6. a) What is an end effector? Explain the basic requirements of an end effector
   b) List the various types of Grippers and their applications

UNIT-IV

7. a) What is a homogeneous matrix? Explain about homogeneous transformation matrix
   b) A point P = [2 3 4]^T is attached to a rotating frame. The frame rotates 90° about the X-axis of the reference frame. Find new coordinate frame after the rotation

OR

UNIT-V

8. a) Derive the Jacobian matrix for velocity and angular velocity of six joint Robot
   b) What are the characteristics of Robot-level languages?

9. Explain the various applications of robot in manufacturing and explain how the quality of product will effect with the robot

OR

10. a) Explain the criterion to select a robot for a specified task
     b) What is work cell? Explain about robot cell layout design

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