



Anwesha '17

27-29 Jan

THE EASTERN SAILS

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Anwesha'17 Technical



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NJACK!

(NOT JUST ANOTHER COMPUTER SCIENCE KLUB!)

Presents

BYTE RACE

'Always code as if the guy who ends up maintaining your code will be a violent psychopath who knows where you live' -

..... Rick Osborne.

Byte Race is a challenge for minds who have honed the art of problem solving. This competition presents to you challenges to solve and code. So, if you get the adrenaline rush when you see a difficult problem this is definitely your event.

RULES :

This is a pre-Anwasha Online event, which will be held on Hacker Rank platform.

This is an individual event and any form of violation of platform rules will lead to disqualification.

Competition consists of 5 algorithmic puzzles to quench your thirst for the unsolvable.

The judgment of the organizers will be final.

Participants are required to bring their own laptops with Hacker Rank handler.

Participants must register on 2017.anwasha.info . Only submissions from participants who have registered will be considered for prizes.

MIND-BENDERS

*"You have the power over your mind-realize this, and you will find strength"
So get ready to knock your brains and prove the genius in you in this mind bending
rendezvous.....*

Mind-benders is a test of wits and logic. The event involves no syllabus or pre-requisite knowledge. The event will solely test the student's logical reasoning, analytical thinking and problem-solving capabilities.

RULES :

- This is a team event. Students should participate in teams of two members.
- Students of different institutions can form a team.
- The event will be in form of pen-paper quiz, it will consist of single choice correct, multiple choice correct and paragraph questions with different marking schemes for each section.
- Use of mobile phones or technology are strictly prohibited during the test.

Questions : 45

Time : 2 hours

In case of any discrepancies, the decision taken by the organizers will be final and bounding.

CTF (CAPTURE THE FLAG)

'In this era of digital world, there is one community rising with most intelligent individuals. Law maker call them criminals but normal people call them Hackers'

Capture the Flag is hacking challenge where you can prove your hacking skills. This challenge will test your basic understanding of various fields of Computer Science.

RULES:

Team can have maximum 3 members.

Participants must bring their own laptops.

Use of Internet is allowed.

Each problem will have different points according to its difficulty level

NJATH

*The most awaited event of Anwesha is back in town. This time, it's bigger and Wittier.
Let us see your googling skill and if you can connect the pieces together.
Anwesha 2017 presents NJATH. The pre-Anwesha event is coming soon.
"Catch you guys on the leader-board"*

RULES :

- NJATH is an online treasure hunt contest. You will be given questions and you will need to decipher the solution.
- Lookout for clues and hints anywhere from url of page to all details in the question . You are allowed to use internet .
You can also download question image if necessary.
- For any question, there is no limitation for number of attempts.
- There are treasure chest hidden throughout the hunts, they will provide additional points and bonus multipliers.
- Discuss forum can be used for extra hints but should not disclose the answer.
- There are 6 levels in the hunt. Each level contains 8 questions in which 2 questions are bonus questions.
- Once advanced to a new level, you cannot go to the previous level. "Happy Hunting"

SPARKONICS

Presents

ELECTRO-EXQUIZITE

*If you can't resist yourself from taking a reading whenever you see some electronics stuff,
If everyone around you feels shorted by your capacitance to speak about electronic gadgets,
If you think your intelligence get forward biased every time an electronic question is induced to you,
then it is the event for you.*

RULES :

- It is better to have a team of two ,if you found no one you can participate alone too.
- The organizers present would declare the rule for each round then and there on the spot.
- Policies regarding the point distribution and other aspects would be ruled by the organizer in Case of any conflict.
- Use of mobile phones is not allowed.
- In case of any confusion the decision of organizers is final.

Round 1 :

MCQ Questions : 30 questions

Time Limit : 30 minutes

Round 2 :

8 teams qualified from round 1.

A) Photo Identification Round :

Guess the scientist name.

Each team gets one photo to identify

10 points for correct answer.

5 points for passed questions.

No Negative .

B) Rapid Fire Round :

Each team gets 1 min.

Questions will be asked simultaneously one after other .

10 points for each correct answer.

No negative marking.

