

**e-Yantra Robotics Competition - 2018**

**Theme and Implementation Analysis – Thirsty Crow**

**<Team ID>**

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| --- | --- |
| **Team leader name** |  |
| **College** |  |
| **Email** |  |
| **Date** |  |

**Scope**

**Q1 a. State the scope of the theme assigned to you. (5)**

< Teams should briefly explain in their own words the theme assigned. What in your opinion is the purpose of such an application? You may use figures / diagrams to support your answer.

Answer format: Text - limit: 100 words. >

**Testing your knowledge (theme and rulebook analysis)**

**Q2. a) What is considered a correct pebble pick-up? (2.5)**

**b) What is considered a correct pebble drop? (2.5)**

< Explain for both, the arena traversal part and the augmented reality part. >

**Mechanism**

**Q3. Explain the mechanism that you would use to pick and drop the pebbles. (10)**

< Explain how you would mount the electromagnet on the robot and what mechanism you would use for the electromagnetic pick & drop system. >

1. Supply 12V to the electromagnet and magnetise it.
2. Move the bot forward so that the electromagnet goes below the ArUco marker and attracts the pebble
3. Move the bot backward until the electromagnet is seen.
4. Supply 5V to the servo-motor. Rotate the arm connected to the servomotor in anti-clockwise direction. Hence, lifting the pebble.
5. Bring the electromagnet down by rotating the arm(in clock-wise direction) connected to the servo-motor.
6. Remove the supply to the electromagnet.
7. Electromagnet demagnetizes and drops the pebble.

**Algorithm Analysis**

**Q4. Draw a flowchart illustrating the algorithm you propose to use for theme implementation. (10)**

< The flowchart should elaborate on every possible function that you will be using for completing all the tasks in the assigned theme.

Follow the standard pictorial representation used to draw the flowchart. >

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**Q5. What kind of path planning algorithm will you use in order to navigate your robot inside the arena? (10)**

< Explain the logic behind the algorithm and the reason for your choice if any. You can use a pseudo-code to help elucidate your answer. >

**Challenges**

**Q6. What are the major challenges that you can anticipate in addressing this theme and how do you propose to tackle them? (10)**

< Answer format: Bullet points

1. Challenge 1

2. Challenge 2

3. Challenge 3, etc. >