

# ROBOKEN

# 2017

## 1.0 OUTLINE OF THE CONTEST

The game is derived from the activities that occur at the “poll stations” during the general electioneering process in the Republic of Kenya, in which the voters are required to elect the candidates of their choice from the list of contesting candidates presented by the electoral body, Independent Electoral and Boundaries Commission (IEBC). IEBC is responsible for the issuance of voters’ registers, ballot papers and ballot boxes, verifying the voters against the list of registered voters, counting of votes and announcing the winners in all the polling stations. During the process, the voters are verified using their national identity cards and confirmed to be voters from the voters registers with the help of the Biometric voter registration system (BVR-system), after which the electoral officers issue the voters with the respective “ballot papers” for the contesting candidates for the positions of: Members of county assembly (MCA), Women representative, Member of parliament, Senator, Governor and the President; all these ballot papers are different in colour. The voter after being given the ballot papers is directed to a private area “a booth” to mark the candidate of choice, where he/she heads to the “ballot boxes”, distinguished with respect to the ballot papers as per the seat under contest to cast the vote, where-after they leave the poll station to give chance for the next voter.

The game aims at the robots (the voter) reporting at the poll station (team A-blue field and team B-red field), getting his registration details verified by the IEBC officers, if registered, collects the ballot papers. In this case only three candidates; PRESIDENTIAL-RED ballot, GOVERNOR-YELLOW ballot & MEMBER OF PARLIAMENT-BLUE ballot). After collecting the ballot papers, the robot then goes to the voting booth to select his candidate. From this point the robot then

heads to the voting boxes to cast their votes. The voting boxes are placed on a raised platform that is clearly visible for all to see.

In this game, the game robot is expected to report to the poll station, go to the verification desk, pick the ballot papers, select his/her candidate at the private booths and cast the votes in ballot boxes. The robot that achieves this in less than or three (3) minutes is declared the winner

## **2.0. THE GAME FIELD STRUCTURE AND SPECIFICATION**

- a) The field consists of a Game Area having the dimension of 6m x 6m and surrounded by a wooden fence with a height of 0.15m and a thickness of 0.025 m. The game field is divided equally for two teams by a wooden fence with a height of 0.15m and a thickness of 0.025m.
  
- b) White lines with a width of 0.03m made of non shiny sticker are drawn on the floor of the Game Area at a distance of 0.3M from each other.
  
- c) The Game Area consists of a starting zone, voter verification area, ballot box picking zone, voting booths and the ballot boxes.
  - i. The starting zone for each robot is a square of 0.5M diagonally placed at each corner of the game field.
  - ii. The verification desk and the voting booths are both tunnels of 0.6m x 0.6m x 0.6 m
  - iii. Ballot papers are placed on a raised platform with a height of 15cm with a top 70cm x 10cm clearly marked Red, yellow and Blue equally placed.
  - iv. The boxes are placed in a lifted up platform with a height of 0.2 m and a square platform of 1m. Two ramps each with a length (slope) of 1.0m are built at two sides of the raised platform
  - v. Ballot boxes are placed at the corner of each platform. The details are shown in figure 1.

### **3.0 Game Procedure**

- a. Each match last for 3 minutes**
- b. In any of the following cases, the match ends immediately (even before three minutes).**
  - i. When a successor is announced**
  - ii. Disqualification is announced**
  - iii. When the referee judges that the game cannot continue**

### **4.0 Setting of Robots**

- i. One minute is given for setting of robots before the game starts.**
- ii. At most two members of each team can engage in setting of robots.**
- iii. Any teams that fail to complete setting of the robots within one minute can resume the setting again once the game starts.**



## 5.0 Deployment of the robots and team members at the start of the game

- i. Game Robot must be started in the Start Zone.
- ii. After starting the game robot, the team members who perform the starting action must leave the game field immediately.

## 6.0 COMPETITION TASKS AND GENERAL RESTRICTIONS

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

- i. The Game Robot must go to the verification box
- ii. The Game Robot will then collect the three ballot papers
- iii. The Game robot then goes to the voting booth to select his or candidates
- iv. The game robot then goes to cast the vote
- vi. Finally the game robot then goes to the start zone

## 7.0 DECIDING THE WINNER

- a. The first team whose Game Robot successfully votes in the three candidates and goes to the starting zone within the 3 minutes shall be declared the winner.
- b. If neither team achieves the above within 3 minutes, then the winner shall be decided on marks scored and time taken. The score shall be decided as follows
  - i. A team that is successfully identified and verified by going through the verification desk ( 9 marks)
  - ii. A team that successfully picks a ballot paper (5 marks for each ballot = 15 marks)
  - iii. A team that successfully marks a candidate (passing through the booth) (5 marks for each ballot = 15 marks)
  - iv. A team that successfully moves up the ramp with a ballot (5 marks for each ballot = 15 marks)

