

SIEMENS CO-PRESENTS



**QUARK<sup>20  
25</sup>**

CYBERNETIC EUPHORIA

# EVENTS RULEBOOK



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**QUARK<sup>20</sup><sub>25</sub>**  
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## PANELS:

- DESIGN AND BUILD
- ELIXIR
- CORPORATE
- MATKA
- SCHOOL BAG
- PROGRAMMER'S INC
- ROBOFICIAL

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DESIGN  
&  
BUILD

# DESIGN AND BUILD

Design and Build deals with all RC cars and plane events. The major events in this panel are

- Burnout
- Trailblazer
- Search and Rescue

- For Event Queries:  
Shaan: 8454885987

- For Registration Queries:  
Ayush: 7707035735

# Trailblazers

## General Rules

- The competition consists of 4 rounds.
- There is no limit on the maximum number of people in a team. However, a team must have at least 3 people.
- All teams are required to design, fabricate and fly an RC aircraft.
- Multiple teams from the same college are allowed, provided they do not enter multiple copies of the exact same RC plane.
- No Readymade models, like RTF, ARF, BNF, etc., are allowed.
- No lighter-than-air systems and rotary systems are allowed. Only fixed-wing aircraft are permitted.
- Participants are permitted to make alterations and modifications between rounds only if their aircraft sustains damage during a flight run. They can only do so after consulting the judges and must go through another technical inspection afterwards.
- One lap will be along a right-angle triangle of sides 80m, 100m and 128m. (subject to change depending on conditions on competition day)
- No aircraft must cross an altitude of 30m at any point due to proximity to the airport
- Any calls regarding grey areas in the rules or updates to the rules are up to the judge's discretion. The judge's decision is final. Teams may not appeal any of the judges decisions.

## Report submission

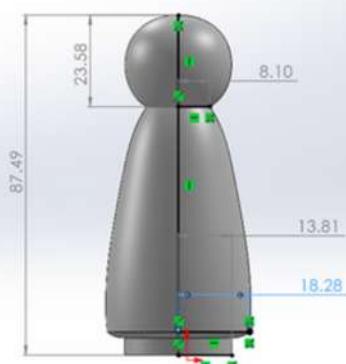
- A report must be drafted and submitted detailing the entire design process. Key components include a sensitivity analysis of the scoring statement, technical details entailing how and why the team chose that configuration, weight distribution, budget table, manufacturing details and a 3-view aircraft drawing.
- This report must be submitted by 20th January 2025.
- This report should be a minimum of 4 pages and a maximum of 8 pages long in its entirety.
- Based on the viability of the design detailed in the report submitted, the team will be invited for the fly-off.
- No significant design changes will be allowed in the final aircraft in the fly-off to the one detailed in the report.
- The top 3 reports will receive a 10% increase to their final score.

## Aircraft Specifications

- The propeller diameter should not be greater than 13 inches.
- Wingspan should be a maximum of 1.5 meters.
- Only electric motors (BLDC) would be allowed. No IC engines or any other form of propulsion will be allowed.
- Use of programming assistance in any way or form is prohibited. (e.g., Gyroscopes, flight control boards)
- There can be a maximum of one battery pack connected to a propulsion system. A propulsion system consists of one battery, one or more electronic speed controllers (ESC), and one or more motors.
- The maximum energy capacity of the battery must be at most 50 Watt-hours.
- Radiofrequency of 2.4GHz only should be used as a control link.

### Technical Inspection (Round 0)

- This is a technical inspection round, and all teams must pass this round to qualify for further rounds.
- The payload for this year is a wooden doll passenger. (dimensions in millimeters)



- The plane must house a minimum of 1 and a maximum of 5 passengers according to the team's choice. This number will be declared during technical inspection by the team and cannot be exceeded in any attempt.
- Passengers of given dimensions will be provided on the mission field. They will be 3D printed out of regular PLA. The weight of the payload will be 21g. Teams may bring their own passengers; however, these will be inspected by the judges.
- The passengers must be carried internally to the aircraft. No part of the passengers can be part of or extrude outside of the airplane's external surfaces or features.
- Teams must fabricate a parachute-like attachment that can be attached to the passengers.
- There is no rule limiting the design of this attachment. It should slow down the fall of the passengers. This attachment must be removable. Permanent adhesives like epoxy are not allowed to secure this mechanism.
- A mechanism to drop the passengers from the payload bay in the aircraft through remote control must be demonstrated during tech inspection.
- The aircraft's empty weight (including battery and all other non-payload and payload drop must be less than 1500 grams.
- All the battery packs, motors, ESCs, transmitters and receivers, and other equipment to be used in subsequent rounds must be shown to the judges. Only inspected pieces of equipment will be allowed.
- Battery packs, motors, ESCs, and propellers must be commercially procured and not tampered with.
- Teams must clear technical inspection to proceed to the main competition.

### Mission 1 (Flight Envelope Test)

- The plane must complete 2 laps in less than 5 minutes.
- No payload is required for this round.
- The plane must be hand launched. The hands of the thrower must be at least 4 centimeters behind the propellers in the case of a puller. Throws pertaining to pusher configuration planes will be looked at from a case-to-case perspective.
- A successful landing is required for a score.
- Score= 1 for successful mission.
- Score= 0 for unsuccessful mission

### Ground mission

- This mission will only be held if there is sufficient time to do so.
- The team must prepare (attach passenger to parachute), load and drop the passengers as fast as possible, while the aircraft is on the ground.
- Only one member of the team can perform this mission.
- The team must perform this mission with the maximum passengers declared in technical inspection.
- Score= (Best Team's Time)/ (Your Time)

### Mission 2 (Parachuting passenger)

- The team can do up to 5 laps of the circuit. A minimum of one successful lap with a successful passenger drop must be performed for a valid score.
- The passenger must be released in a way that lands him as slowly as possible. Passengers must be prepared with the parachute attachment and loaded in a 5 minute staging window prior to flight.
- The plane must be hand-launched and successfully landed for a score.
- Planes may not land mid mission. The planes must have the ability to house and drop multiple passengers in order to maximize their score.
- The judges must be informed before the team releases the passengers. Passengers released without indication will be considered an unintentional drop and will thus be declared an unsuccessful drop.
- The time will be counted from the release of a passenger till it touches the ground.
- Unsuccessful drops include drops where:-
  - The judge loses sight of the passengers.
  - The judge is not informed of the drop
  - The passenger does not touch the ground within 2 minutes.
  - The passenger touches the ground within 3.5 seconds.
  - The passenger gets stuck on a tree or power line.
  - The passenger veers out of the competition zone.
- SCORE=  $1 + [(L * P * T) / (\text{Best Team Score})]$ ,  
where L= Number Of Laps Completed,  
P= Number Of Successful Passengers Dropped,  
T= Combined Total Time of All Successful Passenger Descents.

**SCORE= (LAPS COMPLETED\*SUCCESSFUL CARGO DROPS\*SUM OF ALL TIMES)**

**• THE TIME WILL BE COUNTED FROM RELEASE OF CARGO TILL IT TOUCHES THE GROUND**

# Search and Rescue

Design a wireless remote-controlled flying platform to carry and drop critical materials for trapped refugees in a disaster-affected area through an obstacle course.

## Drone Design Specifications

- All drones should have protection fenders.
- The drone should fit in a 40 X 40 cm square with protective fenders
- The drones should be electrically powered
- Propeller Diameter should be less than 9 inches
- The maximum energy capacity of the battery must be at most 50 Watt-hours
- Quark will provide weights
- The dimensions of the weights will be a cube of length 5 cm.

## General Rules

- The drone must have a dropping mechanism to drop the payload
- The spot to drop the payload and the spot to land will be different
- The participant gets to select the weight of the payload
- In discrepancies, the judge's decision would prevail, and opposition to the same might lead to disqualification
- The arena path will be intimated a week before the fly-off
- Only visual line-of-sight flying is permitted. No camera systems will be allowed to assist the pilot in piloting the drone. Round - 1
- All teams will have to go through the given course with no payload
- Three attempts will be allowed, and the best score will be used in the final scoring
- The scoring analysis will be Score\_1: 1000/time best attempt

## Round - 2

- Only teams who completed round 1 will be able to participate in this round
- Teams will be allowed to use only one battery pack for this round. i.e., no changing batteries in between this round
- The weights provided will be in the following weight categories - ○ 125 grams, ○ 250 grams, 500 grams and 1000 gram
- Each team must complete the course by carrying the following loads sequentially. The team will have to start by completing the course using 125 grams, then followed by 250 grams, and so on.

- After finishing the course with a weight, the team can decide whether to attempt the course with a heavier weight by considering scoring
- Let  $W$  be the weight of the payload used in the given attempt
- After a failed attempt, the team cannot proceed with heavier weights in this round Scoring for this round will be -

If the course has been successfully completed, then -

$$\text{Score2 (current)} = \text{Score2 (Previous)} + W * 10 - t$$

If the Course for the given weight could not be completed, then the score would be -  $\text{Score2 (final)} = \text{Score2 (Previous)} / W$

#### Round - 3 (Finals):

- The top 5 teams will be selected to participate in this round
- A maximum of 2 attempts will be allowed. The best score will be selected
- In this round, teams will have to drop the payload at a given location told to them before starting this round
- The team will select the weight that will be used. Let the weight used be  $W$
- Let  $t$  be the time taken by the team to complete the course in seconds
- The weights provided will be in the following weight categories -
  - 125 grams
  - 250 grams
  - 500 grams
  - 1000 gram
  - The landing zone and the drop zone will be different
- Scoring for this round will be -

$$\text{Score3} = W(300-t)$$

#### Final Scoring

The final score will be calculated as-

$$\text{score\_final} = \text{Score1} + \text{Score2} + \text{Score3}$$

The teams will be ranked by their score\_final only.

