

# **TAMILNADU COLLEGE OF ENGINEERING**

## **DEPARTMENT OF AUTOMOBILE ENGINEERING**

### **RULE BOOK**

### **ABLAZE 2K19**

#### **NATIONAL LEVEL MINI BIKE RACING CONTEST**

## **CONTENTS**

### **SECTION 1:**

- **ADMINISTRATIVE REGULATIONS:**
- ABLAZE OVERVIEW
- ELIGIBILITY - TEAM
- REGISTRATION REQUIREMENTS AND PROCEDURES
- SAFETY REQUIREMENT

### **SECTION 2:**

- 2.1 TECHNICAL REQUIREMENTS**
- 2.2 MARKETING PRESENTATION**
- 2.3 SPECIFICATIONS**

### **SECTION 3:**

- 3.3 CHALLENGE:**
  - 3.1.1 STATIC EVENTS
  - 3.1.2 DYNAMIC EVENTS

### **SECTION 4:**

- 4.1 OVERVIEW OF EVENTS AND RULES**
  - 4.1.1 OFFICIAL ANNOUNCEMENT
  - 4.1.2 RULES AUTHORITY

- 4.1.3 VALIDITY OF RULES
- 4.1.4 RULES COMPLIANCE
- 4.1.5 BEHAVIOR
- 4.1.6 SMOKING AND ILLEGAL MATERIAL
- 4.1.7 UNSPORTSMANLIKE CONDUCT
- 4.1.8 OFFICIAL INSTRUCTIONS
- 4.1.9 ARGUMENTS WITH OFFICIAL
- 4.1.10 TRASH CLEAN-UP
- 4.1.11 COMPETITION OBJECTIVE - A REMINDER

## **SECTION 5:**

### **5.1 AWARD & PRIZE MONEY**

- 5.1.1 CASH PRIZES
- 5.1.2 SPECIAL AWARDS

## **ABLAZE 2K19**

### **NATIONAL LEVEL MINI BIKE RACING CONTEST**

#### **SECTION 1:**

##### **ADMINISTRATIVE REGULATIONS:**

- **ABLAZE OVERVIEW:**

This is a mini-bike racing event organised by TAMILNADU COLLEGE OF ENGINEERING. To empower the young talents in fabricating and racing the bike in a National level mini-bike competition. This event enhances the technical knowledge to the Engineering students.

##### **1.1.5 ELIGIBILITY-TEAM:**

**Team Name:**

Every team should have an inspiration, innovation and meaningful name.

**Team Logo (optional):**

Every team should have an attractive team logo. The team logo should represent the team name (logo related with team name).

**Team Captain:**

Every team requires a team captain and vice team captain. The presence of team captain/vice-captain is mandatory in the event.

**Discipline:**

Every team member must be diploma/undergraduate/postgraduate student of any Discipline.

**Driver:**

Every team should have two drivers; driver must be under of 18 years old. The driver should have a valid driving license and the same will be verified during the event.

**Faculty Advisor:**

Every team must have a **Faculty Advisor** but his presence is not mandatory. The faculty advisors need to verify all the technical requirements under rulebook before get into event.

**Team Member:**

Every team requires a **minimum of 4 members and maximum of 6 members**. The members of the team must be from the same college/university.

## **1.1.5 REGISTRATION REQUIREMENT AND PROCEDURE:**

### **Detail of Registration:**

Download the registration form. Fill the registration form respectively. Send scanned copy and soft copy to our official mail

As soon we receive your E-mail, we will confirm your registration from our side with a conformation mail with your team id.

All the correspondence should take place from the Team's e-mail id or Team captain's e-mail id only.

After registration, during the mail correspondence the Name of the Team, Name of the Captain, Name of the College and Team ID should be mentioned for the quick and prompt reply.

## **1.1.6 SAFETY REQUIREMENTS:**

### **Driver's Equipment:**

The drivers must use a helmet, gloves and shoes during the dynamic rounds. The Driver seat should be properly fixed and rigid. Each team must have two drivers and both of them must possess a valid driving license which should be produced to inspection team during the event.

Rider must have a proper driver suit absence of driver suit the team not eligible to ride on track.

## **SECTION 2:**

### **2.1 TECHNICAL REQUIREMENTS:**

The following requirements and restrictions will be enforced throughout the technical inspection. Noncompliance of any of these must be corrected and the bike should be re-inspected before the bike is allowed to operate under power.

Once the bike has been presented for jury inspection in the design events then until the completion of the process of modification should not be carried out in the bike.

