**SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY**

**MINDBEND 2012**

**CIVIL DEPARTMENTAL EVENTS:**

1. ECO-Dom

**Introduction:**

“**If cities are our civilization, then when we build buildings that kill, we are not civilized.”**

An eco-friendly building is one that is environmentally responsible, profitable and a healthy place to live and work.

With the growing demands of energy and resources, self- sustainable houses are becoming a necessity.

MindBend 2012 gives you an opportunity to provide it in an interesting, informative and creative way.

**Problem Statement:**

Participants are required to present their idea of an eco friendly house. Integrate the best ancient practices with modern technology.

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**Rules:**

1. Team can comprise of maximum 3 members.
2. The event consists of two phases:
3. The online abstract submission
4. Presentation by the shortlisted candidates on the basis of the abstract submitted.
5. The final selected teams will present their idea during MindBend.
6. The shortlisted teams will be notified via e-mail.
7. The winners will be selected by a team of judges based on their presentation (they are supposed to clear any queries of the judges or other participants raised during the presentation).
8. The decision of judges will be final and binding.
9. Interdisciplinary participation is allowed.

**Specifications:**

1. Registration fee is Rs. 60/- per team.
2. The abstract should contain team name, members names, Department name and Institute name, and should not be more than 200 words.
3. An abstract should give a basic idea of the house. Images can also be included but it should be original and developed by the team using any software.
4. An abstract needs to be submitted electronically to the MindBend website on or before 20 September 2012.
5. The presentation is to be in a form of ppt. It should clearly mention your proposed ideas and design. The participants are also required to give a basic 3D idea of the house. They can either use 3D software (like autocad) or can also present a model of the house (whichever they find suitable).

If the model is presented, then following points should be kept in mind:

1. The house should be built within the specified area of 2500 sq cm.
2. No materials will be provided by the organizers, participants can use materials of their own choice.
3. The decision of the judges will not be dependent on the perfectness of the model, but on their idea of the house.

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1. Leaning Tower

**Introduction:**

**Leaning Tower of Pisa - who doesn’t recognize this name..!!!**

It is an amazing art of civil engineering. So here we are presenting the task to you to build a model of leaning tower using popsicle sticks.

**Problem Statement:**

We bring you the challenge to design a Leaning Tower using Tooth picks, Popsicle sticks (ice-cream sticks) & fevicol, which can sustain maximum load, maximum leaning angle and satisfying the stated constraints.

**Rules:**

1. Team can comprise of maximum 4 members.
2. Registration fee is Rs 100/- per team.
3. The leaning tower should be made with popsicle sticks.
4. Interdisciplinary participation is allowed.
5. The final selected teams will present their model during MindBend. The models will be put on an exhibit during the festival.
6. The winners will be selected by a team of judges based on their model presentation.
7. The decision of judges will be final and binding.

**Specifications:**

Material Constraints

* 1. Popsicle sticks (maximum length 110 mm, width 13 mm and thickness 3 mm), wooden toothpicks (maximum diameter 2 mm, length 65 mm and non-colored) and adhesive (fevicol) can only be used to build the structure.
  2. Adhesive can be used to join Popsicle sticks and Toothpicks together; however adhesives cannot be applied on the free surface of a member made of Popsicle sticks to increase its strength (Adhesives such as M-Seal or Fevi-qwik are not allowed).
  3. The Popsicle sticks and Toothpicks can be cut or trimmed to any shape or size.
  4. Structures built using any other materials except those mentioned above will be disqualified.

Test Condition

Prior to evaluating the structure, the dead weight (m) is measured and recorded in grams.

The team members will decide how much weight should be kept initially. The weights will be kept on the middle of the top flat surface of the structure.

After that weight will be increased in 1 kg intervals (or according to situation) and the ultimate load carrying capacity (Fu) of the structure will be evaluated at the point of failure.

Definition of Failure

The structure is considered failed when:

* The vertical deflection exceeds 50mm, i.e. the vertical height reduces by 50mm or more due to bending.
* Any member or joint fails.
* At any point of time, the structure, other than foundation, touches the platform.

Judging criteria

1. Structural Efficiency (E)

The structural efficiency will be calculated by the following equation:

E=Fu/m

Where

Fu= Ultimate load taken by the structure (kgf).

m= Dead weight of structure as measured at the competition.

200 points will be awarded to the team with the highest score in this category, and all others will be awarded points based on their structural efficiency as a fraction of the highest score.

1. Vertical height-load factor (HLF)

HFL= Vertical height of structure above the base (in mm)) \* (load in kg)

150 points will be awarded for the structure with highest value of HFL and all others will be awarded points based on their product as a fraction of the maximum product obtained.

