Question

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The four basic configurations that can be combined to produce a variety of robotic combinations are
Cartesian, articulated, cylindrical and

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1. Oblong
2. Octagonal
3. Square
4. Spherical

Answer (Detailed Solution Below)

Option 4 : Spherical

Detailed Solution

Explanation

Robot Configuration	Explanation	Common Uses
Cartesian	Has the robot's tool moving in a linear motion along each of the Cartesian coordinates (x, y, and z). This type of configuration can seep out a box-like work envelope.	Many 3D printers have their print nozzles mounted on a Cartesian configuration.
Cylindrical	Allows its tool to rotate around a central axis. The tool can also move towards and away from the central axis, plus up and down the central axis. This configuration creates a working volume in the shape of a cylinder.	This configuration is typical, the handling of machine tools and die-cast machines, and spot welding.

Spherical	The tool motion created by this configuration sweeps out a workspace shaped like a sphere. It has its tool rotate around a central axis, and the tool can also rotate around a second axis which is placed at a 90-degree angle on the central axis. In addition, the tool can move back and forth along an axis.	They are commonly used for die casting, injection moulding, welding and material handling.
Selective Compliance Articulated Robot Arm (SCARA)	Uses pivot points to allow its tool to move in a combination of the Cartesian and cylindrical motions. This allows the tool to move more quickly, and move more easily in certain motions, such as moving in an arc.	SCARA robots are used for assembly and palletizing, as well as bio-medical applications.
Articulated	This type of robot is the most commonly pictured when referring to an industrial robot. As a minimum, it needs to have at least a shoulder joint, an elbow joint, and a wrist joint. Many examples of these configurations can have both major and minor axes.	Typical applications for articulated robots are assembly, arc welding, material handling, machine tending, and packaging. The VEX V5 Work cell is an example of an Articulated configuration.
Delta (Parallel)	Can move the robot's tool the fastest of all of the robot configuration types. It uses parallel linkages to allow its tool to quickly sweep out its workspace.	A Delta can nimbly and quickly pick and place items in a sorting task, as well as serve in many other functions.