The Bike must maintain all required specifications are listed.

#### **Wheel base:**

The bike must have a wheelbase of maximum 1300 mm. The wheelbase is measured from the centre of ground contact of the front and rear tires with the wheels pointed straight ahead.

#### **Overall Length:**

The bike must have an overall length of maximum 1600 mm. The length is measured from the front end of the bike to the rear end of the bike.

**Width:**

The bike must have an overall width of maximum 590 mm.

**Height:**

The bike must have an overall height of maximum 950 mm.

**Ground Clearance:**

The bike can have a maximum ground clearance of 220 mm.

**Bike Identification number:**

All the teams will be given a particular Bike number, and the Bike will be known by this number in the whole event. Teams are required to have a team name with an impressive team logo along with the college logo which is to be placed on the Bike's body. Teams are advised not to place any logos on the front of the Bike because the Bike number will be placed on the front of the Bike along with the event logo.

**Manufacturing Cost:**

Teams are required to bring the cost estimation details only the technical cost of the bike will be taken into consideration and during dynamic round teams are required to bring their original bills. (E-bike participants compulsory need to submit their motor bill)

**Weight:**

The weight of the bike should not exceed 90kg.

**Suspension:**

The bike must be equipped with a proper suspension system.

**Wheel:**

The diameter of the wheel should be less than 16 inches.

**2.2 MARKETING PRESENTATION:**

Team after attended the technical inspection should move on to the marketing presentation bay to showcase their vehicle in front of represent juries. Maximum of five minutes is given to each team for their marketing presentation. Maximum of three can present along with their vehicle. Presence of captain is mandatory.

Business plan is a scored activity and the best presentation will be awarded in main event.

## 2.3 SPECIFICATIONS:

### Engine Specifications:

|                         |   |
|-------------------------|---|
| ENGINE                  | Layout Single cylinder, Air-cooled, Two-Stroke<br>Displacement Max 60cc and 80cc<br>Fuel System Carburetor / Fuel Injection |
| GEARBOX and FINAL DRIVE | Type Automatic, Manual<br>Transmission Type Belt / Chain  |
| CHASSIS                 | Frame   |
| SUSPENSION              | Front suspension, Rear suspension or any  |
| WHEELS and TYRES        | Wheel Type Alloy or Spokes<br>Wheel Size (Front/Rear) Less than 16-inch diameter<br>Tube or Tubeless                        |
| BRAKES                  | Front Drum / Disc<br>Rear Drum / Disc   |
| OTHERS                  | Starter Electric or Kick<br>Fuel Capacity 5 Litres<br>Top Speed 60 Km/hr (advised)  |

## SECTION 3:

### 3.1 CHALLENGE:

The teams have to compete in two rounds, static round and the dynamic round. Points are distinctively divided for the two rounds.

#### 3.1.1 STATIC EVENT: (1000 POINTS)

##### JUDGEMENT CATEGORIES AND POINT DISTRIBUTION:

Documentation required during the static round soft copy as well as hard copy of all reports given below are required.

##### Overall Design Report:

This report should contain the design methods, detailed spec-sheet of the bike & the calculations used for the overall design.

## **Technical Inspection (T.I):**

### **Objective:**

The objective of Technical Inspection round is to determine the ability of the bike meet to meet the requirements and restrictions of RIDE rules. T.I is a non-scored activity but disqualification of teams may occur.

Each Bike must pass all parts of Technical Inspection and testing before it is permitted to participate in any dynamic event. The exact procedures and instruments employed for inspection and testing are entirely at the discretion of the Chief Technical Inspector.

Bikes must be presented for technical inspection in finished condition. I.e. full Assembly completed and ready-to-run. Technical inspectors will not inspect any

Bike presented for inspection in an unfinished state.

### **B-PLAN:**

Team after attended the technical inspection should move on to the marketing presentation bay to showcase their vehicle in front of represent juries. Maximum of five minutes is given to each team for their marketing presentation. Maximum of three can present along with their vehicle. Presence of captain is mandatory.

Business plan is a scored activity and the best presentation will be awarded in main event.

### **Corrections:**

If a Bike does not comply with the rules, then correction must be done to be included in re-inspection process.

### **Questionnaire:**

There will be a questionnaire round and any of the team members will be questioned by the judges. Questions will be related to manufacturing and other technical aspects of the bike. Engineering practices of the teams will also be evaluated.

### **Cost report:**

In this report, the cost of the components used in the bike must be specified. It is cross checked by the inspection team. The actual cost must not vary with that in the report.

