

## MCE4101 Introduction to Robotics Quiz2 (5%) SET12

Name.....ID.....

Date: 15 Sept 2020 (9.15-10.00)

Note:

1. OPEN BOOK.
  2. Matlab is allowed.
  3. Answer to the nearest 2 decimal place.
  4. 40 Marks equivalent to 5%.
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1. (40 Marks). The 3 links RPP robot is shown.
  - a) (5 Marks) Obtain DH table and the transformation matrix equation  $T_3^0$ . Where  $d_1$  is link offset. Given  $d_1 = 1.5$ .
  - b) (15 Marks) Determine with analytic method for possible solution for end point location  $P_{end} = [1.77 \quad 1.77 \quad 2.75]$ . Show your working steps.
  - c) (10 Marks) Determine with ikine robotic function for possible solution for end point location  $P_{end} = [1.77 \quad 1.77 \quad 2.75]$ . Given  $IG = [-\pi/10 \quad 1 \quad 1]$ . Show your MATLAB code and the answer.
  - d) (10 Marks) Check your answer b) and c) with fkine robotic function. Show your MATLAB code and the answer.