Round 3 :

4 teams qualified from round 2.

A) Buzzer Round :

All teams play simultaneously.

Question goes to team who buzzes first.

Correct Answer : 10 points.

Incorrect Answer : - 5 points.

Passed to team who buzzed second.

B) Jackpot Round :

All teams play at a time.

Teams have to identify an electrical element.

5 clues for identifying.

10 points for each questions.

1 points lesser after taking each clue.

Team who answers first gets points

A team can give only one answer to a particular question .

Incorrect answer : - 5 points.

LINE-FOLLOWER

EVENT DESCRIPTION :

The Line follower robot is a mobile machine that can detect and follow the line drawn on the floor. Generally, the path is pre-defined and can be visible like a black line on a white surface with a high contrasted color. Participants should have to complete the paths as per rules and regulation. Event is divided in three rounds. Participants who complete each round in less time will be declared as a winner.

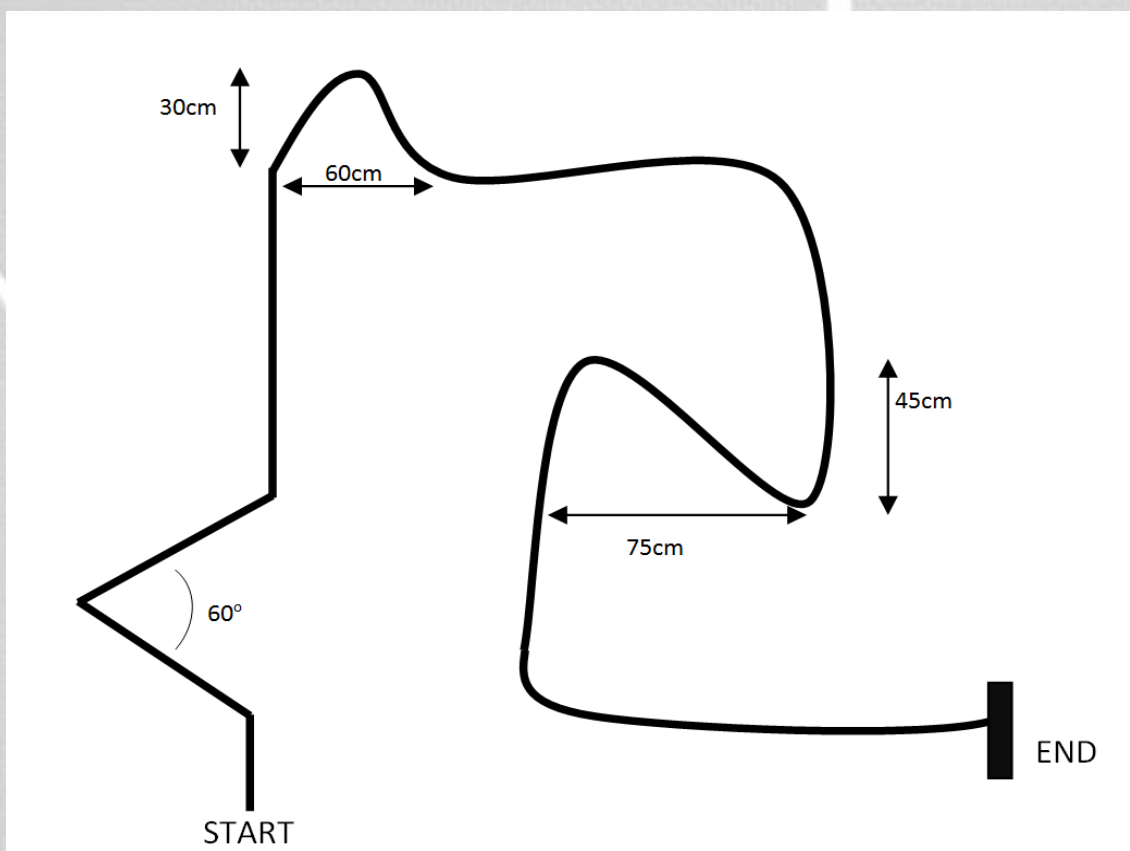
SPECIFICATIONS :

- The Robot must be strictly autonomous.
- The width of the black or white line will be less than 1.5 cm-2cms.
- Dimensions of the Robot should be less than 20cm*20cm*15cm (l x b x h).
- The participants have to ensure that room lighting, photography, etc. does not affect the functioning of the sensors.
- In case of tie, the design of the Robot may be considered.
- If none of the Robots finishes the course, then the one which covered the longest distance in less time will be considered the winner.
- A power supply should be of maximum 12-15 V.