# Drone Race

Official IDRL SAH (STAY@HOME) CHAMPIONSHIPS Rulebook

## A. Roster Format

1. If there are 3 Pilots per team then we have GRP A only i.e. max 6 pilots available.  
Run 10 Rounds until R10 with 1 min break between each round.

Rounds R1 to R10 are played one after the other with all 6 pilots flying at once.  
In Rounds R1 to R9, same ranked players from each team based on their qualifier rank (Q Rank) internally compete against each other to score 1 point.

The winner of each round gets 1 point and the loser gets 0 points.

In Round R10, only the Top two pilots from round score 5 and 3 points for their team.  
This is to keep it exciting till the end so that any team can come back from behind and clinch the win.

2. If there are > 3 Pilots per team then we have GRP A and GRP B i.e. max 12 pilots available.

Run 5 Rounds with 1 min break between each round until R5 and in R5 only the Top pilot's winning team takes 3 points.

All 6 pilots from GRP A fly together at once and remaining pilots from GRP B fly together at once.

Run R1, R2 for GRP A, then R1, R2 for GRP B, then R3, R4 for GRP A, then R3, R4 for GRP B, then R5 for GRP B and finally R5 for GRP A.

In Rounds R1 to R4 for both GRP A and GRP B, same ranked players from each team based on their qualifier rank (Q Rank) internally compete against each other to score 1 point.

In Round R5, only the Top two pilots from round score 5 and 3 points for their team.  
Round R5 like Rounds R1 to R4 occurs twice, once for GRP A and once for GRP B.

This is to keep it exciting till the end so that any team can come back from behind and clinch the win.

## B. Definitions and Formulae

Official IDRL Currency = Debatas (Symbolic Value = D formatted in the style of letter D from official IDRL logo)

Pilot Match Value (PMV in Debatas) = 10000 Debatas \* PMV Ratio = X Debatas

PMV Ratio = ((Total Points Scored in Match / Rounds played) + 1) - (Qualifying Rank / 10)

Team Match Value (TMV in Debatas) =  $\Sigma$  PMV of all team pilots

#### C. Rules

Each IDRL SAH match during the SAH season will be played on every Saturday at 9:30 pm IST as a Saturday Night Live (SNL) match between two city teams across India.

Track for an SNL match between two teams according to the SAH Season Race Schedule will be released by midnight on Wednesday of that week.

All the pilots of the two teams scheduled for a particular episode must join the IDRL Discord Voice Channel at sharp 9 pm IST. The pilots should maintain decorum and not chit chat needlessly on the voice channel. Only if there are issues or points that the pilots need to address then they will be heard. The pilots must also tune to all announcements of the Race Director sent on the same Voice Channel.

If there is an odd even number of pilots across the two competing teams, then the number of participating pilots from each team will be equal to the maximum pilots available from the team that has the lower number of pilots with a minimum of 3 pilots available.

If it's an even number then all pilots will compete.

There will be a cap of Max. of 6 pilots per team that can participate in each episode.

Team captains can call in for pilot replacements in the event that a pilot is disabled for technical or other reasons.

Teams can be of different sizes. But a minimum of 3 pilots per team is required either by virtue of the original team players or by max. 1 sub trade from an external team. Also captains can take two approaches to form their squad for a particular episode:

A. Selection based on pure merit i.e. as per fastest qualifying time.

B. Selection based on group vote provided all those selected have set their times on the track for that episode. This allows for rotation of pilots to occur.

Each of the points above requires pilots to have set a qualifier timing on the track leaderboard by 8:30 pm IST.

If one or more pilots of any team are scheduled to go for the next round starting in 1 min, and if they are disconnected from the game server for any reason then a timeout timer of 2 mins will be started for that pilot(s). If the pilot(s) is unable to reconnect to the game server and is in a ready to go position on the start launch pad before the timeout timer expires then the point goes to the opposing pilot competing internally (as per A. Roster Format given above). If both the pilots from two teams timeout then they both are awarded 0 points for that round.

**Most Important Rule:** The time that the next round starts after the previous round ends is exactly 1 min. Irrespective of how many and which pilots are available for the next round, the next round will start exactly in 1 min. There will be no excuses tolerated for not being available for the next round. The points are awarded as per A. Roster Format above.

The Team Points for each match are awarded as per follows:

Win: 2 Points | Loss: 0 Points | Draw: 1 Point | No Show: -3 Points

If two competing teams tie at Knockout Stage, then their TMV (See Definitions and Formulae) will be considered which is aggregated over matches of that SAH Season.

If within a particular round of the match if two pilots tie (this is extremely rare, more like an impossibility since total lap time is calculated upto msec) but still to be accounted for, the pilots will be given 1 point each.

A pilot must complete 3 laps in order to be eligible to get 1 or more points per round. The last place is an exception since it's inconsequential.

Each pilot must have a valid IDRL X Membership to enter the Knockout Stage and be eligible to receive their prize money share.

The prize money that each pilot of the season's winning teams receives will be proportional to their contribution throughout the series. If a pilot misses a race he is still eligible for the prize share. The captains can override this performance based distribution rule with equal pay if they feel that all pilots should receive equal amounts.

Only participating pilots will upload their timings. Strict penalties for pilots from other teams uploading their times. Please make sure your auto upload feature is turned off.

If 1 pilot from each team fails to upload timing by 8:30 pm then the race will still proceed with those 2 defaulting pilots included.

If a team has only 1 or 2 pilots who have uploaded the timings while the other team has 3 or more, then the former team has to either sub in a player from an external team to make the total count to at least 2 pilots so that they can play handicap or else forfeit the match.

Subs can only be allowed from an external team to avoid circular dependency loopholes.

Only 1 sub can be traded in by any team.

No subs will be entertained who do not have a valid leaderboard timing.

No subs will be entertained who have used a different callSign to set their timings.

If your team needs a sub then the sub should have the time uploaded on the leaderboard by 8:30 PM IST on Race Night.

If only 1 pilot from each team has uploaded timings then both teams will get forfeit points i.e. -3 and the match will be abandoned.

If any team forfeits twice in any SAH Season Championship then they will be ineligible to play further and will lose claim of any winnings for that Season.

Team captains will have until 8:30 pm IST to set their leaderboard times for that episode.

Debatas are used as a currency value for ranking pilots in the league and play a critical role in pilot trading during pilot auctions between city teams.

Debatas are also a measure of a team's net worth and they represent the standing capacity of the team to buy / sell pilots to increase the team's strength.

As of present, the captains of each team cannot be traded and only the captains or their appointed team managers are allowed to trade pilots.

It is advised that you should always have a backup player at hand.

If all 3 players of your team have uploaded timings before 8:30 pm and all three are available then you are good to go.

However, if 2 players have uploaded their timings only and you do not have any other player from either your team or any other team that has uploaded timing by 8:30 pm then you will have to forfeit the game.

If there is a third timing before 8:30 pm in the absence of the original 3rd player of a team, then you need to spend 10k Ds to acquire the said player from another team.

The individual team captains will report with a valid issue and this will be cross checked in the absence of a 3rd player. The captains can then choose to sub in an extra player by trading 10k Ds provided that player has a valid timing set on the leaderboard by 8:30 PM IST on race night.

No other pilots should or are allowed to publish their timings if it's not their match and their timing will not be considered.

In the event that the backup player also fails to appear then the team will have to forfeit the game.

Teams are allowed to appoint team managers to handle pilots / financial matters which can be purchased by the team via the means of offering a certain D stake in the team.

Team captains and managers need to first find and recruit the best talent from their home city followed by their state before turning in to trade inter-city and international players via auctioning.

Debatas will be used as a currency value for the purposes of betting on SAH matches.

Based on their net worth in Debatas, one or more interested sponsors can invest to hold an ownership stake in the city franchise team to sponsor all the needs of the pilots.

There will be a direct correlation between Indian Rupee (INR) and IDRL Debatas (D) at the time of sponsor investment.

A variety of merchandise for team city pilots and fans will be available as the IDRL SAH Championships progress.

Subs are allowed at any point throughout the Season including the Knockout Stage.

Player trades i.e. buying/selling of pilots between two city teams are allowed throughout the Season in the Group Stage and a maximum of 1 trade is allowed per team in the Knockout Stage.

Sub will mean either a player from your own team or any other player who hasn't yet joined a team and Subs outside your team will incur a cost to your team that is paid out to the subbed in pilot.

Trading will refer to exclusively trading a pilot that is already a part of another team.

No Rules or Assumptions should be made outside of the rules that are contained in this Rulebook.

Any change to the rules contained in this Rulebook will have to go through a strict review process that is approved by a majority vote on the IDRL Discord Channel.

