

National University of Singapore
Department of Mechanical and Production Engineering

ME444

Dynamics and Control of Robotic Systems

Term 1, 1994/95

Quiz 2

The figure below shows the schematic diagram of the Intelledex Robot Model 605T. This robot is a six-axis manipulator consisting of all rotational joints with axes 0, 1, and 2 co-intersecting at a common point.

1. Assign coordinate frames to each link according to the Denavit-Hartenberg convention *and* the following rules:
 - a) The base frame (frame 0) should be as indicated in the figure. Its origin should coincide with the co-intersection point of axes 0, 1, 2, and 5.
 - b) The end-effector frame should be as shown in the figure.
 - c) To the maximum extent possible, make r_i and d_i be equal to zero
2. Identify the kinematic parameters of the robot by filling in the D-H table below.
3. If at the configuration shown in the figure, axis 1 has a joint motion range of $\pm 115^\circ$, determine the joint motion range in terms of q_2 (joint variable for 2nd joint, assigned according to the Denavit-Hartenberg convention, item 1 above.).