RULES :

- The Robot has to follow the black line on white background and complete the track in least possible time.
- Maximum 3 touches will be allowed for each round(Each touch contains 5 sec penalty.)
- Maximum Four Participants are allowed in a team.
- Team members can be from different colleges.
- If the machine remains immobile for respectable time then on the spot decision will be taken by the organizers.
- The Judges' decision shall be considered as final and indisputable.
- Any team involved in any type of argument with the judges will be disqualified.
- The organizers reserve the rights to disqualify any team indulging in any kind of misbehavior.
- The organizing team has the right to change any of the rules at any time.
- The changes will be highlighted on website and conveyed to registered participants well in advance.
- All the tracks will be shown at the time of competition.

TRACK DETAILS :



ROUNDS :

Round 1: In this round every team has to complete the track. It will be a simple track consisting of 2 laps. The Robot which will take minimum time to complete the track will go to next round.

Round 2: The Robot which will complete the entire track in minimum time will go to the Final round.

Final Round: Team will be given enough time to make the changes as per the requirements. The Robot which will complete the entire track in minimum time will be declared as the winner.

STATIC RUSH

PROBLEM STATEMENT :

- **Static rush** is a **theme based treasure hunt**.
- The competition comprises of a **multi-level hunt for components and building a particular circuit**. The schematics and components of the device would be provided by the organizers.
- After the schematics are given, everyone would be given a series of riddles/tasks.
- The completion of every riddle/task would give a hint to a checkpoint where you would be receiving components and riddle/task for the next checkpoint.
- After collecting all the components, the team has to make the circuit work.
- The team that takes the **minimum time** to complete the circuit would be declared as **winner**.

GENERAL GUIDELINES :

The main aim of the hunt would be make a complete physical circuit whose schematic would be provided. The components of the circuit would be provided at each checkpoint after you complete the task assigned. Each task varying from checkpoint to checkpoint could take form of a riddle or an associated physical task.

JUDGING CRITERIA :

- Time of completion
- Efficiency, creativity and quality of design and output
- Time taken to clear individual check points
- Distribution of score weightage depending on the difficulty level of the check point
- Explanation of the circuit

RULES AND REGULATIONS :

- Maximum 3 members in a team.
- Members can be of any year and any branch.
- Teams have to report to the spot before 15 minutes of the scheduled time.
- All team members have to be collectively present at the checkpoint with their previous clue to receive the circuit component.
- Explanation of the clue may be required.

**Rules are flexible as per the organizers discretion.*

Presents

Virtual Auto Expo

This is an event for all the automobile enthusiasts.

Rules/Regulations:

Make a presentation (ppt) on any one of your favourite cars (even an ATV/ formula one) of any company. You have to act as a representative trying to sell your product.

Presentation must contain the following points:

- a. Car Features (including photos)
- b. Cost
- c. Why people would buy your product?
- d. Any extra thing which you want to add.

Extra points if you include a small video (1 min max) on that car in the presentation.

Maximum time for presentation: 6 minutes.

You can participate individually or in a team of two.

Judging criteria:

1. Presentation Skills
2. Content of the ppt
3. Are you able to convince the costumer(judges in this case) to buy your product
4. How much good is your product
5. How much knowledge you have about your product

Auto-Quiz

The one and only track where horsepower does matter.....

RULES:

This year we are back to the old school method with event divided into two rounds:

1. Qualification: All the teams will compete for the starting grid and obviously the pole position.
2. Main Race: This will decide the winners and losers by a round table quiz.

A team of max. two driver is allowed

(STUDENTS COUNCIL OF MECHANICAL ENGINEERS)

Presents

MECH-FIRE

This event is based on your knowledge of the vast mechanical world.

