Week 5:

1. Select the objective function generally used as a secondary subtask in redundancy resolution.
   a) Manipulability Measure
   b) Joint Angles
   c) Cartesian Coordinates
   d) None of the above
2. Is the following an advantage of redundant manipulator.
   Control is not tedious. False/True
3. How many DOF the human thumb, index, and middle fingers, respectively have?
   a) 5, 4, 4
   b) 4, 4, 4
   c) 3, 4, 5
   d) 5, 3, 3
4. As per our research study, how the redundancy parameter generally behaved among the human subjects?
   a) Only positive
   b) Only negative
   c) Both positive and negative and time-varying
   d) None of the above
5. Choose from the following the criteria utilized in the research study of manipulability analysis of humans.
   a) Manipulability measure
   b) Singularity
   c) Joint angle
   d) None of the above
6. What is the observation of the human fingers in coordinated rotational motion?
   a) Thumb is active, and Index and Middle fingers are passive
   b) All three digits are passive.
   c) All three digits are active
   d) Thumb and Middle fingers are active, and Index finger is passive.
7. Choose the difference between kinematic manipulability ellipsoid and force ellipsoid.
   a) Major axis of kinematic ellipsoid is the minor axis of force ellipsoid.
   b) Minor axis of kinematic ellipsoid is the same as that of force ellipsoid.
   c) Only Major axes are equal.
   d) None of the above.
8. The expression for Moore Penrose Pseudo Inverse (right inverse) of a given matrix J is
   $$J^{+} = J^{T}(JJ^{T})^{-1}$$
9. In the direction of the major axis of the kinematic manipulability ellipsoid, the end-effector of the robotic system moves at
   a) High speed
   b) Low speed
   c) Constant speed
   d) None of the above
10. The expression for manipulability measure for non-redundant manipulators is
    a) Determinant of Jacobian Matrix
    b) Square root of Jacobian Matrix
    c) Square of Jacobian Matrix
    d) None of the above