

Student Name: \_\_\_\_\_

Unit No. **13****Part I.** Place the letter of the key term next to the correct definition.

Term	Definition
	The ability to move in a single independent direction of motion. To be able to move in multiple directions means to have multiple _____. Moving up and down is one example of this, moving right and left is another, and the ability to move up-down and right-left requires <i>two</i> of these.
	The arrangement of connected parts in a machine. A gripper _____ typically consists of an actuator, links, and fingers.
	A gripper mechanism is designed so that the gripper faces are parallel when the mechanism moves together and apart.
	A joint in which the axis of rotation is perpendicular to the robot arm. The human elbow illustrates this degree of freedom.
	An instantaneous spike of loading on a mechanical system.
	A joint in which the axis of motion is linear.
	A motor's maximum torque; the torque at which a motor stalls.
	A joint in which the axis of rotation is parallel to the robot arm. Twisting the human wrist illustrates this degree of freedom.

**A.** Twisting Joint    **B.** Stall Torque    **C.** Sliding Joint    **D.** Mechanism  
**E.** Degree of Freedom    **F.** Parallel Gripper    **G.** Shock Load    **H.** Rotating Joint

**Part II.** Fill in the blanks.

A \_\_\_\_\_ is the ability to move in a single independent direction of motion.

The first type of degree of freedom is one in which a robot's arm can \_\_\_\_\_ about an axis parallel to the arm. The human wrist has this degree of freedom.

The second type of degree of freedom is a \_\_\_\_\_ movement. In this case, a component of the robot can slide in and out (or up and down, or left and right).

The third type of degree of freedom is one in which a robot's arm can rotate about an axis \_\_\_\_\_ to the arm. The human elbow illustrates this degree of freedom.

A \_\_\_\_\_ load is an instantaneous spike of loading on a mechanical system.

If the load applied to a motor is \_\_\_\_\_ than (or equal to) the stall torque of the motor, the motor will stall and the arm will not move.

It is sometimes a good idea to add a factor of safety to this force to ensure it can encounter any unanticipated loads. A *factor of safety* is also known as the \_\_\_\_\_.

**Part III.** Place the letter of the Inventor technical term next to the correct definition.

Term	Description
	This dialog box displays the templates for selection when creating a file. Double-click an icon to select a template or click a tab to show more templates.
	Used to create rectangles by specifying diagonal corners. Each rectangle side is a line segment.
	Consists of the sketch plane, a coordinate system, 2D curves, and the dimensions and constraints applied to the curves.
	Points can be either sketch points or center points. Click the Center Point tool on the Standard toolbar to switch the point style between sketch point and center (default). In the graphics window, center points appear as cross-hair symbols and sketch points appear as dots.
	Specifies one or more files to place as a component in an assembly.
	These determine how components in the assembly fit together. As you apply them, you remove degrees of freedom, restricting the ways components can move.

**A.** New    **B.** Place Component    **C.** Constraint    **D.** Point, Center Point  
**E.** 2D Sketch    **F.** Two Point Rectangle