiation which is required in cold regions.



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*Thank  
you!*

**STAY HOME, STAY SAFE**