Degree of Freedom (DOF)

1. It is term used to describe a robots freedom of motion in three dimensional space-specifically, ability to move forward and backward, up and down and left and right.
2. The number of degree of freedom defines the robot's configuration. For example, many simple applications required movement along three axes X,Y and Z.

- These task required three joints or three degree of freedom. The three degree of freedom in the robot arm are:

1. Rotational Traverse: It is a movement on vertical axis. This is the side to side swivel of the robots arm on its base.
2. Radial Traverse: The radial Traverse is the extension and retraction of the arm, creating in and out motion relative to the base.
3. Vertical Traverse: The vertical traverse provides up and down motion. For the applications that required more freedom, additional degrees can be obtained from the wrist, which gives the end effectors its flexibility. The three degrees of freedom in the wrist have aeronautical names Pitch, Yaw and Roll or Swivel.

- Rotation around the front-to-back axis is called roll.
- Rotation around the side-to-side axis is called pitch.
- Rotation around the vertical axis is called yaw.