

Ans:

Radome is a sheltering structure which is used to protect an antenna from winds, icing and/or temperature extremes. It is constructed of material that minimally attenuates the electromagnetic signal transmitted or received by the antenna.

The antennas used for Radar systems are affected by environmental conditions such as high winds, icing and humidity. In order to protect the antennas from such conditions a structure is designed known as radome.

The shape of radome is spherical, planar, geodesic etc., Generally, an ogive-shaped radome is used for air-craft radars. The radomes are made with materials like fiber glass, PTFE-coated fabric and plastic. The incidence angle on surface of the radome varies according to the directions of an antenna.

A few types of radomes used in radars are mentioned below.

1. Air-supported radome
2. Ground-based radome
3. Rigid self-supporting radome

1. Air-supported Radome

In this type of radome, the antenna propagates an electro magnetic waves parallel to the direction of radome axis, then the incident angle on radome surface is above 80° . Otherwise, the incident angle can be zero. Due to this, the uniform properties of antenna are difficult to the design of radome should be in such a way that, the antenna patterns and electromagnetic waves are not much attenuated and distorted.

1. Ground-based Radome

The ground-based radome is used to operate the radar antennas in heavy winds by providing the large motors. It also protect the antenna from snow and ice.

Cost of ground-based radome is economic. The basic structure of radome is as shown in figure below.

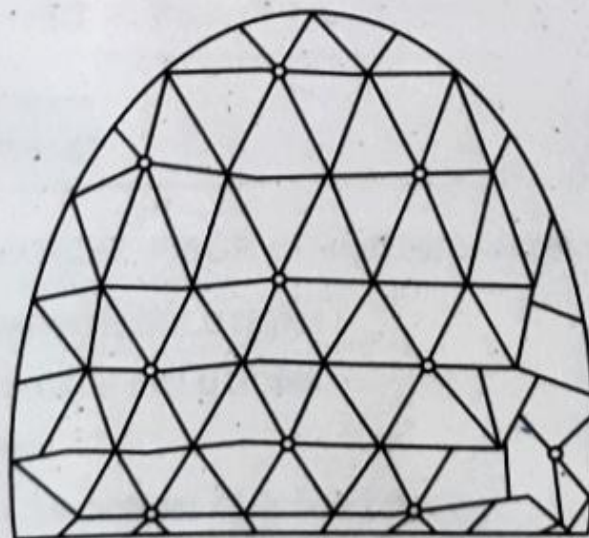


Figure: Rigid Radome for Ground Based Antenna

3. Rigid Self-supporting Radome

The draw backs of air-supported radome are overcome by rigid-self supporting radome. These radomes are made up of plastic panels which are very thin. The structure of rigid self-supporting radome is very simple. In some cases it is also termed as geodesic dome.

Applications of Radome

1. Ground-based radars
 2. Shipboard radar
 3. Aircraft or missile applications
 4. Terrestrial and marine applications.
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