1. Inclination-load factor (ILF)

ILF= (Angle (in degrees) with vertical) \* (load in kg)

100 points will be awarded for the structure with highest product of and all others will be awarded points based on their product as a fraction of the maximum product obtained.

1. Ultimate Load Carrying Capacity (Fu)

Fu=maximum load taken by the structure (in kgf).

75 points will be awarded to the team with largest ultimate load capacity, and the remaining teams would be awarded points based on linear interpolation of their own capacity between the maximum (largest ultimate load capacity) and the minimum.

1. Leaning angle (LA)

LA= leaning angle of the structure.

50 points will be awarded to the team with the maximum inclined angle with the vertical, and all others will be awarded points based on their angle of inclination as a fraction of the maximum inclination with vertical registered.

Thus,

Total points=E + HLf + ILf + Fu + LA

Where E=200

HLF=150

ILF=100

Fu=75

LA=50

So maximum Total Points=200+150+100+75+50

=575

The judging will be done on the basis of points secured by the participants. The participant with highest points will be the winner.

Structural constraints & penalty

1. The structure should have a minimum base area of 100\*100 mm^2 and should fit in a square of area 200\*200 mm^2. Structures with base area less than 95\*95 mm^2 will be disqualified, i.e. erroneous base area between 100\*100 mm^2 and 95\*95 mm^2 will be accommodated. Structures with base area more than 200\*200 mm^2 will have the following penalties applicable:-

15 points will be deducted at every increase of 10\*10 mm^2 in the base area after 20\*20 mm^2.

If the base doesn’t fit in square of 250\*250 mm^2, it will be disqualified.

1. The structure should have a **base foundation of a maximum of 100 mm in height below the leaning structure** as shown in the fig.

Structures with height of foundation more than 100 mm will have the following penalties applicable:-

If maximum height of foundation exceeds 100 mm, but is within 110 mm—30 pts will be deducted.

If maximum height of foundation exceeds 110 mm, but is within 120 mm—60 pts will be deducted.

If maximum height of foundation exceeds 120 mm, structure will be disqualified.

1. The foundation of the structure will be tied with threads to hold the base tightly.
2. **Height of the leaning structure will be measured from above the height of the foundation**. Also the structure should have a **minimum of 350 mm vertical height above the foundation**. Structures having **vertical height less than 350 mm will be disqualified**.
3. Angle made by the leaning structure with the vertical will be measured from above the foundation to the highest point of the structure using the formula

**The minimum angle of the structure with vertical should be 10 degrees**.

Structure having angle 8 to 9 degrees will be awarded 0 pts in the maximum inclination criteria.

1. *The structure should be symmetrical from outside, i.e. all sides of leaning structure should be uniformly inclined with same angle inclination*.

Moreover the uppermost surface of the structure should have the same shape and size as the bottom of the leaning structure (not the base foundation).

Top surface should be flat and parallel to ground surface. This is required in order to help you balance the load easily on the top surface.

Drawing of the arena along with explanation of how the foundation will be tied will be mentioned with the drawing/figure.

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1. c@mpuz0ne:-

**Introduction:**

An ideal CAMPUS for an engineering institute is not a new thing for us Engineers…..

Nowadays, engineering institutes are increasing in numbers without having a good, effective & eco-friendly campus. So we as engineers are required to build such an ideal campus that features with necessary objects which you think that a good campus should comprise of, also it should be environment-friendly.

So….why to wait!!!!! Just start thinking on an ideal campus, and come out with an innovative idea.

Yeah….it’s really as easy as you are thinking…!!!!!

**Problem statement:**

Make a model of ideal campus for an engineering institute using waste & junks (will be provided).

**Rules:**

1. It will be an “on the spot” event.
2. Each team comprises max of 3 members.
3. White sheet, waste & junk will be provided.
4. You are required to come with tape, scissor & necessary measuring instruments.
5. All the branches of B.Tech & M.Tech are open to participate.

**Specifications:**

1. Registration fee is Rs. 45 per team.
2. The campus should be designed within the specified area of 3000 sq cm.
3. The area specifications of the buildings & other things should be clearly mentioned by the participants.
4. The time limit for campus designing is 3 hours.
5. The winner will be selected by a panel of judges based on their model planning and their creativeness.
6. The decision of judges will be final.

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Department Game zone:

Are you game?

***Jenga***

A game where players take turns to remove a block from a tower and balance it on top, creating a taller and increasingly unstable structure as the game progresses. The game ends when the tower falls in even a minor way. The winner is the last person to successfully remove and place a block.

***Excited?***

**\*Participants can come in a group of 3 to 4 and can play against each other.**

**\*On the spot registrations will be done for this event.**

**\*Registration fee 15/- per person.**

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