Submission of motor bill for e-bike and solar bike participants is mandatory.

### **Manufacturing Level:**

Good engineering practice will reflect a great manufacturing quality. The bike will be examined by the judges at the time of Dynamic Event. So

the participating teams are advised to manufacture the bike with pre-planned strategies so that the bike would be able to compete in several tasks and tests.

The best solar performer award is one of the special awards. The award was given according to the mileage basis.

| <b>S.NO</b> | <b>CATEGORY</b>        | <b>POINTS</b> |
|-------------|------------------------|---------------|
| 1.          | Design Evaluation      | 200           |
| 2.          | Cost Report            | 200           |
| 3.          | Innovation             | 300           |
| 4.          | Marketing Presentation | 300           |
|             | Total                  | 1000          |

**Point's distribution for static round: (1000 points)**

### **3.1.2 DYNAMIC EVENT: (1000 POINTS)**

#### **1. Brake Test**

All the bikes have to pass the brake test to participate in any of the Dynamic Events. The bike must stop in a straight line after the brake is applied. Each bike will be given 2 attempts to pass the brake test. And in case if the bike passes the test in the first attempt it will not be given further trials.

**Note:** The Brake Test does not have any points, but it is mandatory for the teams to qualify this round to participate in the Dynamic Round.

#### **2. Acceleration Test: (250 points)**

##### **Objective:**

The acceleration event evaluates the Bike's acceleration in a straight line on flat pavement.

##### **Procedure:**

The bike will accelerate from a standing start over a distance of 100 m on a flat surface. The foremost part of the bike will be staged at exactly behind the starting line. The time taken to accelerate would be measured.

##### **Penalty:**

Cones Down or Out: A two (2) second penalty will be added for each time (including entry and exit gate cones) that occurred on that particular run to give the corrected elapsed time.

### **3. Skid Pad test: (250 points)**

#### **Objective:**

The objective of the skid-pad event is to measure the Bike's cornering ability on a flat surface while making a constant-radius turns.

#### **Skid Pad Layout:**

There will be two (2) pairs of concentric circles in a figure of eight pattern. The centres of these circles will be 2m apart. The inner circles will be 2.5m in diameter, and the outer circles will be 4.5m in diameter. The driving path will be the 2m path between the inner and outer circles. The bikes will enter and exit through gates on a 2m wide path that is tangential to the circles where they meet. The line between the centres of the circles defines the start/stop line. A lap is defined as traveling around one of the circles from where he start/stop line and returning to the start/stop line.

#### **Procedure:**

The track is laid on as shown and the bike will enter the track perpendicular to the figure eight. They must take one full lap on the right circle to establish the turn and the bike must move on to the left circle to complete the lap. This completes one lap and will be timed. Immediately upon finishing the circle the lap will be completed, and the bike will exit the track. The bike will exit at the intersection moving in the same direction as entered. A driver has the option to take a second run immediately after the first.

#### **Penalties:**

**Cones Down or Out:** A penalty of 1second will be added to the time for everyone that is knocked down or out (including the gate cones).

**Unfinished:** Bike's that have gone out of the track will continue as long as they havenot gone off course will be classified as Unfinished. Bike's that do not follow procedure, i.e. run an incorrect number of laps or run the Laps in the wrong sequence will also be classified as unfinished.

**Legs touching the ground:** A penalty of 2 seconds will be added to the time forevery time the rider touches the ground with any/both of his feet.

### **4. Endurance event: (500 points)**

#### **Objective:**

The endurance event is designedto evaluate the bike's overallperformance, reliability and efficiency.

### **Procedure& Specifications:**

In general, the teams completing the laps in the shortest time will earn the maximum points available for this event. The endurance distance is approximately 1.2km.

The track consists of various obstacles at different places like standing water, muddy sand, converging bridge, rocks, etc.

### **Endurance Penalties:**

The penalties in effect during the endurance event are listed below:

### **Cone down or out:**

1 second per cone. This includes cones before and after Start/finish line.

### **Off Course (OC):**

For an off Course, the driver must re-enter the track at or prior to the missed gate or a twenty (20) second penalty will be assessed.

### **Legs touching the ground:**

A penalty of 2 seconds will be added to the time for every time the rider touches the ground with any/both of his feet.

**Riding Out of Order: 2 Minutes.**

## **SECTION 4:**

### **4.1 OVERVIEW EVENT RULES AND ORGANIZER**

#### **AUTHORITY:**

After completion of registration, the team ID and other information's will be sent through the emails to the respective team email ID. The rules will be same throughout the event and any amendments done will immediately be informed to the entire participating team through email / Face book page.

