

# TECHNICAL BRIEFING ROBOCON 2011

16 MAY 2011

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# BUNGA RAYA UNITY FOR 1 NATION

**Date** : 13th – 18th June 2011  
**Venue** : Stadium Tertutup Nilai  
**Time** : 9:00 am – 5:00 pm

# 1. TEAMS

- A team consists of **three (3) undergraduate students** and **one (1) instructor** who all belong to the same college, university or polytechnic. The three (3) students of the team are entitled to participate in the match itself.
- In addition, **three (3) pit crew members** can adjust the robots in the pit area and help to carry the robots to the Game Field only. The members of the pit crew must be **undergraduate students** of the same university.
- Participation by **post-graduate students is not permitted**

## 2. ROBOT DESIGN

- Each team is recommended to build **maximum three (3) robots**: One (1) Manual Robot and one (1) or two (2) Automatic Robots.
- Each robot must not be split into sub-units or connected by flexible cords.
- ***Only the communication between Automatic Robots is allowed.*** However, wireless radio frequency is prohibited.
- The robots in the contest must be built by the team members from the same university/college/polytechnic.

### 2.1 Manual Robot

- i. The manual robot is operated by a team member through a connected cable, an infrared remote control, visible ray or sound control.

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- ii. Wireless radio frequency control is prohibited and operator is not allowed to ride on the robot.
- iii. In the case of operation through cable, the length of cable must be in between **1,000 mm and 3,000 mm**.
- iv. The cable connection on the robot must be placed **at a height of no less than 1,000 mm above the floor**.
- v. In the Manual Start Zone, the Manual Robot must have its **dimension no larger than 1,000 mm in length, 1,000 mm in width and 1,400 mm in height**.
- vi. The robot can expand, stretch or extend within a cylinder of 2,000 mm in diameter considered from top view.

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## 2.2 Automatic Robots

- i. Each Automatic Robot must perform its tasks automatically after it is started by a team member.
- ii. In the Automatic Start Zone, the Automatic Robot must have its dimension no larger than 1,000 mm in width, 1,000 mm in length and 1,400 mm in height.
- iii. There is no limitation on the dimensions of the Automatic Robot after the game starts.

## 2.3 Weights of the Robots

- The **total weight** of all robots, equipments and other devices used in the entire contest **must not exceed 50 kg**, excluding the back-up set of batteries of the same type, weight and voltage as the primary set of batteries.

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## 2.4 Power Sources

- i. Each team must prepare its own power sources.
- ii. The voltage of the **power sources** used by each robot **must not exceed DC24V + 10%**.
- iii. The pressure of the **compressed air power must be less than six (6) bars**.
- iv. The organizer has the right to declare and prohibit any dangerous and inappropriate power sources.

## 2.5 Safety Rules

- i. The use of explosives, fire or dangerous chemicals is prohibited.
- ii. If a laser is used, it must be of **class 2 or less**. In designing and preparing the laser, full care must be taken to protect all persons at the venue from harm during all procedures. In particular, the beams must be so oriented that they cannot shine into the eyes of the spectators.

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## 2.6 Examination of the Robots

- i. Participating robots are examined prior to the test run on the day before the contest and again on the day of the contest before it begins.
- ii. The team that fails the examination is not allowed to participate in the test run or contest.***

# 3. GAME PROCEDURES

## 3.1 Length of a Game

- i. Each match lasts in **three (3) minutes**.
- ii. The match **ends immediately**, even before three (3) minutes for the following cases:
  - a) When **“Mekar”** is achieved.
  - b) **Disqualification** is announced in the game.
  - c) When the referee judges that **the game cannot continue**.

## 3.2 Setting of Robots

- i. **One (1) minute** is given for setting of robots before the game starts.
- ii. **Three (3) members** of each team can engage in setting of robots.
- iii. Any teams that fail to complete setting of the robots within one (1) minute can resume the setting once the game starts.

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## **3.3 Deployment of the Robots and Team Members**

- i. Manual Robot must be started in Manual Start Zone.
- ii. Automatic Robot 1 must be started in Automatic 1 Start Zone.
- iii. Automatic Robot 2 must be started in Automatic 2 Start Zone.
- iv. The team members who perform the starting action must leave the Game Field immediately after starting the Automatic Robot.

# 4. COMPETITION TASKS

Once the game has begun, each team shall complete the tasks:

1. The **Manual Robot** picks up **three (3) Baskets** and places them at any Pole at the Common Zone. **Without completing this task**, the Manual Robot is not allowed to do other tasks and Automatic Robots are not allowed to start.
2. The **Manual Robot** brings the Sepal and places it at the Decoration Point on the Pavilion.
3. The **Automatic Robots** collect Petals and Stamen Bases from the Storage Points and place them at the Preparation Points from the ground field only.
4. The **Automatic Robots** move up to the Pavilion, take a Petal and a Stamen Base from the Preparation Points, stack a Petal on the Sepal at the Decoration Point and stack a Stamen Base on the Petal.