RULES :

- A team can have maximum of 2 members.
- Event will be conducted in 2 rounds.

Round 1:

It will be a written round comprising of 30 MCQ questions. Time limit is 1 hr for this round.

Round 2:

Top 8 teams of round 1 will qualify for this round. The rules of this round will be revealed on the spot.

- Policies regarding the point distribution and other aspects would be ruled by the organizer on the spot.
- In case of any confusion the decision of organizers is final.

JUDGING CRITERIA :

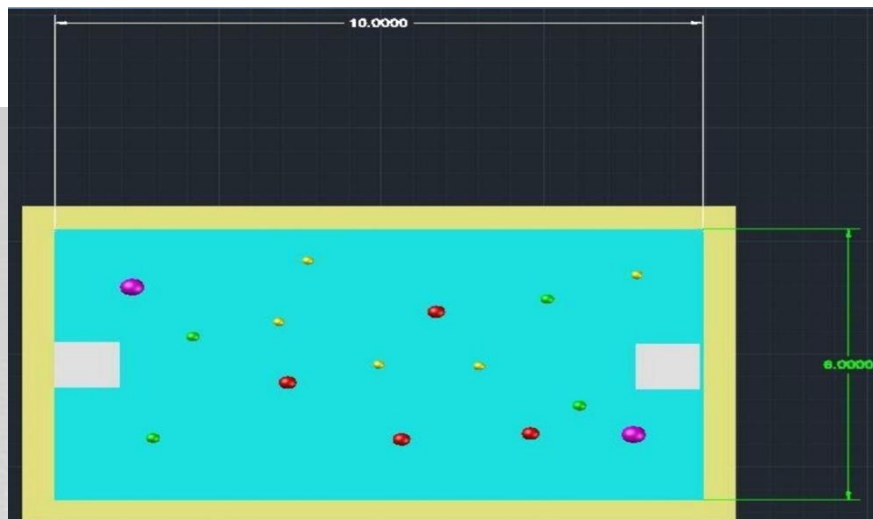
- The team with highest point in round 2 will be declared as the winner.
- In case of a tie, there will be a tie breaker round.

AQUA-SOCCER

PROBLEM STATEMENT :

- There will be a water tub partially filled with water . Few balls of different sizes will be floating and there are two goal posts at two opposite sides.
- Two teams will be simultaneously play against each other through their bot. Aim of both is to put the balls inside the respective goal post .Team with maximum score at the end of match will be declared as the winner of that match.

ARENA TOP VIEW :



RULES :

- A team can have a maximum of 4 Members.
- Dimension of the tank will be 10 ft. X 6 ft. X 3 ft. (approx.)
- Balls will have varying dimensions ranging from table tennis balls to normal size plastic cricket balls.
- Different color balls will carry different points.
- Points corresponding to each ball will be told on the spot.
- some bonus points will also be awarded during the course of competition if a bot collects more than one ball at a time and make it to the goal post.
- Dimension of goal post is 1 ft. X 1 ft. X 1 ft.
- Aim of each team is to put the balls in respective goal posts.
- Dimension of the bot should not exceed 1.5 ft. X 1.5 ft. , however there is no restriction on minimum size of the bot.
- If a ball anyhow enters the goal post corresponding to Team X (in which Team X is supposed to put the ball) then points corresponding to that ball will be awarded to Team X.
- Incase you are using electric power supply , you must bring your own circuit equipment , adapter etc.. Voltage across motors should not exceed 24 V.

RULES REGARDING HAULT :

- One match will have a playing time of 4 Minutes.
- One COMMON HALT of 1 Minute will be provided after 2 Minutes of the playing time.
- One team can have a PERSONAL HALT of 45 seconds only once in a particular match. If the team exceeds the halt time or takes extra halt then negative point per extra second will be awarded (How much negative points will be awarded will be told on the spot).

- In case all balls available at the start of the match are put into the goal posts before completion of “PLAYING TIME” then extra balls at the CENTRE LINE will be introduced into the game.