- v. A team that successfully casts the three ballots correctly for each elective post(12 marks for each ballot = 36 marks)
- vi. A team that successfully leaves the casting zone down the ramp, after casting the three votes (5 marks)
- vii. A team that successfully parks ( 5 marks)

## 8. Retries

- i. A retry can be made only after the referees' permission.
- ii. Team members are allowed to touch the robots while preparing for a retry.
- iii. Retries of a robot or several robots at the same time can be made as many times as necessary.
- iv. A retry of game Robot is made at Start Zone only.
- v. During a retry, the team can request the referee to bring the ballot papers back to their previous positions. During a retry, the team can request the referee to bring the completed papers that was dropped on the way back to the starting point. The earned score still remains.
- vi. During a retry, the team can bring all the objects which are held by the robots during asking for the retry back to the Start Zones. However the dimension of each robot and its objects in the Start Zone.
- vii. The Game Robot is not allowed to place the ballot papers in the wrong box, this action causes violation and a retry is compulsory. The papers which are placed in the wrong boxes will be brought back to the starting point.

## 9. SPECIFICATIONS OF CONTEST TOOLS

- a. The game field, the ballot papers and ballot boxes, the verification desk and the booth are provided by the organizer.
  - i. The mass of ballot papers shall not exceed 500 g and shall be made from foam material.

## 10. CAUTIONS IN ROBOT DESIGN AND DEVELOPMENT

- i. Each team is recommended to build 2 robots: 1 Game Robot and 1 Spare Robot.
- ii. Each robot must not be split into sub-units or connected by flexible cords.
- iii. Wireless radio frequency is prohibited.
- iv. The robots in the contest must be built by the team members from the same institution.
- v. Game Robots
  - a. Each Game Robot must perform its tasks automatically after it is started by a team member.
  - b. In the Start Zone, the Game Robot must have its dimension no larger than 0.5 m in width, 0.5m in length and 1m in height. There is no limitation on the dimensions of the Game Robot after the game starts.
- vi. Weights of the robots
  - a. The total weight of all robots, equipments and other devices used in the entire contest must not exceed 50 kg. However, the back-up set of batteries of the same type, weight and voltage as the primary set of batteries, is exempted.
- vii. Power sources of the robots
  - a. Each team must prepare its own power sources.
  - b. The voltage of the power sources used by each robot must not exceed DC24V.
  - c. The pressure of the compressed air power must be less than 6 bars.
  - d. The organizer has the right to declare and prohibit any dangerous and inappropriate power sources.
- viii. Safety rules
  - a. The use of explosives, fire or dangerous chemicals is prohibited.
  - b. 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.

## 11 VIOLATIONS

If a violation occurs, 10 points will be immediately deducted and if the violation still continues, 10 points will be deducted for every 3 seconds. Each time of deduction is considered as the number of violations. The team with three violations in a match will be disqualified. The violations are categorized as follows:

- i. Any parts of any robots or the objects held by any robots move out of the game field or the space above it.
- ii. Any parts of any robots or the objects held by any robots enter the opposing team area or the space above it.
- iii. Any parts of any robots or the objects held by the robots cause obstruction
- iv. The Game Robot hinders or cause difficulty for the opponent's Game robot

## 12. DISQUALIFICATION

A team will be disqualified if it commits any of the following actions during the match:

- i. The team damages or tries to damage the field, facilities, equipments or opponent's robots.
- ii. The team performs any acts that are not in the spirit of fair play.
- iii. The team fails to obey instructions or warnings issued by the referees.
- iv. The team has made a false start for three times in the same match.
- v. The team has made three violations in the same match.

## 13. SAFETY ISSUES OF THE ROBOTS

- i. All robots must be designed and manufactured as to pose no danger of any kinds to any persons in the venue.
- ii. All robots must be designed and manufactured as to cause no damage to

any robots of the opposing team or the field.

#### 14. TEAMS

- i. Each participating Institution in the contest can be represented by one team only.
- ii. A team consists of ten students and three instructors who all belong to the same institution. One of the ten students of the team is entitled to participate in the match.
- iii. In addition, other members of pit crews can adjust the robots in the pit area and can help to carry the robots to the field, but cannot participate in the match. The members of the pit crews must be students of the same Institution.
- iv. Participation by post-graduate students is not permitted, However they can be allowed to make presentation