#### **4.1.2 Rules Authority:**

All the authority of rules is under ABLAZE organizing Committee. Query regarding event questions or intent of these rules will be resolved by the Technical committee of ABLAZE.

#### **4.1.3 Validity of Rules:**

The rules and other information related to ABLAZE 2k19'is valid until the completion of the event and schedule as decided by the ABLAZE 2k19'Organizing Committee.

#### **4.1.4 Rules Compliance:**

By entering into RIDE, a national level competition, the team members & faculty advisors of the entering university agree to comply with, and be bound by, the rules of ABLAZE 2k19'. All the rules & procedures are issued or announced by the ABLAZE 2k19'Organizing Committee. All team members, faculty advisors and other university/college representatives are requested to cooperate with us and follow all the instructions from competition organizers, officials and judges.

#### **4.1.5 Behavior:**

All the members of each and every team are required to follow the rules laid by ABLAZE 2k19'Organizing Committee, during the competition. Any team fails to follow the rules will result in 20% reduction of overall score or elimination from the event. Arguments With officials may also result in the team being eliminated from event.

#### **4.1.6 Smoking and Illegal Material:**

Alcohol, illegal drugs, weapons or other illegal material are strictly not allowed on the event site during the competition. This rule will be in effect during the entire competition. Any violation of this rule by a team member will cause the expulsion of the entire team.

This applies to both team members and faculty advisors. Any use of drugs, or the use of alcohol by an underage individual, will be reported to the authorities for prosecution.

#### **4.1.7 Unsportsmanlike Conduct:**

In the event of unsportsmanlike conduct, the team will receive a warning from an official. A second violation will result in expulsion of the team from the competition.

#### **4.1.8 Official Instructions:**

Failure of a team member(s) to follow an instruction or command directed specifically to that team or team member(s) will result in a twenty-five (25) point penalty. There should not be any direct involvement of industrial experts in Designing and manufacturing of the bike.

#### **4.1.9 Arguments with Officials:**

Argument with, or disobedience to, any official may result in the team being eliminated from the competition. All members of the team may be immediately escorted from the grounds.

#### **4.1.10 Trash Clean-up:**

Clean-up of trash and debris is the responsibility of the teams. The team's work area should be kept uncluttered. At the end of the day, each team must clean all debris from their area and help with maintaining a clean paddock.

#### **4.1.11 Competition Objective - A Reminder**

The ABLAZE 2k19' event being organized by Department of Automobile Engineering is a challenge of design engineering and manufacturing competition that requires performance demonstration of mini bikes and is NOT a race. Engineering ethics will apply. It is recognized that lots of hard work has been put in by the teams for an entry into many events. It is also recognized that this event is an "innovation enhancement experience" but that it often becomes confused with a high stakes race. In the heat of competition, emotions, Peak and disputes arise. The officials of ABLAZE 2k19' are involving trained volunteers in organizing the event and maximum effort will be put in to settle the disputes an equitable, professional manner.

#### **Unsportsmanlike Conduct:**

In the event of unsportsmanlike conduct, the team will receive a warning from an official. A second violation will result in expulsion of the team from the competition.

#### **Endurance Penalties:**

The penalties in effect during the endurance event are listed below:

**Cone down or out:** 1 second per cone. This includes cones Before and after start/finishline.

**Off Course (OC):**For an off Course, the driver must re-enter the track at or prior to the missed gate or a twenty (20) second penalty will be assessed.

**Touching the ground:** A penalty of 2 seconds will be added to the time for every time the rider touches the ground with any/both of his feet

## **SECTION 5:**

### **5.1 AWARDS AND PRIZE MONEY:**

#### **5.1.1 SPECIAL AWARDS:**

##### **FOR BOTH 60CC AND 80CC**

| <b>S.NO</b>          | <b>AWARDS</b>               | <b>CASH PRIZE</b> |                  |
|----------------------|-----------------------------|-------------------|------------------|
|                      |                             | <b>60cc</b>       | <b>80cc</b>      |
| <b>1.</b>            | <b>1<sup>st</sup> PRIZE</b> | 8000              | 8000             |
| <b>2.</b>            | <b>2<sup>nd</sup> PRIZE</b> | 6000              | 6000             |
| <b>3.</b>            | <b>BEST INNOVATION</b>      | 1000 with shield  | 1000 with shield |
| <b>TOTAL(RUPEES)</b> |                             | <b>30000</b>      |                  |