

# CONTRAPTION

## **EVENT OBJECTIVE:**

If you think that machines always simplify tasks, you are mistaken! Because in a Rube Goldberg machine or contraption you have to do the exact opposite! You have to make a laboriously contrived machine to perform simple tasks. Defy the basic law of engineering; DON'T keep it simple and small! Complexity is the essence of this event. So apply your brains, deliberately over-engineer, to perform the tasks in as complex ways as possible.

## **EVENT STRUCTURE:**

### **PROBLEM STATEMENT:**

1. To fire a projectile to hit a particular target(Hitting can be done in a circle of diameter 15 cm)
2. To shut off an alarm clock

### **Round 1:**

The first round consists of abstract submission (soft copy).

**Last date of submission of abstract is midnight of 15<sup>th</sup> September 2016.**

You can send it to our email ID: **contraption@mind-spark.org**

### **ABSTRACT DETAILS:**

Team name:

Team leader's name with contact no.:

College name:

Receipt no:

All participants details with contact no.:

Email id for further contact :

Contraption Design (200 words): (The overview and theme of contraption design)

### **Round 2:**

Depending on the abstract teams will be short listed for round II which will be the qualification round.

All teams are expected to get **4 copies** of printed abstract for the event, clearly mentioning steps and chart, which shows all Energy conversions. (If possible diagrams should be added.)

### SUMMARY OF CONTRAPTION:

Total number of steps	
Total number of distinct steps	
Total number of repeated steps	
Total number of bonus steps (if any)	
Total number of links	

Detailed write up of each step in sequence must be specified. Use of sketches, flow charts is allowed. Use the following tabular format.

### STEPS:

STEP NUMBER	DESCRIPTION OF THE STEP	ENERGY CONVERSION INVOLVED

### SCORING PATTERN:

- A**– Completion of first task. (180 marks)
- B**– Completion of second task. (120 marks)
- C**– Points for theme related steps. (Depending on steps, Decided by judges)
- D**– Neat and tidiness and overall look of contraption model.(out of 50)
- E**– Use of mechanical, chemical and electrical energy.(15 for each)
- F**– Total repeated mechanical, chemical and electrical energy. (3 for each)
- G**– Total energy conversions except mechanical, chemical and electrical. (15 for each)
- H**– Total repeated energy conversions except mechanical, chemical electrical. (5 for each)
- I**– Total number of energy conservations. (15 for each)
- J**– Number of compulsory steps, bonus steps used. (20 for each)

**K**– Points for abstract representation, simplicity, presentation/explanation of contraption at the time of event & behaviour of team.

**L**–Points deducted due to hand touches. (30 for 4 hand touches, 60 for 5 hand touches, 120 for 6 hand touches)

**M**– Points deduction due to failure in initializing two parallel lines at the starting.

**Formula used:**

$$Z=180*A(A=1)+120*B(B=1)+C+D+15*E+3*F+15*G+5*H+I*15+20*J+K-L-M$$

Note: -Points for [**C, D and K**] are given and decided by judges.

**Bonus steps:**

1. Display of message promoting '**A Green Expedition**'
2. Use of non-conventional source of energy.
3. Conservation of energy during the contraption (e.g.: switching off any appliance used, etc.)

**Theme related steps:**

This year's theme is '**A GREEN EXPEDITION**'

It aims to use of technology which is green, i.e a technology with least carbon print.

Try to incorporate the steps involving the use of the things differing from the existing one in work, design. (e.g. using a cart with spherical wheels, using bulb as a source of heat )

You can claim for such steps and if the judges found it appropriate then you can earn upto 30 points depending on steps.

**RULES:**

1. The minimum and maximum time for contraption is 2 minutes and 10 minutes respectively. After 10 minutes, 30 points per minute will be deducted from the total score.
2. In the first trial 3 hand touches are allowed without deduction of points. Before the fourth hand touch one would be given choice to go for fourth hand touch or to go for second trial. For 4th, 5th and 6th 30, 60 and 120 points will be deducted respectively from the total score.
3. In case of second trial 2 hand touches will be allowed with deduction of 50 and 80 points for each. Further average of two trials will be considered. The team will be disqualified if they exceed permissible number of hand touches in the respective trail.

4. A set-up time of 3 hours and 1 hour will be given for each team for first trial and second trial of the model respectively. Only 2 trials are allowed.
5. Final decision made by judges and organizers will be binding to all.
6. Each team should perform the 2 tasks as mentioned in the problem statement in the same sequence.
7. No alteration in any step will be allowed during the trial of the contraption.
8. A space of 6ft.\*6ft.\*8ft. (l\*b\*h) will be provided to each team.
9. Students should carry proof of identity issued by their institution.
10. Each team can have a maximum of 4 members.
11. Same person cannot be a member of more than one team. All teams involving common person as a participant will be disqualified.
12. Participants are required to report at 7.30 a.m.
13. Participants should take due safety measures in their models.
14. Rules are subject to without prior intimation. Participants are requested to check the MindSpark '16 website ([www.mind-spark.org](http://www.mind-spark.org)) regularly for updates.
15. All decisions of Judges, Event Heads and Organizers will be final and binding to all participants. No arguments shall be entertained.

#### **TEAM AND FEE STRUCTURE:**

Team size : Maximum 4 participants per team  
Registration Fee : ₹ 200/- per team.

#### **FAQS:**

Q. Who can participate in this event?

A. Any undergraduate student from any branch or a non-engineering course can participate in this event.

Q. Is a team of students from different colleges allowed?

A. Yes. Team members may be from any year, any branch and any college.

Q. Is it necessary to participate as a team of four?

A. No, four is the maximum number of participants that can be a part of a single team.

Q. Is it possible to participate in other events of MindSpark?

A. You are free to participate in as many events as you want. However you have to manage your own schedule.

Q. Will any changes in design be allowed after submitting the abstract?

A. Additions within the rules will be allowed, minor changes will be allowed, of course, any serious difficulties will be handled with care. The changes need to be informed to the event heads at most 1 day prior to the event.

Q. Is the use of hydraulics and pneumatics allowed?

A. Use of hydraulics and pneumatics is allowed.

**EVENT HEADS:**

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