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ELIXIR

# ELIXIR

- Elixir encompasses all the quizzes conducted. The events are-
  - 1. Ganimatoonic
  - 2. Quark National Quiz
  - 3. Torque and Trivia

- For Event Queries:  
Shaan: 8454885987

- For Registration Queries:  
Ayush: 7707035735

# Ganimatoonic

## General Rules-

- This quiz will be based on Ganimatoonics i.e. Games (not limited to just video games), Anime, Cartoons and Comics over the years.
- Anything related to these domains can be asked in the quiz.
- Team composition: 1 to 3 members; Cross college teams are allowed.
- Registration can be done on the spot.
- There will be a preliminary round conducted by the quizmaster. T
- he top eight teams from the preliminary round will participate in the finals.
- The design and scoring systems of both the preliminary and final rounds will be explained by the quizmaster on the spot.
- Quizmaster's decision is final and binding.

# Quark National Quiz

- This will be the flagship event consisting of scibiztech phenomenon: questions from the world of science, business and technology.
- Team composition: 1 to 3 members; Junior College and College students eligible for participation, with cross-college teams allowed.
- Teams per college: Unlimited there will be a preliminary written round, which when combined with the regional winners will have total 8 teams making it through to the final
- The winners of the regional rounds will be skipping the prelims and proceed straight to the QNQ finals
- Quiz will consist of an interactive final consisting of numerous rounds declared by the quizmaster on the spot.
- Scoring patterns will be explained by the quizmaster himself.
- Quizmaster's decision is final and binding.

# Torque and Trivia

Rev up your knowledge and hit the road with 'Torque N Trivia' – the ultimate automotive-themed quiz! Test your horsepower of facts across the vast landscape of cars, engines, and automotive history. From classic cruisers to high-speed supercars, navigate through a series of questions designed to challenge even the most seasoned gearheads. Buckle up for a thrilling ride through the twists and turns of 'Torque N Trivia' – where the race to automotive expertise never hits the brakes!

Team composition: 1 to 3 members. Junior college and college students eligible for participation with cross college teams allowed

Teams per college : unlimited.

## Format and rules

There will be a preliminary written round which will see top 6 teams go through to the final round

Quiz will consist of an interactive final consisting of numerous rounds conducted by the quiz master on the spot

Scoring pattern scoring will be explained by the quiz master themselves

Quizmaster's decision is final and binding.

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CORPORATE

Corporate deals with all events related to marketing, consulting and finance. The major events in this panel are:

- Regalia
- Case Crackdown
- Fix the Product
- Marketing Mayhem
- Bullion Beatdown

• For Event Queries:  
Shaan: 8454885987

• For Registration Queries:  
Ayush: 7707035735

# **Regalia**

Are you a startup founder looking for validation on your product by industry experts? Or are you looking to bag money from a B-Plan competition with the prize pool in lakhs? Even if you are a founder who is looking for potential investors - Pitchers is the place for you!! Join us at Regalia to be held during Quark, the biggest techno- management fest of India held at BITS-Pilani, Goa Campus and manifest your dream of having a shark tank like experience.

Regalia will be held in 3 stages -

**1. Registrations (Online)**

- A short 60 word writeup of what your startup is doing
- A short 30-60 second elevator pitch explaining your company(preferably done by one of the founders so we can get to know them better)
- A small pitch deck(of not more than 4-5) pages comprising problem statement, solutions, product, business model etc Resume of one of the founders

**2. Mentorship (Online)**

**3. Demo Day (Offline)**

Shortlisting - a shortlisting round will be done on Day 0 of Quark and only selected startups will move to the final round of pitching Pitch your startup in the auditorium full of people with investors and other judges sitting in the jury to award you the prize money as well as potential investments.

# CASE CRACKDOWN

## Round 1 (Think in a blink):

This round is a qualifier round in which all the participants would be tested on their basics of Quantitative Aptitude, Multi-source reasoning, graphic interpretation, and Table analysis type of questions. . This round would include basic multiple-choice questions which would not only serve as a test of knowledge but also an individual's critical thinking ability.

A few details:

The quiz will be conducted on an online platform

Questions would be multiple-choice in nature.

A screen would display the real-time fluctuations in rankings.

Top performers qualify for the next round.

Groups would be formed of the qualifying participants who form a team for the further round.

## Round 2 (Pitch Deck):

This is the second round of the competition in which the qualifying teams are presented with a case problem, they are to come up with a brief pitch deck (2-3 pages) outlining solutions to the case problem.

This year's theme is based on a popular and intriguing business problem - Turning around a failing giant company. Participants are expected to come up with bold and novel strategies to solve the problems the company is facing.

The pitch deck format allows for concise, impactful communication of ideas, mirroring real-world consulting scenarios.

Teams with the best pitch decks will be shortlisted for the final round.

The pitch decks are to be submitted in an online format before the deadline.

## Round 3 (Detailed Presentation) :

The final round consists of a presentation round. The finalists would present a more detailed deck (6-8 pages) to a panel of judges, who would evaluate the presentations and decks to choose winners.

This round will be conducted offline.

Finalists are expected to come up with realistic, detailed solutions.

Marks would be awarded for:

Problem Analysis

Originality of solution

Creativity of solution

Feasibility

Presentation quality

# MARKETING MAYHEM

## Round 1 (Think in a blink) - Unstop

This round is a qualifier round in which all the participants would be tested on their basics of marketing strategies, other marketing lingo, past marketing missteps, etc. This round would include basic multiple-choice questions that would serve as a test of knowledge and an individual's critical thinking ability.

A few details:

The quiz will be conducted on an online platform

Questions would be multiple-choice in nature.

Top performers qualify for the next round.

## Round 2 (Choose your challenge):

This is the second round of the competition, where qualifying teams are presented with a lineup of products grouped into industry-specific categories (e.g., Quick Commerce, EdTech). Each team selects a category and competes in an auction to secure a product within it. The auction will take place within a fixed bidding window, with all products in a category displayed simultaneously to ensure transparency and fairness. Once a product is secured, teams are allocated up to x hours, out of which remaining time (x-bid for product 1- bid for product 2) will be utilized in person to create a concise 3-slide deck covering the first three deliverables: product details, tagline and its reasoning, and potential brand ambassadors.

## Round 3 (Present you solution):

Within the time that they set for themselves (apart from the time utilized in round 2), the teams are expected to submit their pitch decks on a link that would be shared with them. Going beyond the time they have set for themselves; they would be penalized for the excess time they took.

It is to be noted that this round is an online submission round in which all the qualified teams are expected to submit detailed decks of their strategy. The teams would then proceed to present the decks in front of a panel of judges for the final scoring.

The deck should include:

Details of the product.

A tagline for the product and the idea behind it.

Potential brand ambassadors for the brand/product.

Design of the packaging.

Strategy for the campaign.

The submission should:

1. Be in the format specified
2. Submitted within the deadline that participants choose for themselves.
3. Include the details of all the team members.

Marks would be awarded for:

1. Your creativity
2. Presentation
3. Research
4. Campaign feasibility
5. Profitability brought to both companies

## FIX THE PRODUCT

### Round 1 (Think in a Blink) - Unstop

This round is a qualifier round in which all the participants would be tested on their basics of consultancy, product and business. This round would include basic multiple-choice questions which would not only serve as a test of knowledge but also an individual's critical thinking ability.

A few details:

The quiz will be conducted on Unstop.

Questions would be multiple-choice in nature

Top performers qualify for the next round - the cutoffs will depend on the attempts.

### Round 2 (Mix & Match) - Offline

This is the second and final round of the competition in which the qualifying teams are expected to ideate on a product that could be launched on a merger of two fundamentally different companies (i.e., A and B; as the event's name suggests). For instance, ideate on a merger product that Jockey and Kingfisher could jointly launch.

It is to be noted that this round is a submission round in which all the qualified teams are expected to submit detailed decks of their product. The teams would then proceed to present the decks in front of a panel of judges for the final scoring.

The deck should include:

Details of the product

The target audience

Market validation

Addressable market size analysis

Expected profits/gains that each of the two companies enjoys out of the merger

The submission should:

Be in PDF format

Submitted within the deadline

Include the details of all the team members

Marks would be awarded for:

Your creativity

Presentation

Research

Product feasibility

Profitability brought to both companies

# Deal Dynamics

This event is designed to test students' knowledge in business strategy and valuation, with a focus on mergers and acquisitions (M&A). It consists of two rounds: an initial quiz on finance and a detailed M&A case study challenge. Additionally, participants will have the opportunity to attend an expert-led workshop on M&A by industry expert

**ROUND 1** The quiz portion of our event will take place in 3rd week of January so as to give selected teams enough time to prepare for the grueling second round. Details of the Quiz Duration: 1 hour Format: 25 MCQs with +4, -1 Negative marking. Content: The quiz will test participants on general finance, corporate strategy, and M&A fundamentals. Platform: The quiz will be conducted on Unstop Teams: each team will have 2-3 members Selection: Top 150 teams selected will proceed to round 2

**WORKSHOP ON M&A** Duration: 1.5 hours Objective: A comprehensive session led by a professional from the industry, focusing on M&A strategies, best practices, evaluation of M&A deals as an outsider and key insights from real-world cases. Content: The workshop will cover fundamentals of M&A transactions, valuation techniques, integration strategies, and practical challenges faced by companies during mergers or acquisitions. Takeaways: Participants will gain an in-depth understanding of M&A strategies, exposure to industry practices, and guidance from leading experts in investment banking

**ROUND 2** Case Study Assignment: Teams will be given a list of 40-50 companies across various industries. Objective: Select two companies to merge, or propose an acquisition, aiming to create a more efficient and competitive entity. Teams will prepare a detailed report justifying their choices. Deliverable: A report that includes: Strategic rationale for the chosen companies Synergies in business Financial Impact of M&A on the company Implementation plan focusing on integration strategies

**JUDGING CRITERIA:** The event will be judged by a industry expert and will follow the following judging criteria: Innovation: Originality and creativity of the proposed merger/acquisition. Strategic Insight: Depth of analysis regarding business and financial benefits. Financial Acumen: Quality of financial evaluation and justification. Presentation: Clarity, structure, and professionalism of the report



SIEMENS CO-PRESENTS  
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MATKA

Matka is the E-Sports Gaming panel. The major events in this panel are

- Valorant
- FIFA
- BGMI

- For Event Queries:  
Shaan: 8454885987

- For Registration Queries:  
Ayush: 7707035735

# Foreword

This document outlines the rules that should at all times be followed when participating in a Matka competition. Failure to adhere to these rules may be penalized as outlined.

