

**e-Yantra Robotics Competition**

**<Please enter your team id here>**

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| **Date** | **14 December 2016** |

Think and Answer

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**Instructions:**

* Maximum **30 marks** will be awarded
* There are no negative marks
* Write your answer in given space only. Suggested n**umber of lines** will be taken seriously at the time of evaluation
* **Unnecessary explanation** will lead to less marks even if answer is correct
* Use the same **font and font size** for writing your answer
* After completing this document upload the document on portal. Instruction for uploading the document is provided on the portal.

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**Q1:**

What is Odom frame? How is it important while navigation and who publishes it?

**(3+3 lines: 2 + 2 marks)**

**Answer:**

<Please write your answer here.>

**Q2:** What are the necessary requirements (packages and settings) to navigate in a map and why they are necessary? Can navigation be done without gazebo simulator?

**(5+5 lines: 5 + 5 marks)**

**Answer:**

<Please write your answer here.>

**Q3:**

Is it possible to define the starting position of robot in RViz? Justify your answer with example.

**(2+5 lines: 2 + 5 marks)**

**Answer:**

<Please write your answer here.>

**Q4:**

How can you calculate the linear and angular velocity using encoder ticks? Justify your answer and write mathematical expressions?

**(10 line: 5 marks)**

**Answer:**

<Please write your answer here.>

**Q5:**

Explain accelerometer and gyroscope in brief (No marks for definition)

**(5 lines: 3 marks)**

**Answer:**

<Please write your answer here.>