JUDGING CRITERIA :

- If any Team gets indulged in unhealthy practice such as damaging opposition bot intentionally then negative point may be awarded.
- Teams with maximum score at the end of the match will be declared as winner of that particular match.
- Semi-Final and Final round may take place depending on number of participating teams.
- Winner of Final Match will be declared as the “CHAMPION OF AQUA-SOCCER”.

ROBO-WARS

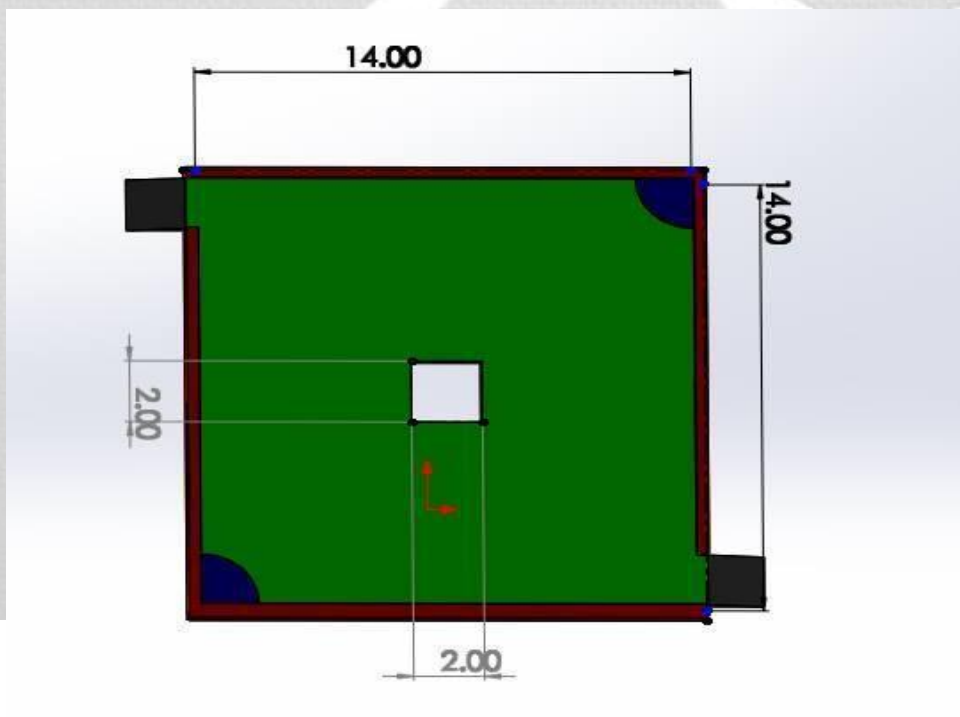
AIM :

The objective is to construct a wired or a wireless, manually controlled bot that can attack, immobilize or throw out the opponent's bot in one on one competition.

TEAM SPECIFICATION :

A team can consist of maximum of 5 participants. Every team should have a unique name.

ARENA :



BOT SPECIFICATIONS :

The dimensions of the bot should not be exceeding (50cm)*(50cm)*(50cm).

The weight of the bot should not exceed 15 kg, including all hydraulics and on-board circuits, etc.

MOBILITY :

Rolling (wheels, tracks , castor wheels, etc.) or Walking using linear actuated legs are ALLOWED.

CONTROL EQUIPMENTS :

For wired machines:

- The teams which are using wired controlled bot must have adapter as per their requirement but not exceeding 36V DC across any two terminals.

For wireless machines:

- The teams must have at least four channel wireless remote control circuit or two dual control circuits which may be interchanged before the start of match to avoid frequency interference with other teams. The case of any interference in the wireless systems will not be considered for rematch.
- Remote control systems from readymade toys should not be used.

Power Source:

- The electric voltage between 2 points anywhere in the machine should not be more than 36V DC at any point of time.
- No AC source should be used at any point on the bot.

For Wireless bots:

- All efforts must be made to protect battery terminals from a direct short and causing a battery fire, failure to do so will cause direct disqualification.
- Battery will not be allowed to change during the match.

Weapons:

Allowed:

- Cutters, blades, saws and spinning hammers(wire cutting is allowed) , Magnetic weapons, flippers, lifting devices.
- Hydraulics can be used for lifting purposes with entire hydraulic setup should be onboard, no external input (from outside the arena) can be given to the robot for functioning of its hydraulic system.

