

MCE4101 Introduction to Robotics
Quiz1 (5%) –SET 15

Name.....**ID**.....

Date: 9 July 2020 (9.20-10.20)

Note:

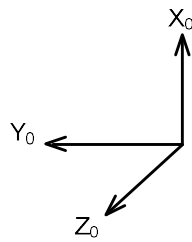
1. *OPEN BOOK.*

2. *25 Marks equivalent to 5%.*

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 x axis then
- iv. Translate 2 in the current y 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 x axis then
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- 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

