Assignment-1 Robotics

Note: 1. Please take reference of ("Introduction to Robotics Mechanics" by John C. Craig and PDF Notes).

2. Answer must be given in your own handwriting in a notebook, clearly mentioned your name, enrollment number and section there

1. Describe the functions of the robot.
2. With the help of line diagram explain basic components of a Robot system.
3. What are the requirements and challenges of end effectors?
4. What is meant by Joint gripper? Explain.
5. Explain the following i) Euler angles ii) RPY representation
6. Derive the Inverse kinematics of the 3-DOF manipulator by considering an example.
7. Derive the Denavit and Hartenberg 4×4 transformation matrix.
8. Determine the revolution matrix for a rotation of 450 about y-axis followed by a rotation of 1200 about z-axis, and a final rotation of 900 about x-axis.
9. Discuss the features of SCARA and cylindrical robot and also find the D-H matrix for cylindrical robot.