Not Allowed:

- Any kind of inflammable/corrosive fluid, Liquid projectiles, Flame based weapons. Any kind of explosive or intentionally ignited solid or potentially ignitable solid.
- Nets, tape, glue, or any other entanglement device.
- Radio jamming, tazers, tesla coils, or any other high-voltage device.

GAMEPLAY :

- Tournament will be in the form of league which will lead to semi-finals and finals.
- Fixtures and duration of each match will be decided on the spot depending on number of teams and time constraints.
- Point allocation will not be disclosed leading to any disputes but it is assured that point allocation will be fair and without any discrimination.

CRITERIA FOR VICTORY :

- A bot is declared victorious in that particular match if its opponent is immobilized and the match will be finished at that point of time.
- A bot is declared immobilized if it cannot display any kind of linear motion of one inch for a time period of 30 seconds. A bot with one side of its drive train 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.
- If a robot is thrown out of the arena that particular match will stop immediately, and the robot still inside the arena will automatically be declared as the winner for that match.
- Robots cannot win by pinning or lifting their opponents. Organizers will allow pinning or lifting for a maximum of 25 seconds per pin/lift then the attacker robot will be instructed to release the opponent. If, after being instructed to do so, the attacker bot is not able to release its opponent, their robot may be disqualified.
- If two or more robots become entangled or a crushing or gripping 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.
- If a bot is deemed unsafe by the judges or if it damages arena in any form, it will be immediately disqualified. The match will be immediately halted and opponent will be declared winner.
- Qualification of a bot to next level is subjective and totally on the decision of the judges. A bot winning in a round against its opponent doesn't guarantee its entrance into the next round. If the judges found the winner bot incompetent to enter into the next round, it may get disqualified. Judges can disqualify both the bots of a match from advancing to the next round. All the decisions taken by the judges will be final and binding to all. Any queries afterwards will not be entertained.

SAFETY RULES :

- Special care should be taken to protect the on-board batteries, but without proper protection will not be allowed to compete.
- If you have a bot 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 event organizers. Safe innovation is always encouraged, but surprising the organizers with your brilliant exploitation of a loophole may cause your robot to be disqualified before it even competes.
- All weapons must have a safety cover on any sharp edges.
- Any kind of activity (repairing, battery handling, etc.) which may cause damage to the surroundings during the stay of the teams in the competition area should not be carried out without the consent of organizers. Not following this rule may result in disqualification.

ACE

(ASSOCIATION OF CIVIL ENGINEERS)

Presents

SPAGARIDGE

"Design is the essence of engineering and Drawing is the language of Engineers."

*Have you ever sat gazing at the marvels of Civil Engineering spread across the pages of history and wondered, "How do they do it?" If you have an inexplicable passion for Structural Engineering, then this one is for you.
"Build the Strongest Bridge"*

The first bridges built by humans were probably just wooden planks or boulders placed on a flowing stream. But today, engineers have built bridges to cross vast stretches of rivers. Before actually constructing a bridge, we need to model it and test its performance in the lab.

Anwesha brings you a chance of showing your engineering skills with noodles!
So, get innovative and build your bridge model with this unconventional construction material.

OBJECTIVE :

Design and construct a model of a single span truss bridge with the help of **spaghetti noodles** satisfying the constraints stated below

EVENT STRUCTURE :

Round 1: The teams shall mail a zip file containing the abstract of their design to ace@iitp.ac.in . The abstract should contain the following:

Drawings of the design (isometric and orthographic views) with proper dimensioning on AutoCAD or clear pictures of handmade sketches. Clearly state the specifications and advantages of your design and any innovative idea that you have.

Analysis of the design according to the dimensions specified in the problem statement in a simulation software namely Bridge Designer 2016.

The analysis is mandatory. Workshop for the same shall be conducted.

The teams will be shortlisted for Round 2 on the basis of their abstracts.

Round 2: The shortlisted teams shall construct their bridge under the surveillance of the organising team at IIT Patna.

Round 3: The model built by each team will be tested till failure (yielding) by applying an incremental static load.

TEAM SIZE :

Each team should have 3 or 4 members.