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5. The **Manual Robot** collects any Stamen that belong to its team from the Common Zone and places it at the decorated Flower on the Pavilion. Manual Robot is allowed to touch the decorated Flower during this task at the Decoration Point.
6. The **Automatic Robots** carry the Completed Flower and drop it on the Sea of Challenges. ***No part of the robots is allowed to touch the Sea of Challenges either directly or indirectly.***
7. **Only the Automatic Robots** can bring the Stigma and drop it on the top of the Stigma Stem, in the Completed Flower floating on the Sea of Challenges. ***No part of the robot is allowed to touch the Completed Flower directly or indirectly.***

# 5. GAME RESTRICTIONS

1. In any case of **dropping the Stigma on the Game Area**, the dropped Stigma **cannot be re-used** any further in the match.
2. In the case of **dropping the Baskets, Stamens or Sepal**, the Manual Robot can pick it up if it is inside its own Game Area, including the space above it. The dropped Baskets, the Stamens and the Sepals **can then be re-used**.
3. The Automatic Robots can do any tasks of the Manual Robot **except the task Rule (5.1)**.
4. The Manual Robot can be switched to become an Automatic Robot after placing all Baskets at the Common Zone with referee permission. The switching process must be done in any Automatic Start Zones.

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5. If the **Flower is not complete**, no score is given for dropping that Flower on the Sea of Challenges and **no score** for dropping the Stigma on the incomplete Flower.
6. In the case of **dropping objects (except for the Stigma)**, robot can pick them up as long as they are inside its own colour's Game Field and **can be used again**.
7. Team members **cannot touch** any robots except during starting operation or *Retry*.

# 6. RETRIES

1. A *Retry* can be made only after the **referee permission**.
2. Team members are allowed to touch the robots while preparing for a *Retry*.
3. Retries of a robot or several robots at the same time **can be made as many times as necessary**.
4. A ***Retry of Manual Robot*** is made at Manual Start Zone only.
5. A *Retry* of Automatic Robot is made at either Automatic 1 Start Zone or Automatic 2 Start Zone.
6. The team can request the referee to bring the dropped Petal or Stamen Base back to their previous locations; back to the Storage Points or back to the Preparation Points if they are successfully placed earlier during a *Retry*. The earned score still remains.

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7. The team can request the referee to bring the Completed Flower that was dropped on the way to the Sea of Challenges back to the Decoration Point during *Retry* with the score remains.
8. The team can bring all the objects which are held by the robots during *Retry* back to the Start Zones. However, the dimensions must follow **Rules (8.5) and (8.6)**, otherwise the objects will be considered as the dropped objects.
9. *Retry* is **compulsory** if the Manual Robot drops the Baskets during carrying Baskets to the Common Zone.
10. *Retry* are **compulsory** for any violation occur otherwise it will lead to disqualification.
11. Strategies premised on the use of retries are allowed.

# 7. VIOLATIONS

- The violations are categorized as follows:
  1. Any part of any robot or the objects held by any robot **moves out of the game field or the space above it.**
  2. Any part of any robot or the objects held by any robot **enters the opposing team area or the space above it.**
  3. Any part of the Manual Robot or the objects held by the Manual Robot enter the Sea of Challenges or the space above it.
  4. Any part of the **Manual Robot physically touch any Automatic Robot** either directly or indirectly.
  5. Any part of any robot or the objects held by the robots **cause obstruction in the Common Zone.**
  6. The **operator of the Manual Robot** uses the Manual Robot **to hinder or cause difficulty** for the opponent team while placing Baskets in the Common Zone.

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7. Any part of any Automatic Robot physically **touches the Sea of Challenges**, especially during dropping the Completed Flower, either directly or indirectly.
8. Any part of any Automatic Robot physically **touches any part of the Flower** floating in the Sea of Challenges, especially during placing a Stigma, either directly or indirectly.
9. The Automatic Robot **holds any Stigma** and the **Completed Flower at the same time**.
10. The **Automatic Robot places any Petals** to the Preparation Points **while it is on the Pavilion**.
11. Other **actions that infringe on the rules** without producing disqualification.

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- **20 points** will be immediately deducted **for each violation**.
- If the **violation still continues**, 20 points will be deducted for every **three (3) seconds**.
- *Each time of deduction is considered as the number of violations.*
- *The team with three (3) violations in a match will be disqualified.*

# 8. DISQUALIFICATION

- A team shall be disqualified if committed to any of the following during the match (**- 60 points**):
1. The team **damages or tries to damage** the Game Field, and/or facilities and equipment of opponent's robots.
  2. The team has made a **false start three (3) times** in the same match.
  3. The team performed any act that is not in the spirit of fair play.
  4. The team **fails to obey** instructions and/or warnings issued by the referees.
  5. Any team **withdraw/walk-over** from the match.
  6. The team has made **three (3) violations** in the same match.

# 8. DECIDING the WINNER

1. The first team successfully drops a Stigma on the completed Flower on the Sea of Challenges is the winner of the game. This is the achievement so called “Mekar”.
2. If neither team achieves “Mekar” at the end of the three (3) minutes, the winner is decided based on the **final scores** and highest score is the winner. The score of each task is described as in Table 1.
3. Points simulation:

# 10. OTHERS

- The legitimacy of any action not provided in this rule book shall be subject to discretion of the referees.
- The dimensions described in the rule book have a margin of error of plus or minus 5% unless otherwise stated.
- However the dimensions and weights of the robots as shown in the rule book are the maximum and cannot be tolerated.
- All FAQ should be addressed into this website of the Malaysia Robot Contest 2011, <http://www.robofest.org.my/index.asp>
- Notification of any additions and/or corrections to this rule book will be made on the official web site.
- The referees may demand additional explanations on safety issues when the safety of a robot is deemed to be in question.

# Q & A

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# THANK YOU

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# GOOD LUCK

