Assignment 5

The due date for submitting this assignment has passed.

As per our records you have not submitted the assignment.

1. Select the objective function generally used as a secondary objective in redundancy resolution.
   - Manipulability Measure
   - Joint Angles
   - Canonical Coordinates
   - None of the above
   No. the answer is incorrect.
   Correct Answer: Manipulability Measure

2. Choose True or False.
   - True
   - False
   No. the answer is incorrect.
   Correct Answer: True

3. How many DOF do the human thumbs, index, and middle fingers, respectively have?
   - 5, 4, 4
   - 5, 5, 5
   - 5, 4, 5
   - 5, 3, 3
   No. the answer is incorrect.
   Correct Answer: 5, 4, 4

4. As per our research study, how the redundancy parameter generally believed among the human subjects?
   - Only positive
   - Only negative
   - Both positive and negative and time-varying
   - None of the above
   No. the answer is incorrect.
   Correct Answer: None of the above

5. Choose from the following the criteria utilized in the research study of manipulability analysis of humans.
   - Manipulability measure
   - Ergonomics
   - Joint angles
   - None of the above
   No. the answer is incorrect.
   Correct Answer: Manipulability measure

6. What is the observation of the human fingers in coordinated grasping motion?
   - Thumb is active, index and middle fingers are passive
   - All three digits are passive
   - All three digits are active
   - Thumb and middle fingers are active, and index finger is passive
   No. the answer is incorrect.
   Correct Answer: Thumb and middle fingers are active, and index finger is passive

7. Choose the difference between kinematic manipulability ellipsoid and force ellipsoid.
   - Major axes of kinematic ellipsoid in the minor axes of force ellipsoid
   - Minor axes of kinematic ellipsoid is the same as that force ellipsoid
   - Only minor axes are equal
   - None of the above
   No. the answer is incorrect.
   Correct Answer: Only minor axes are equal

8. The expression for Wrench Perceivable Results Reversal (true inverse) of a given matrix J is
   - $\mathbf{J}^{-1} = \mathbf{J}^{\top} \mathbf{J}^{-1}$
   - $\mathbf{J}^{\top} L = \mathbf{J}^{\top}$
   - $\mathbf{J}^{-1} = \mathbf{J}^{\top} \mathbf{J}$
   - $\mathbf{J}^{-1} = \mathbf{J}^{\top} \mathbf{J}^{-1}$
   No. the answer is incorrect.
   Correct Answer: $\mathbf{J}^{-1} = \mathbf{J}^{\top} \mathbf{J}$

9. In the direction of the major axes of the kinematic manipulability ellipsoid, the end-effector of the robotic systems moves at
   - High speed
   - Low speed
   - Constant speed
   - None of the above
   No. the answer is incorrect.
   Correct Answer: High speed

10. The expression for manipulability measure for non-redundant manipulators is
    - Square of Jaccobian Matrix
    - Square of Jacobian Matrix
    - Determinant of Jacobian Matrix
    - None of the above
    No. the answer is incorrect.
    Correct Answer: Square of Jacobian Matrix