megalith
DEPARTMENT OF CIVIL ENGINEERING

Department of Civil Engineering IIT Kharagpur & ice

ROTOLARE

INTRODUCTION

Roller Coaster is an astounding structure which provides stunning rides. Roller coasters are called "gravity rides" for a good reason: once the coaster has been dragged to the top of the first hill and released, it is the force of gravity that keeps the coaster going all the way back to the stationed platform at the end of the ride. As the coaster goes through its twists, turns, rolls, and loops, it gains energy due to gravity and loses its initial energy due to friction. Roller Coaster geeks play with changes in gravitational potential and kinetic energy and thrive to make the most exciting ride.
Teams shall design and build a "roller coaster" meeting the design requirements as per specified below. The "roller coaster" shall mean the entire structure, including the roller coaster track and the base, but not the actual vehicle. The "COASTER" means the vehicle that travels on the Roller Coaster track.

PROBLEM STATEMENT

Teams need to make model of a roller coaster track using the basic hardware material like plastic tubes, rubber tubes (transparent) and paper. It is recommended to design your roller coaster around a theme like a jungle, an ocean as that add up to the excitement factor.

Materials provided by Megalith Team

Five rectangular blocks (6''*6''), Tape, Fevicol and Scissors.

[NOTE: Students have to bring their own track and other materials required for making the roller coaster (Megalith Team will not provide any other material apart from specified above).Commercially available roller coaster kits are not allowed to use. Participants need to bring 'double sided tape' to join rectangular blocks and ground.]

SPECIFICATIONS FOR BOT

a) Size restrictions - the height should not be more than 2.5m.
b) The model should be designed for a regular size glass marble.
c) The starting and stopping points must be clearly marked in the model.
d) The energy source for the ride can be gravitational pull only. Use of external energy sources like magnets, springs, electricity are not allowed. However these energy sources can be used for aesthetics and design (like background lightning).
e) Each team will have to measure the total track length and mount it on the 5 rectangular blocks given.
f) Teams may use more than one marble in case one marble fails to complete the track.
g) Teams can use maximum 5 supports using the rectangular blocks provided only.

JUDGING CRITERIA

1) Time (30 Pts)

Each model will be entitled to three runs. The longest time to go from the start position to the finish will be the official time for that model.

Calculation of Points for Time:- Points will be relative.

Points = (Your time/max time) * 30

For example, if your time is 24 seconds and max time = 35 sec, then you will get marks = (24/35)*30

2) Technical Points (45 Pts)

a) Loop Factor (15 Pts):

Points= (Sum of diameters of all the loops in the roller coaster/ Maximum sum of diameters)*15

b) Vertical Jump Height (5 Pts):

Height Coaster travels during jump.

H = Max height Coaster jumps in any Roller Coaster in competition.

h = Height jumped by your Coaster.

Points = (h/H) * 5

c) Vertical Loop (15 pts)

Vertical loop is defined as, the loop of track where the 'rider' is upside down. If the vertical loop is a portion of a corkscrew (helix), it counts as a vertical loop.

Points: For, 1 loop= 10 pts, 2 loop= 15 pts.

d) Degree of Openness (10 pts)

Points will be awarded for degree of openness of track.

Mostly closed- 0 pts

Around 50% open - 5 pts

More than75% open - 10 pts.

3) Aesthetics (25 pts)

a) Creativity (15 pts)

For, 90° turn of the track

Points: for 1 turn= 2 pts, for 2 turns= 5 pts

For, 180° turn of the track

Points: for 1 turn= 4 pts, for 2 turn= 10 pts.

b) Aesthetically Charming (5 pts)

Whether the track is neatly designed and is having uniformity in color/design. Whether it is well-constructed or having any roadway obstruction.

c) Theme (5 pts)

What's the name of your roller coaster? Does your scenery support this theme? Does the design support your theme? Is there a coolness or cleverness factor in your name?

RULES AND REGULATONS

a) Event is open to all.

b) Maximum team size is 5.

c) Participants can form teams from different branches/ college/ university/ institute having at least 1 civil engineering student.

d) No two teams must have any common member.

e) Teams are not allowed to touch their model once the ride begins.

f) The time limit for the completion is **180 minutes**.

g) The decision of the judges shall be final. Any coaster that violates the rule above or the spirit of the competition will be disqualified.

CONTACTS US

Immidisetty Anudeep
+91-9933905138

Rahul Jain
+91-7699086340