It should be remembered that it is always the administration of the tournament that has the last word and that decisions that are not explicitly supported, or detailed in this rulebook, or even go against this rulebook may be taken in extreme cases, to preserve fair play and sportsmanship. We at Quark hope that you as a participant, spectator, or press will have an enjoyable competition to partake in and we will do our utmost to make it a fair, fun, and exciting competition for everyone involved.

## Event Rules:

### 1. Punctuality

- All matches in Matka should start as stated on the provided schedule, any changes in the time must be accepted by the opposing party and administrators (if rescheduling is generally possible)..
- All participants in a match should be on the server and ready to go at the latest, 10 minutes before the match is to start.

### 2. Participants Not Showing

- If a participant is not ready to play until 10 minutes after the scheduled start of the match, he is considered a no show..
- In that case, the participant will be penalized, and the match will have to be rescheduled if the schedule allows it..
- Otherwise, the opponent will receive a default win from the administration.

### 3. Removable Media

It is strictly forbidden to connect or use any removable media on the tournament computers without prior examination and approval from the tournament administrator

### 4. WarmUp Period

- A warm-up period of 20 minutes is usually provided before a match, although this period may not be guaranteed..
- This will include the time that might be required by a player to set up his/her config and game setting2
- In case a player arrives late, no extra time shall be provided for configuration or setting changes

**5. Cheating:**

- The use of the following programs will result in a cheat ban: Multihacks, Wall hack, Aimbot, Colored Models, NoRecoil, No-Flash, and Sound Changes.
- These are only examples, other programs or methods may be considered cheats as well.
- The player who is found cheating shall be banned from further participation in subsequent iterations of Matka and his/her team shall be immediately disqualified from the tournament

# Valorant

## 1. Map Pool :

- Ascent
- Bind\*
- Breeze\*
- Haven
- Lotus
- Split
- Sunset

## 2. Veto Process

- The veto process should be completed 10 mins before the scheduled start time of the match.\*
- Only 1 player from either team can participate in the process and choices cannot be reverted after being made.\*
- The captain who'll take the first pick shall be decided with a coin toss

## 3. Map choice\*

2 Coin flip determines Team A

2 For BO1: BanA-BanB-BanA-BanB-BanA-BanB: remaining map is being played. Team A picks a side

2 For BO3: BanA-BanB-PickA-PickB-BanA-BanB: remaining map is being played as a decider map. Team A picks the side for the first map

2 For BO5: PickA-PickB-BanA-BanB-PickA-PickB: the last map is the decider map. Team A picks side for the first map

## Dropping of Player:

2 If a player drops before the first kill in the first round of a half, then the half will be restarted.\*

2 If a player drops after the first kill have been made and has not returned when the round has been decided, then the match will be paused at the start of the next round.\*

2 If a player drops and the opponent has been notified before any kills have occurred during that round, then the round will be restarted.\*

2 If a player has not returned, or cannot be replaced within 10 minutes after the pause has started, then the team with the dropped player may forfeit the match at admins discretion

## Draws

In case of a draw after all 24 rounds have been played, normal overtime rules shall apply

## **Pause**

### **i) Technical Pause**

If a player has a problem that prevents him from playing on, he is allowed to use the pause function ("!pause").

The pause function can be used at any time but it will only come into effect during freeze time (immediately, if used during freeze time, else at the beginning of the next freeze time).

The player has to announce the reason before or immediately after he paused the match.

If no reason is given, the opponent may unpause the game and continue playing. Unpausing or pausing the game without any reason will lead to penalty points

### **ii) Tactical Paus**

Each team is allowed to invoke a tactical pause of 30 seconds up to four times per map.

If the Matka Game Integration is being used, the special command "!timeout" has to be used.

Otherwise, the "!pause" command has to be used and the team has to announce the tactical pause via chat.

The pause function can be used at any time but it will only come into effect during freeze time (immediately, if used during freeze time, else at the beginning of the next freeze time).

If all tactical pauses had already been used on the same map, the admin will unpause the game and continue the game

### **iii) Admin Paus**

The admin can also pause the game from his station or from a player station when it seems required.

Also, if for some reason the player pausing does not work, they have to request the admin to do it.

# FIFA

Tournament will be single elimination with a maximum 256 participants.

All games will be played on FIFA 23.

Any regular season teams, as installed with the original game, can be selected except for all-star teams.

Games will be played for 6 minute halves.

The Game settings are as follows:

Difficulty Level: World Class

Injuries: On

Offside: On

Camera: Tele

Radar: 2D

Quick Subs: On

Allotted time for mid-game substitutions: 45 seconds

Overtime: If the game goes into extra time the winner will be decided using penalty shots

Absence of the participant will result in forfeiture with their opponent going through to the next round

Controller settings will be set as:

Competitive Master Switch: Yes

Through Pass Assistance: Semi

Timed Finishing: Off

Next Player Switch Indicator Pass Block Assistance: Off

Auto Switching: On

Air balls and loose balls Ground Pass Assistance: Semi

Cross Assistance: Semi

Analog Sprint: On

# BGMI

## Roster Requirements

**Maximum Roster Requirement:** Each Team must maintain, at all times during any Official Competition, exactly four players in the Team's starting lineup ("Starters") which is the minimum number of players allowed.

## Player Equipment:

Players may participate in Tournaments or Official Competitions only on mobile phones or approved handheld devices.

Players may not use peripheral devices of any kind without explicit written approval of Tournament Officials (including tablets, adapters, controllers, Bluetooth keyboards, and mice).

Players may not use an emulator to play on a PC or other device that is not a handheld device.

All Teams and Team Members must observe the highest standards of personal integrity and good sportsmanship at all times. Team Members must behave in a professional and sportsmanlike manner in their interactions with other competitors

## Cheating:

Cheating is prohibited. Any modification of the BATTLEGROUNDS MOBILE INDIA game client by any player, Team or other Team Member is prohibited. The use of any kind of cheating hardware, device or cheat program, or any similar cheating method such as signaling devices, and hand signals, etc., shall be deemed cheating.

Downloading any cheat program to the device used for Official Competition match is strictly prohibited.

Any matters relating to an Official Competition or BATTLEGROUNDS MOBILE INDIA that are not covered by these General Rules, any Competition-Specific Rules or the Registration Requirements shall be subject to an interpretation made by Tournament Organizer and provided to the Teams from time to time in the form of an update to, or interpretation of, these General Rules, any Competition-Specific Rules or the Registration Requirements.

**Overview:**

We will conduct three matches per team and final scoring will be based on team's final in-game placement:

**Placement Points**

1 : 15

2 : 12

3 : 10

4 : 8

5 : 6

6 : 4

7 : 2

8-12 : 1

13-16 : 0

**Stoppage of Play:**

(A) Pause

- No pauses will be permitted during Tournament play for any reason. The Tournament Operator is not responsible for players or team disconnections from the match due to personal conditions, force majeure issues, or other conditions that may result in the forfeiture of the match. Players and teams bear the responsibility for corresponding consequences and risks.

(B) Technical Malfunctions or Emergencies.

- Tournament Operator and officials should be immediately notified of any technical malfunctions or emergencies. Players should only remake the Tournament Game according to the request of the Tournament Organizer. The Tournament Organizer may remake a Tournament Game under the following circumstances, but not limited to:
  - a) Technical malfunction or a player disconnects (excluding malfunctions and disconnects as a result of a player's mistake or fault) within 60 seconds after a player lands on the battlefield;
  - b) A problem occurs during the loading screen and the game cannot be loaded;
  - c) A player is unable to move on the battlefield within 60 seconds after such player lands on the battlefield;
  - d) A player does not enter the Tournament Game before the departure of the starting plane;
  - e) Some players are able to join a Tournament Game without flying on the starting plane and without parachuting, but instead start on the battlefield.
- The decision to remake a game lobby is at the sole discretion of the Tournament Operator.

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# SCHOOL BAG

# SCHOOL BAG

- School Bag is the set of events especially designed for school students from Goa. The major events in this panel are:
  - Debate
  - Enigmatica
  - Open Showcase
  - Quiz
- For Event Queries:  
Shaan: 8454885987
- For Registration Queries:  
Ayush: 7707035735

# Quiz

The Schoolbag 2024 Quiz will be one on general knowledge with a generous sampling of questions on Science and Technology in which students from the schools of Goa get to test their quizzing aptitude and the depth of their general knowledge.

