**Problem 1**

Diagram

Description automatically generated

Looking at the chain of the robot side with joints tagged by A, B, C, and D

* A is a Revolute joint with 1 Degree of Freedom (DOF)
* B is a Universal joint with 2 DOF
* C is a Revolute joint with 1 DOF
* D is a spherical joint with 3 DOF

Looking at the chain of the human side with joints tagged from 1 to 8

* 1 is a spherical joint with 3 DOF
* 2 is a spherical joint with 3 DOF
* 3 is a revolute joint with 1 DOF
* 4 is a revolute joint with 1 DOF
* 5 is a revolute joint with 1 DOF
* 6 is a revolute joint with 1 DOF
* 7 is a revolute joint with 1 DOF

**Problem 2**

The arms are in the special mechanism.

Hence,

* m = 6
* Joints J = 9 (6 spherical joins + 3 revolute joints)
* Links N = 8 (ground included)
* Spherical joints has 3 constraints -> 3 \* 6 constraints in total
* Revolute joints has 1 constraints -> 1 \* 3 constraints in total

DOF = m(N – 1 J) + spherical-constraints + revolute-constraints

= 6(8 – 1- 9) + 18 + 3 = 9

**Problem 3**

**Text, letter

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