DIMENSION SPECIFICATION :

The dimensions of the bridge model must be within the following limits:

- Length: 48-56 cm
- Width : 10-11 cm
- Height: 12-16 cm
- There should be a proper clearance for a 10cm X 8cm X 8cm box to pass through the span of the bridge.
- The members of the bridge can be built by grouping a maximum of 8 sticks of Spaghetti noodles together.

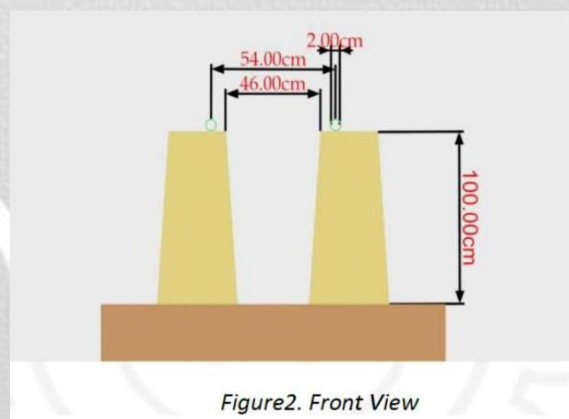
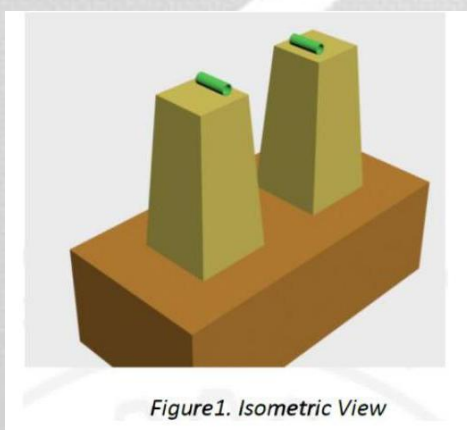
WEIGHT SPECIFICATION :

The bridge model should weigh 350 grams or less.

ARENA SPECIFICATION :

- The arena has two wooden columns representing the landmass on the sides of a river.
- The distance between the inner edges of these columns is 46 cm.
- One cylindrical support of diameter 2cm and length 15cm is placed on each of the wooden column.
- One of the cylindrical supports is fixed to the column and the other is free to act as a roller.

The arena is as shown below:



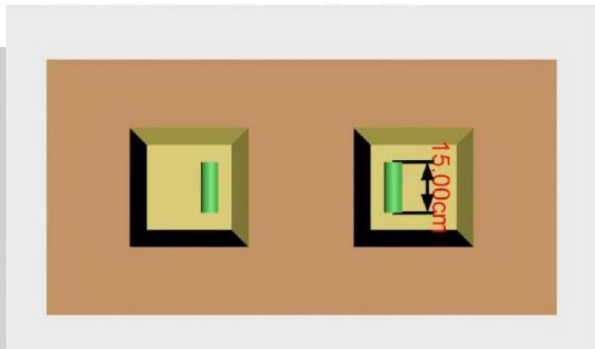


Figure3. Top View

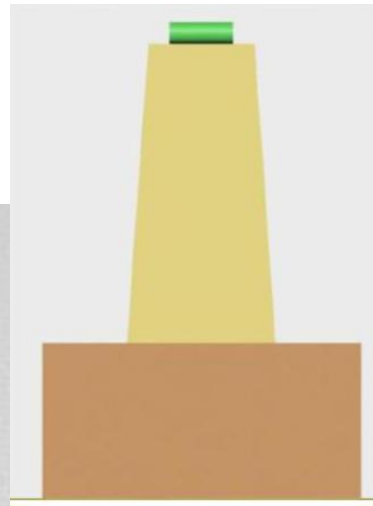


Figure4. Side View

A sample spaghetti bridge placed on cylindrical supports is shown below:



MATERIALS :

The teams shall be provided the construction materials. The teams can bring required tools to build the structure. The following materials will be provided:

- Spaghetti noodles
- Cutter
- Pencils
- Ruler
- A3 size sheet
- Glue

Some properties of spaghetti (dry):