- Category:
  - A: Classes 8-10
  - B: Classes 11-12
- Rounds:
  - A written elimination round, from which select teams from each of the categories will be selected for the Quiz.
  - The Final Quiz, consisting of several rounds.
- Rules:
  - There must be three members in each team.
  - A school may send a maximum of three teams per category.
  - The decision of the quiz master in all regards will be final.

# Debate

- In the Schoolbag Debate, participants must lock horns in verbal combat and stun their opponent in a valley of cogent rebuttals.
- Categories: Single category (8th-12th). Max two teams per school.

## Format:

- Several rounds will be held in the same debating format, with the losing team being eliminated after each round.
- Points will be awarded based on the number of victories for each team with extra points for winners.

## Rules:

- Teams of 2, with a maximum of two teams per school in each category
- The students will be given a motion that resembles what would be presented in a house of parliament.
- The debate will be on the idea conveyed by the motion and its viability, and will not be one based on facts.
- Teams will be divided into two pools: The team speaking for the topic represents the government and team going against the topic represents the opposition.
- Sufficient time shall be given for preparation.

# **Enigmatica**

## **Format:**

Enigmatica will be held at the computer center of BITS Goa.  
Questions will be of MCQ type with individual participation.

## **Rules :**

- Enigmatica is a competitive exam consisting of logical and challenging yet fun puzzles
- These will test the student's mental prowess and his/her ability to assimilate the information provided and put it to good use.
- The event requires absolutely no prerequisites, apart from basic puzzle/problem solving logic.
- Participants have to pay a registration fee of Rs. 100. This will be collected at the time of the event.
- On the spot registration will be available until capacity of the computer center is met.
- Prize pool worth Rs. 10,000.
- The marks scored in the exam will directly translate into points for your school 1:1 with extra points for winners. First place gets an additional 50 points, second place gets 30 points and third place gets 20 points.
- The exam will be of 1 hour duration. Any doubts/clarifications on the questions will be cleared after the exam.
- Winners for each category will be announced separately.
- The competition covers a diverse range of puzzle genres, including but not limited to logic puzzles, mathematical puzzles, and lateral thinking challenges. This ensures that participants are exposed to a variety of problem-solving techniques, enhancing their cognitive abilities.

## **Open Showcase**

Science Fair is an opportunity for school students to present working models/ demonstrations based on science and technology during Quark 2024.

We invite students to submit abstracts and present their projects pertaining to any realm of science and technology – renewable energy, for instance.

Categories: Depending on the number of registrations there may be two categories.

### **Rules:**

- Participation in this event grants you 25 points. Additionally, First place gets 200 points, second place gets 150 points and third place gets 100 points
- Students are required to present a working model or display project.
- A team may have up to 4 members.
- Each participating team must send an abstract to events@bitsquark.in by 31st January.
- The abstract must provide a clear description of the project, as well as the participants' name and school.
- Only teams selected on the basis of their abstract may present their exhibit during Quark.
- Members of the team are responsible for their model/project and must be present at the venue during the event.
- Winners for each category will be announced separately.

The exhibits/projects may include:

- A working model to explain a concept, principle or a process.
- An indigenous design of a machine/device.
- An innovative/inexpensive design or technique
- Application of basic principles of science/technology
- Scheme/design of a device or machine to reduce the production cost5 !5 An investigation based study.



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PROGRAMMER'S  
INC

## **PROGRAMMERS INC**

Programmers inc is the coding related panel. The major events in this panel are -

- BITS CTF
- Bug Smash
- Fools Coding
- CodeJam
- Hackathon

- For Event Queries:  
Shaan: 8454885987

- For Registration Queries:  
Ayush: 7707035735

# **BITS CTF**

## Competition Overview:

- BITSCTF is a computer security contest designed for individuals interested in Cybersecurity.
- The competition comprises a series of challenges that require participants to reverse engineer, break, hack, decrypt, or employ any means necessary to solve them.
- All challenges are intentionally designed to be hackable, providing valuable hands-on experience.
- The primary objective of the game is to accumulate as many points as possible by successfully solving given challenges.
- This CTF follows a jeopardy-style format with varying categories of challenges. 6. The competition has a duration of 48 hours.
- Teams can consist of up to 4 participants.

## Judging Criteria:

- Participants will be evaluated based on their cumulative points earned throughout the entire set of problems.
- In the event of a tie, rankings will be determined by the cumulative time taken to solve all questions.
- A live leaderboard will be maintained for the same.

## Rules:

- The competition is an online jeopardy-style CTF featuring various challenge categories, accessible via the Internet, and lasting for 48 hours.
- Participants can compete individually or in teams (with a maximum team size of 4). - Participants are required to provide valid contact information for future notifications and prize claims.

## Prohibited Actions

- Participants engaging in inappropriate behavior will face immediate disqualification, including but not limited to:
- Sharing solutions or hints.
- Attacking infrastructure or applications not designated for the competition.
- Targeting other participants with malicious intent.
- Employing general brute force attacks on online platforms, unless specified in a challenge.
- Creating dummy accounts.
- Any actions deemed unfair by the organizers.
- Attempting to compromise the integrity of the contest server

## Bugs Coding

**Event Description:** This debugging-focused event challenges participants to identify and fix errors in pre-written C++ code. The event emphasizes attention to detail and problem-solving within a limited timeframe.

**Requirements:**

- EventDuration: 1 preliminary round, followed by up to 5 knockout rounds.
- Format: Offline event

**Benefits and Outcomes**

1. Skill Development: These events will enhance participants' coding, debugging, and problem-solving skills.
2. Engagement: A diverse set of events ensures inclusivity and sustained interest.

## Fools Coding

- This event will push your logical, deductive and mathematical skills to the limits. Be the Bond of programming and figure out what is the hidden source code by looking at its behavior on your inputs. It is a single round offline event.
- The participants will be provided a portal with a black box' function and an input template or some hints.
- The competition can be played by individuals only.
- Participants that behave inappropriately will be immediately disqualified, including: Sharing solutions or hints. Scoring system is dynamic.
- Example: Fibonacci number for every input n.) and code it. The portal will test your function on several test cases, and award a score accordingly. The score will vary depending on the difficulty level of the problem.
- The participants are responsible for bringing their own laptops and ensuring that they are sufficiently charged for a 3-hour event. source code is doing (e.g. calculating the nth Participant will be judged on the cumulative points over the entire set of problems.
- In case of a tie, it will be sorted by adding the cumulative time of all the solved questions.
- Almost all languages supported on HackerRank are allowed.
- Any participants, if found using any unfair means, will be disqualified from the event. Each program will be tested based on our critical test data.
- However, output and input should be exactly as specified in the samples provided. Internet connectivity, other than for accessing Hacker rank, is not allowed.
- The decision of the organizers in declaring the results will be final.
- No queries in this regard will be entertained.

# **CodeJam**

- Do you believe not just in writing code but making it more efficient? If yes, this event is for you. Quark presents to you a competitive programming event. Rack your brains to solve puzzles and real world problems. Compete with people all across the nation and show off your programming skills.
- CodeJam will have 2 rounds and are individual events. These rounds will be held on [codechef.com](http://codechef.com) Anybody is allowed to sit for the first round which will be a qualification. The contest will be hosted on an online platform for a duration of 2 hours with 6-8 problems.
- Round 1 :
  - It will be an online round in last week of January.
  - No team participation is allowed and plagiarism of any sort will result in cancellation of participation.
  - For any wrong submission (any of the test cases failed), a penalty of 10- 15 mins will be imposed.
  - You are required to print the final output.
  - Sample output format will be provided in each problem statement. All the major programming languages are permitted.
  - The participants will be judged on both correctness and time of submission of the solution.
  - Use of the internet, other than accessing platform, is prohibited. Any participants, if found using any unfair means, will be disqualified from the event.
  - The decision of the organizers in declaring the results will be final. No queries in this regard will be entertained.

## Round 2:

- It will be an offline event. Only qualified participants will be allowed to participate in round 2. Rules are similar to first one.

# Hackathon

- In the context of a hackathon, the word "hack" is used to describe how multiple technologies can be used together in a new and innovative way.
- Teams of 3 to 4 people spend the weekend working on innovative software and hardware solutions to real world problems.

NOTE: The hackathon is ONLINE

- These projects range in platform and application, including elements of web development, mobile applications, drones, and more. However, many times the most important aspect of a hackathon is the community it generates and skills that inexperienced hackers walk away with.
- The hackathon is a 30 hour event consisting of talks, API demo sessions, socializing sessions and of course a 24 hour hacking session.
- The initial 6 hours will consist of talks and API demo sessions after which hacking starts.
- The 24 hours hacking session will be owed by an evaluation of every team's hack by a panel of judges.
- The panel will decide the top-3 teams which will be announced at the spot.
- Any sponsored special prizes will require teams to go to the sponsor's booth individually and demonstrate their hack to the sponsor.
- These prizes are at the complete discretion of the organization sponsoring them and there is no guarantee if there will be prizes given, if any



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ROBOFICIAL

## **ROBOFICIAL**

- Roboficial is the robotics panel. The major events in this panel are :
- RoboClench
- RoboSoccer
- RoboRace
- RoboSumo
- RoboWars

- For Event Queries:  
Shaan: 8454885987

- For Registration Queries:  
Ayush: 7707035735

# RoboClench

## Problem Statement:

- Teams have to build a remote-controlled robot which can perform the simple task of clenching objects.
- The robot has to put these objects in strategic places to complete the obstacles course.

