MCE4101 Introduction to Robotics
Quiz1 (5%) –SET 13

Name…….ID……..
Date: 9 July 2020 (9.20-10.20)
Note:
1. OPEN BOOK.
2. 25 Marks equivalent to 5%.

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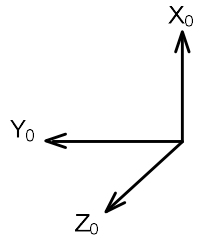
1. (25 Marks). The original frame is given. The following transformation steps for fixed frames are

i. Rotate -90° in the current y axis then
ii. Translate -2 in the current z axis then
iii. Rotate 90° in the current y axis then
iv. Translate 2 in the current x axis then

a. (10) Find the T_4^0 transformation matrix.

b. (5) If a point is fixed on the z axis at (0,0,1), obtain the coordinate P_4 with reference to origin.

c. (10) Plot all the transformation frames and mark P_4 location with reference to origin



2. (25 Marks). The original frame is given. The following transformation steps for fixed frames are

i. Rotate -90° in the fixed y axis then
ii. Translate -2 in the fixed z axis then
iii. Rotate 90° in the fixed y axis then
iv. Translate 2 in the fixed x axis then

a. (10) Find the T_4^0 transformation matrix.

b. (5) If a point is fixed on the z axis at (0,0,1), obtain the coordinate P_4 with reference to origin.

c. (10) Plot all the transformation frames and mark P_4 location with reference to origin