- Ultimate tensile strength ~2000 psi
- Stiffness (Young's modulus) E ~10,000,000 psi

TESTING OF STRUCTURES :

- The dimensions and weight of each structure will be measured. Structures violating the dimensional and weight specifications will be penalised according to the rules.
- Each structure will be mounted on the arena over the two cylindrical supports shown in the arena.
- A 20 cm X 8 cm wide plate will be placed symmetrically on the base of the structure.
- The centre of the plate will be bolted to a screw-jack which will apply load on the structure. The screw-jack will be connected to a load cell to measure the load being applied.
- The structure will then be loaded and a continuous monitoring of its deflection and load will be done until it fails. The maximum load taken by the structure will be noted.

EVALUATION OF STRUCTURES :

The structures will be evaluated on the basis of their performance under loading as well as on the basis of aesthetics.

- The efficiency of each structure will be calculated according to the following formula:
$$e = (\text{Maximum load}) / (\text{Weight of Structure})$$
- Evaluation on the basis of aesthetics will be done by judges and will include criteria like:
 - a) Innovation in design
 - b) Cleanliness of work
 - c) Overall look of the structure

SCORING :

The final score of each structure will be calculated according to the following rules:

- 70% weightage - Efficiency
Maximum efficiency by any structure will be taken as the constant 'E' and points will be calculated according to the formula: $= X (e / E) * 70$
- 30% weightage - Aesthetics

Each structure will be graded by the judges on a scale of 0-30.

PENALTIES :

Penalties as mentioned below will be imposed if the structure violates the dimensional or weight specifications.

- **Weight exceeds the limit**
(Penalty of 15% of the total score)
- **Dimensional specifications are not met**
(Penalty of 10% of the total score)
- **Use of any material other than that provided**
(Penalty of 50% of the total score or can lead to disqualification as decided by the judges)

In case of any discrepancies, the decision taken by the judges and the coordinators will be final and bounding.

THE THRESHOLD CLUB

Presents

ARE YOU UPDATED???

...Where a smart answer won't get you fired!

Get ready to face the bolting experience that shall unbolt the best of you...!!!

***As the name says, this quiz tests your comprehensive knowledge of today's world.
From Business to Bollywood, Science to Sports, this quiz spans all genres.***

So, for all the quizzing enthusiasts out there, if you think your knowledge of the world is exemplary, it's time to prove your mettle in "Are You Updated".

General Guidelines-

- The quiz is based on General Knowledge.
- You can participate as a team of two members.
- The quiz will be conducted in two rounds- **Prelims** and **Finals**.
- The first round i.e. Prelims, will be a written round and the second round i.e. Finals, will be an audio visual round.
- Top six teams will qualify for the Final round.

Judging Criteria-

The team with the highest score after the second round (excluding the score of the Prelims) will be the winner.

In case of a tie, the winner will be decided by tie breaker round.

Rocket Propulsion

PROBLEM STATEMENT :

You need to convert a simple plastic bottle into a rocket which can be fired through the rocket launcher (which will be provided) into the sky reaching weapon of mass destruction.

WORKING PRINCIPLE :

For Rocket:

The plastic bottle is filled with alcohol vapour and secured on the rocket launcher. It blasts off as soon as an electric spark is produced by Rocket launcher. (Cheat Codes : For better control of the range of rocket, the concepts of Centre of Mass -Centre of Pressure should be applied while making the rocket.)

RULES :

1. A team can have at most 2 members.
2. Each team needs to bring a modified bottle rocket with them. The alcohol will be provided.
3. Inner diameter of mouth of the bottle should be slightly greater than the nozzle.

Judging Criteria

Judging will be based on the followings:

1. Each team must submit about 100 words text explaining their rocket design. You can also add the image of your rocket .The last date for submission is 21 October by 5 pm. Send your responses in a MS Word file at vijay.ch15@iitp.ac.in (10 points)
2. The appearance of rocket . (10 points each)
3. The rockets will be shot and the range will be measured .The range will be measured for only those rockets whose range exceeds a minimum distance, provided at the beginning of this round. The rocket having the maximum range will be the winner. (70 points)



**FOR MORE INFORMATION AND UPDATES
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