## Gameplay:

- The event will be points based.
- Total duration to complete the track will be 6 minutes.
- The robot has to begin from the START point.
- The timer will be started.
- The robot will have to pick up square blocks, climb up the ramps and place the blocks at specified locations to complete the course.
- The teams will be awarded points for successfully completing a task.
- A team can decide to skip a task of an obstacle or the complete obstacle, but will be penalized for doing so.
- No points will be awarded for skipped task.
- A team can only skip one task from the whole course and must perform the remaining tasks. Failing to do so will lead to elimination.
- If a bot performs a task incorrectly or topples over during the competition, it will have to go back to the previous checkpoint and start over from that checkpoint.
- The timer will not be stopped in any case.

## Penalty:

- Touching the bot or using the wire attached to the robot at any time to help clear an obstacle will lead to a penalty of 10 points.
- If the robot crosses track limit 10 points will be added as penalty.
- Skipping an obstacle will lead to a penalty of 20 points.

## Scoring:

- A = Points scored for clearing a task.
- P = Penalties
- T = Time =  $(360 - \text{Time taken in seconds})$
- TOTAL POINTS =  $A + T - P$
- The team with maximum points will be declared as winner.

## Arena:

- The arena will consist of ramps of different slopes, vertical drops, and rumbles as obstacles.
- Dimensions of the square blocks will be 100mm x 100mm x 100mm.
- The width of the track is 450mm.

#### **Robot Specification:**

- The dimension of the robot should be less than or equal to 300mm x 300mm x 300mm (l x b x h), failing which the team will be disqualified from the competition.
- Maximum allowed weight of the robot is 5kg.
- The robot must be controlled manually. Teams can use wired as well as wireless control systems.
- In case of wired robots, the length of wire should be minimum 2 meters so that the wire remains slack at any instant of time.
- Participants aren't supposed to use any readymade Lego components or readymade gripping mechanisms.
- However, the participants are allowed to use readymade gear assemblies.
- Only one person will be allowed to control the robot.
- The use of batteries exceeding 3S LiPo is strictly prohibited
- Failing to meet any of the above specifications will lead to immediate disqualification.

#### **Rules and Regulation:**

- Timely arrival is mandatory for all teams. Failure to comply will result in elimination, with the option to rejoin upon payment of a designated fee in given time frame. - Team can consist of only 4 members.
- Only one team member is allowed to handle the robot. No other team member is allowed to enter the arena.
- The robot will be liable for disqualification if it causes any kind of damage to the arena.
- The robot is not allowed to slide the blocks against the ground, except for fine adjustments in the deposit zone.
- Any damage to the blocks will lead to immediate disqualification.
- In case of any disputes/discrepancies, the organizer's decision will be final and binding.
- All decisions about scoring, gameplay & timing, and participation, made by the organizing committee is final.
- Teams should be completely respecting their vote and decisions.  
"At any point judge's decision is the final decision"

# RoboSoccer

## Problem Statement:

- A manually controlled robot, wired or wireless, has to push the ball in the opposite team's goal post and also defend the opponent from pushing the ball in their own goal post.

## Gameplay:

- Each round consists of 2 halves each of 1.5 min. (Subject to change based on participants)
- The team scoring the greatest number of goals before full time will be declared the winner.
- There will be a side switch after half time.
- In case of tie, there will be a tie-breaker of 1 min. The team scoring first wins.
- No ramming purposely, yellow card for 2 successive ramming, -1 point for ramming thrice or more. Play Fair.
- Incase of damage to the robot, a team can claim their repair time of 1 min. Failing to repair the bot within the time limit will lead to negative points.

## Robot Specification:

- Maximum allowed weight of the robot is 5kg.
- The owing size limitations apply for each robot, including the clamps the robot has:
  - Ø Width – 300mm
  - Ø Length – 300mm
  - Ø Height – 300mm
  - No tolerance allowed.
- The use of batteries exceeding 3S LiPo is strictly prohibited.
- The external device, which is used to control the machine, is not included in the size constraint.
- The machine can be wired/wireless.
- The machine must not be made from Lego parts, or any ready-made assembly kits. Participants are not allowed to use any kick mechanism.
- Clamp width at the base must be minimum 15 cm, with minimum depth of about 6 cm. Clamp should be stationary i.e. without any moving parts and can be of any shape with an angle of not less than 90°. Clamp length should not exceed 10cm.
- The robot can be powered by a source such as a battery fixed on the robot or by a stationary power source connected to the robot by a cord.
- Participants should keep spare batteries, otherwise it may lead to disqualification, if bot is not ready or stops in between the match.
- The length of the wire (for wired bots) should be long enough to cover the whole arena and wire should remain slack during the complete game.
- Minimum length of the wire permitted is 2m.

**Arena:**

- The arena dimensions are 8 feet in length and 4 feet in width. The arena has a 20 cm wide goal post on either side.
- The arena is bounded from all sides.

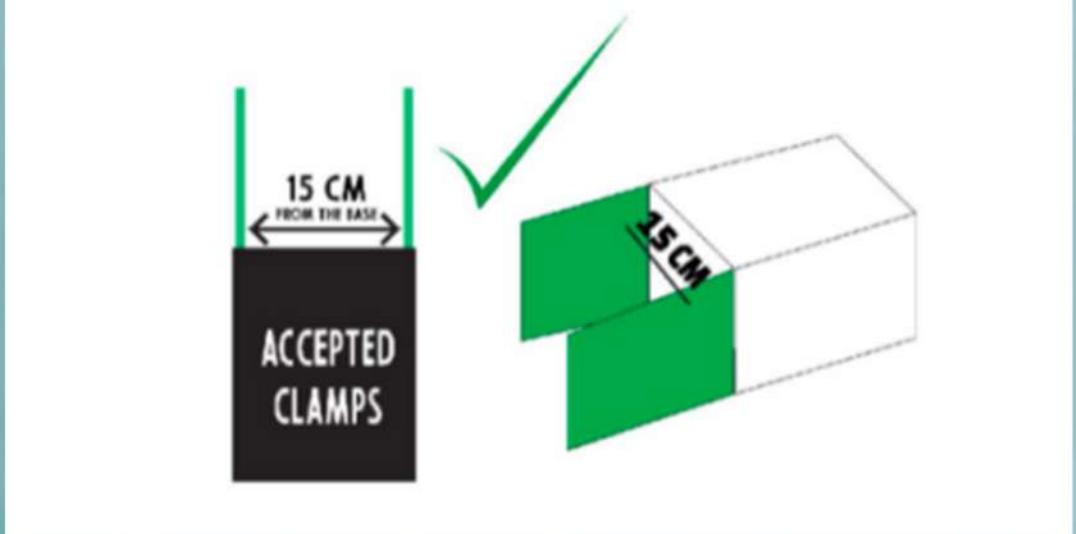
**Rules and Regulation:**

- Timely arrival is mandatory for all teams. Failure to comply will result in elimination, with the option to rejoin upon payment of a designated fee within given timeframe. A team can have a maximum of 4 members.
- One team member is elected as the robot handler. Only that team member is permitted to control the robot during the game.
- All other team members must remain outside the game zone.
- The matches will be held in knock-out format.
- Participants who misbehave may be asked to leave the competition area and risk v. being disqualified from the contest.
- Robots or participants that cause deliberate interference with other robots or damage to the arena will be disqualified.
- All decisions about scoring, Game Play & timing, and participation, made by the Organizing Committee are final.
- Teams should completely respect their vote and decisions.

"At any point judges' decision is the final decision"



## ALLOWED



# RoboRace

## Problem Statement:

- A manually controlled robot, wired or wireless, has to traverse through a track full of turns and obstacles in the minimum possible time.

## Gameplay:

- The robot will be placed at the start line. The robot starts when the timer starts.
- The robot should remain on track, otherwise it has to start from the last checkpoint crossed, though the timer will not be stopped.
- There are penalties for each obstacle skipped.
- Penalties will be added to the total time.
- Timer will stop as soon as the robot crosses the finish line.

## Robot Specification:

- The robot can be wired/wireless.
- The robot must be controlled manually.
- The maximum dimensions for the robot shouldn't exceed:
  - Ø Length: 300mm
  - Ø Width: 300mm
  - Ø Height: 250mm
- The total weight of the robot cannot exceed 5kgs.
- The machine must not be made from Lego parts, or any ready-made assembly kits, and it must be powered electrical by, use of IC engine is not allowed.
- The robot can be powered by a power source such as a battery fixed on the robot or by a stationary power source connected to the robot by a cord.
- The use of batteries exceeding 3s LiPo is strictly prohibited.
- Participants should keep spare batteries, otherwise it may lead to disqualification if bot is not ready or stops in between the race.
- The length of the wire (for wired bots) should be long enough and the wire should remain slack during the complete race.

## Race Track:

- There will be a Start and Finish Line.
- The track surface and course may have unevenness.
- There will be obstacles in the race track, which will try to slow down the robot.
- Track may consist of steep ramps, bridges, speed breakers, marble pits, slippery path, rotating disc, curve ramp down, seesaw etc.

