CLASSIFICATION OF ROBOT:

The ways of classifying a robot as follows:

1) According to the structural capability of robot –

i) Mobile Robot

ii) Fixed robot.

MOBILE ROBOT:

A mobile robot is an automatic machine that is capable of locomotion. Example: spying robot. Mobile robots have the capability to move around in their environment and are not fixed to one physical location. Mobile robots can be "autonomous" (AMR - autonomous mobile robot) which means they are capable of navigating an uncontrolled environment without the need for physical or electro-mechanical guidance devices. Alternatively, mobile robots can rely on guidance devices that allow them to travel a pre-defined navigation route in relatively controlled space (AGV - autonomous guided vehicle). By contrast, industrial robots are usually more-or-less stationary, consisting of a jointed arm (multi-linked manipulator) and gripper assembly (or end effector), attached to a fixed surface

FIXED ROBOT:

Most industrial robots are fixed with the base but the arms are moving. Fixed robots are robots that stay in one place and cannot move from their position. They are usually attached to a fixed surface like the floor or a machine. These robots perform specific tasks such as welding, assembling, or lifting objects using a robotic arm. Fixed robots are commonly used in industries and factories to do repetitive work with high accuracy. An example of a fixed robot is an industrial robotic arm used in manufacturing.

2) According to the control:

To perform as per the program instructions, the joint movements an industrial robot must accurately be controlled. Micro-processor-based controllers are used to control the robots.

Different types of control that are being used in robotics are given as follows.

a. Limited Sequence Control:

It is an elementary control type. It is used for simple motion cycles, such as pick-and-place operations. It is implemented by fixing limits or mechanical stops for each joint and sequencing the movement of joints to accomplish operation. Feedback loops may be used to inform the controller that the action has been performed, so that the program can move to the next step. Precision of such control system is less. It is generally used in pneumatically driven robots.

b. Playback with Point-to-Point Control:

Playback control uses a controller with memory to record motion sequences in a work cycle, as well as associated locations and other parameters, and then plays back the work cycle during program execution. Point-to-point control means individual robot positions are recorded in the memory. These positions include both mechanical stops for each joint, and the set of values that represent locations in the range of each joint. Feedback control is used to confirm that the individual joints achieve the specified locations in the program.

c. Playback with Continuous Path Control:

Continuous path control refers to a control system capable of continuous simultaneous control of two or more axes. The following advantages are noted with this type of playback control: greater storage capacity—the number of locations that can be stored is greater than in point to-point; and interpolation calculations may be used, especially linear and circular interpolations.

d. Intelligent Control:

An intelligent robot exhibits behaviour that makes it seems to be intelligent. For example, it may have capacity to interact with its ambient surroundings; decision-making capability; ability to communicate with humans; ability to carry out computational analysis during the work cycle; and responsiveness to advanced sensor inputs. They may also possess the playback facilities. However, it requires a high level of computer control, an advanced programming language for decision-making logic and other _intelligence' into the memory.