**Rules and Regulations:**

- Timely arrival is mandatory for all teams. Failure to comply will result in elimination, with the option to rejoin upon payment of a designated fee
- A team can have a maximum of 4 members.
- One team member is elected as the robot handler.
- Only that team member is permitted to control the robot during the game.
- All other team members must remain outside the game zone.
- Participants who misbehave may be asked to leave the competition area and risk being disqualified from the contest.
- Robots or participants that cause deliberate interference with other robots or damage to the arena will be disqualified.
- All decisions about scoring, Game Play & timing, and participation, made by The Organizing Committee are final.
- Teams should completely respect their vote and decisions.  
“At any point judges’ decision is the final decision”

# Time Challenge

## Problem Statement:

- An autonomous robot has to follow black lines on a white background or white lines on black background and reach from starting line to finishing line as soon as possible. The Robot must be able to detect a particular line and keep owning it.

## Gameplay:

- Robots will be placed at the starting point and time will be recorded until it reaches the finish line.
- The track will be divided into 3 and 4 sectors: A, B & C (&D).
- Under each sector only 2 hand touches will be allowed.
- For the 3rd hand touch the robot will have to skip the current sector and start the next sector.
- For each hand touch the robot will have to start from the beginning of the sector.
- Each team will be given 2 trials in each round.

## A robot must restart if:

- The robot doesn't start after pressing the start button.
- A hand touch occurs.
- The robot moves off track.
- The referee orders a restart.
- Robot with least time wins.

## Robot Specification:

- The owing size limitations apply for each robot.
- The use of batteries exceeding 3s LiPo is strictly prohibited.
- The robot cannot have potential more than 12V between any two points.
- The robot must be controlled autonomously with no human aid. The overall specifications of the bot must not exceed following (including tolerance):
  - Ø Width – 280mm max.
  - Ø Length – 280mm max.
  - Ø Height – 200mm max.
- The weight of the robot can be max. 5kgs.
- The robot must be started manually with a start button.
- Use of lego parts and ready-made bots is not allowed.
- The robot can be powered by a max 12V power source such as a battery fixed on the robot or by a stationary power source connected to the robot by a cord.
- Participants should keep spare batteries otherwise; it may lead to disqualification if the bot is not ready or stops in trial.

**Track:**

- The Track is made up of white coloured flex sheet with black coloured lines on it or white lines on black coloured flex sheet.
- There will be one START point and one FINISH point in the entire arena.
- The track will be divided into 3 or 4 sectors: A, B, & C (&D).
- The thickness of the lines will be 30mm.
- The course line may have acute, obtuse and right angles, curves. The course line may also have discontinuities at various points.
- The track will be released on the day of the event on the spot.

**Penalty:**

- Hand touch = +2 seconds
- Skipping a sector = +6 seconds.

**Rules and Regulation:**

- Timely arrival is mandatory for all teams. Failure to comply will result in elimination, with the option to rejoin upon payment of a designated fee.
- A team can have a maximum of 4 members.
- The competition will be of 2 rounds.
- Round 1 shall be a qualifier round and round 2 shall be the final round.
- In round 1, each team will give 2-time trials.
- Least time and with best out of 2 given trials will be judged upon.
- For the 1st trial a test run of 3 Mins will be given after which, immediately 1st time trial will follow
- Teams can give the 2nd and Final trial of the first round immediately after the 1st trial or later in the competition.
- Final trial of the first round immediately after the 1st trial or later in the competition. . There won't be any TEST RUN for the 2nd trial.
- The bot must cover the entire track within 4 minutes to qualify for the final round \*
- Any shortcut paths and deviation from the main line will lead to placing of the bot back to the nearest check point.
- The coordinator's decision will be counted as the final. In case if no bot is able to complete the track in given time, bot covering maximum checkpoint in minimum time will be shortlisted for the final round.
- The Line Follower Bot must be fully self-contained and must not be externally operated by wire or remote radio control during the course of the race.
- Before commencement of the actual racing, the teams will be allowed to test their bots on the track but only for limited period of time as decided by the coordinators \*. Once the bot is placed on the track, a maximum of 8 touches will be allowed to reset the bot on the right track and a penalty of 5 sec per touch shall be added to the total time.
- Winner shall be the group which finishes the track in the shortest time. In case no team manages to finish the track, then the prize shall be given to the team who completes most part of the track in shortest time and with minimum touches.
- "At any point judges' decision is the final decision"

# RoboSumo

## Problem Statement:

- A manually controlled robot wired or wireless has to push the opponent's robot out of the designated arena & also it has to defend itself from getting pushed out by the opposition.
- **Gameplay:**
  - Each round consists of 2 halves. Each half of 1.5 min. (Subject to change)
  - The robots inside the ring should push each other out of the ring and to score a point.
  - After each point the robots will go back to the default positions and resume the match.
  - Starting point for the robot will be outside the ring.
  - If 50% of the robot or more is outside then the robot is out.
  - In case of damage the team can claim their technical time of 2 mins. Technical time can be claimed only once for the whole round.
  - Please be advised that achieving a 7-0 lead will result in an immediate conclusion of the game, with the leading team declared the victor.
  - Team to score most points wins.
  - In case of a tie-breaker a special round will be held. First to score wins. (Special round will be announced on the day of event).

## Robot Specification:

- Robot dimensions shouldn't exceed:
  - Length = 350mm
  - Width = 350mm
  - Height = 300mm
- Robot weight shouldn't exceed 5kg
- No tolerance allowed.
- Robot can be controlled wired/wireless.
- If wired then wire length shouldn't be less than 2m.
- The use of batteries exceeding 4S LiPo is strictly prohibited.

## Arena:

- Arena dimension will be 3m x 3m. Play area is a ring in the center of the arena of Diameter 1.5m.
- Initial position will be outside the ring.

## Scoring:

- If the robot falls outside the ring 4 points will be awarded.
- If both the robot falls out of the playable area 2 points for each robot will be awarded.

- Rules and Regulation:
- Timely arrival is mandatory for all teams. Failure to comply will result in elimination, with the option to rejoin upon payment of a designated fee
- A team can have a maximum of 4 members.
- One team member is elected as the robot handler. Only that team member is permitted to control the robot during the game.
- All other team members must remain outside the game zone.
- The matches will be held in knock-out format.
- Participants who misbehave may be asked to leave the competition area and risk being disqualified from the contest.
- Robots or participants that cause deliberate interference with other robots or damage to the arena will be disqualified.
- All decisions about scoring, Game Play & timing, and participation, made by the Organizing Committee are final.
- Teams should completely respect their vote and decisions.
- "At any point judges' decision is the final decision"

## RoboWars

Task: Design and construct a wireless remote-controlled robot capable of fighting one on one in

- Categories :
  - 8Kg category
  - 15Kg category
  - 3Lb Category
- Participation: All participants build and operate Robots at their own risk. Fighting Robots is inherently dangerous. There is no amount of regulation that can encompass all of the dangers involved. Please take care not to hurt yourself or others when building, testing and competing. Compliance with all event rules and competition regulations is mandatory. It is expected that competitors stay within the rules and procedures of their own accord and do not require constant policing.
- Loopholes: If you have a robot or weapon design that does not fit within the categories set forth in these rules or is in some way ambiguous or borderline, please contact the coordinators. Safe innovation is always encouraged, but surprising the event staff with your brilliant exploitation of a loophole may cause your robot to be disqualified before it ever competes.
- Safety Inspections: ·Each event has safety inspections known as Tech checks. It is at the coordinators sole discretion that your Robot is allowed to compete. As a builder you are obligated to disclose all operating principles and potential dangers to the coordinators.
- Activation: Robots must only be activated in the arena, testing areas, or with expressed consent of the event organizer and the safety officials. All activation and de-activation of robots must be completed from outside the arena barrier or within specially designated areas. You must never enter the arena with live robots without the express permission and supervision of the ·event organiser.
- Power Tools: ·It is expected that builders will follow all basic safety practices such as shoes, gloves and goggles when operating any machinery. The use of welders, grinders and other equipment that may produce smoke, debris or other harmful substances is only permitted in dedicated workshop areas. Please take care of yourself and others around you.
- Discipline: It is expected that all participants are disciplined and show good behaviour towards other participants, judges and coordinators. Strict actions will be taken on participants not abiding the rules; which may also lead to disqualification of the team.

### 2.1 Weight limit:

- The maximum weight of the COMBOT should not exceed respective category weight i.e. 8kg in Category 1 and 15kg in Category 2 & 3lb in Category 3.A
- If a COMBOT using interchangeable panels or weapons, the weight is measured with the heaviest set-up in place. External controlling device, wires and batteries will not be considered for weight. Weight of the Robot will be checked before every match.
- (NOTE: There will be No Tolerance in Weight provided for each Category)

### 2.2-Dimensional limit:

- I. 8 Kg Category: Same as 15 Kg Category
- II. 15 Kg Category: The COMBOT should fit in a box of 500mm X 500mm X 500mm (L X B X H) at any given point of the match.
- III. 30 Kg Category: The COMBOT should fit in a box of 1000mm X 1000mm X 1000mm (L X B X H) at any given point of the match.
- The external controlling device like wires and remote control will not be considered for dimensions.

### 2.3 Mobility:

- All Robots must have (easily visible mobility) in order to compete. Methods of mobility included.
- Rolling on wheels or the whole robot rolling.
- Walking such as linear actuator operated legs.
- Shuffling mechanisms such as rotational cam operated legs.
- Ground Effect Ground effect air cushions such as a hovercraft.
- Jumping, hoping or flying robots are not allowed

### 2.4 Robot Control Requirement:

- The robot should be controlled using a remote controller and should be completely wireless.
- It is necessary to have binding capability between transmitters and receivers.
- The team must have at least four frequency wireless remote-control circuit or two dual control circuits which may be interchanged before the start of the match to avoid frequency interference with other teams.
- In case of any interference in the wireless systems there will not be any rematch or stoppage.
- Team should pair up the wireless remote with the machine before putting it into the arena.
- Nonstandard or self-made remote-control systems must first be approved by the organizers.
- Remote control systems from toys might be used. Remote control systems available in the market may also be used.
- All robots should be having failsafe for the radio; i.e. in case of loss of radio signal the robot should immediately stop all the drive and weapon system

It is recommended to install a Kill Switch or Power Link system to be able to disconnect battery immediately in case of any emergency.

#### 2.5 Weapon system:

The robots can have any kind of weapon system i.e. wedge; spinners; flippers; cutters; electric or pneumatic lifters; etc.; except for following:

- Weapons causing invisible or internal damage like Radio jamming, tasers, tesla coils, or any other high-voltage device&
- Any kind of Tethered or un-tethered projectiles and hammer or thwack bots are not allowed.:
- Flame based and inflammable liquid-based weapons and lasers are not allowed.:
- Weapons used for entangling other bots like nets, cables, glue etc. not allowed. In case used entangler will be disqualified.:
- Any kind of explosive or intentionally ignited solid or potentially ignitable solid.
- Usage of IC engines, Hydraulic and other flammable devices are not allowed.:
- Any innovative weapon is always appreciated however the source of powering and impact caused should be clearly mentioned in Abstract; any surprises will cause disqualification.
- Care should be taken that no weapon causes any sort of intentional damage to the arena; if seen intentionally damaging the arena may lead to disqualification.
- **2.5.1 Pneumatic Systems:**  
The Robots are allowed to use pneumatic system for powering their weapons under following conditions
  - The pneumatic tank should be on board and gases used for pneumatic should be nonflammable and non-toxic.:
  - The tank should be attached with a pressure gauge and maximum pressure in the tank should not cross 50 Bars under any circumstances; On board pressure gauge should be provided.:
  - The actuating pressure in the pneumatic actuator should not cross 10 Bars and pressure valve should be present to adjust actuating pressure.:
  - All the pneumatic components should be certified and safety and security letters should be produced to the organisers.

#### 2.6 Battery & Power:

- The machine can be powered electrically only.
- Use of an IC engine in any form is not allowed
- On board Batteries must be adequately protected within the body shell and securely fixed to minimise the chance of being punctured or coming loose during combat; which will be checked in technical inspection.:
- The electrical voltage at any point of time in the machine should not exceed 30V DC. Robots using higher voltage will not be allowed to play the match.

- 230 V AC source will be provided; for charging of the batteries after the match All wiring and terminals must be of a suitable size and secured to prevent chaffing and shorting."
- All terminals should be covered to minimise the risk of electrical shorts. Failure to do so will cause direct disqualification. (Also checked in technical inspection)
- **TEAM SPECIFICATION:**
- Any team can participate in Robowars. A team may consist of a maximum of 5 participants. The participation is open to all. No person is allowed to register for two different teams
- Team Name:
- Every team must have a name which must be unique. Organizers must be notified during if a Team's name has been changed.
- Team Representative:
- Each team must specify their Team Representative (Leader) at the time of registration on the website. All the important communications between organizers and the registered teams will be done through their Team Representative. The Team Representatives must submit valid contact details (phone no., email ID etc.) at the time of registration
- During match hours no person can help the other team for controlling bots Each team needs to submit the Controller name before each match.
- **CERTIFICATION POLICY:**
- Certificate of Excellence will be given to all the winners. Certificate of participation will be given to all the participants. The teams which get disqualified due to disobeying any of the competition rules will not be considered for the certificate.
- \*It is Mandatory to wear Shoes by each and every team member for the purpose of safety. Care should be taken while handling the bots. Any kind of causality should be reported quickly to the organizer, so that first-Aid can be given immediately. Members without shoes will not be allowed to enter the arena nor allowed to stand near the control station.
- **ROUNDS**
- **3.1 TECHNICAL INSPECTION:**
- In this coordinator will check the robot for all technical rules as stated above and will PASS the robot if all the rules are abided, if robot fails to do so, necessary changes have to be done in order to participate in the robot else may lead to disqualification. (All rules under section 2 should be abided).

### 3.2 MATCH & GAMEPLAY:

- All matches will be death match of 3 minutes. Only 3 participants will be allowed to stay near the control station.
- No Hand touches will be allowed in between the match; and the match won't be stopped.
- Only if two Combots are stuck to each other and hence immobile, in such case Combots will be separated by safest means and the match will be continued for remaining time and position of the robots will be maintained.
- A robot will be declared victorious on the basis of criteria stated in section 4.4 and will be decided by the Judges.
- Decision of the Judges will be considered final and no team can object or quarrel on the decision, failure to do so may cause disqualification.
- All robots will be given at least 30minutes of break after each match. Time is calculated from the time the robot leaves arena. If the robot fails to return to the arena when called after the allotted time; the robot may be forced to forfeit.
- 3.3 Criteria for Victor:
  - A robot is declared victorious by knockout if its opponent is immobilized or thrown outside the playing area.
  - A robot will be declared immobile if it cannot display linear motion of at least one foot in a timed period of 15 seconds. A bot with one side of its drivetrain disabled will not be counted out if it can demonstrate some degree of controlled movement. In case both the robots remain mobile after the end of the round then the winner will be decided subjectively by the judges.
  - A robot that is deemed unsafe by the judges after the match has begun will be disqualified and therefore declared the loser. The match will be immediately halted and the opponent will be awarded a win
  - Robots cannot win by pinning or lifting their opponents. Organizers will allow pinning or lifting for a maximum of 10 seconds per pin then the attacker robot will be instructed to release the opponent. If, after being instructed to do so, the attacker is able to release but does not, their robot may be disqualified. If robots become entangled due to a crushing or gripping or any other weapon is employed and becomes trapped within another robot, then the competitors should make the timekeeper aware, the fight should be stopped and the robots separated by the safest means.

Points will be given on the basis of aggression, damage, control and strategy

1. □ Aggression – Aggression is judged by the frequency, severity, boldness and effectiveness of attacks deliberately initiated by the robot against its opponent. If a robot appears to have accidentally attacked an opponent, that act will not be considered Aggression.

2. Control – Control means a robot is able to attack an opponent at its weakest point, use its weapons in the most effective way, and minimize the damage caused by the opponent or its weapons.

'3.Damage – Through deliberate action, a robot either directly or indirectly reduces the functionality, effectiveness or defensibility of an opponent. Damage is not considered relevant if a robot inadvertently harms itself. Also, if a rapidly spinning device on a robot fragments, any damage to the opponent will not be considered "deliberate".\$

4.Strategy – The robot exhibits a combat plan that exploits the robot's strengths against the weaknesses of its opponent. Strategy is also defined as a robot exhibiting a deliberate defence plan that guards its weaknesses against the strengths of the opponent.

- In case the match is stopped by a participant due to malfunctioning of combot, the stoppage will be considered as a forfeit from the match and opponent will be declared victorious

### 3.4 Event specific Terminologie:

- Disabled –A robot is not functioning correctly due to either an internal malfunction, or contact with the opposing robot or Arena Hazard.
- Disqualification – A Robot is no longer permitted to compete in the current Robowars Tournament.
- Immobilized – In Judge's opinion, a robot is not responsive for a specified period of time.
- Knockout – Occurs when the attack or deliberate actions of one robot causes its opponent to become immobilized or thrown outside the playing arena)
- Lifting – Occurs when one robot controls an opponent's translational motion by lifting the drive mechanism of the opponent off of the Arena floor.
- No Contact – Occurs when neither robot makes contact with each other for a specified period of time.
- Pinning – Occurs when one robot, through sheer force, holds an opponent stationary in order to immobilize it.
- Radio Interference – Refers to the situation where at least one robot becomes nonResponsive or noncontrollable due to the effect of the other robot's remote-control signal.
- Non-Responsive – In a Referee's opinion, the robot cannot display some kind of controlled translational movement along the Arena floor.
- Restart – Occurs after a Fault or a Timeout has been declared and the competing robots are ready to continue.
- Stuck – A robot is hung-up on a part of the Arena, an Arena Hazard or an opponent, such that it is effectively non-responsive.
- Tap-Out – Occurs when a Robot's Operators decide that they no longer want to continue the Match, and concede the win to the opposing Team.
- Timeout – A temporary halting of a Match. Timeouts are usually called to separate robots, but can be called for other reasons as well.

- Technical Knockout – Occurs when a robot wins due to immobilization of its opponent even though, in the Judges' opinion, no action of the winning robot caused the opponent's immobilization.

**NOTE:**

If a team has more than one robot they should have separate parts of each robot. If a team has similar designed robots then there should be a way to distinguish the bots through the entire event.

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