CONTRAPTION PROBLEM STATEMENT

EXCLUSIVE FOR FIRST YEAR:-

1) MAKE A HUMAN POWERED MECHANICAL DEVICE TO PICK THE STONES OF VARIOUS SHAPES, SIZE AND WEIGHT WHICH IS ON SOLID GROUND. AND LIFT THE STONES UPTO CERTAIN HEIGHT (15CM) WITHOUT USING ANY ENERGY STORING DEVICES AND ELECTRONIC GADGETS.

NOTE: - WEIGHT OF THE STONES WILL BE 250 GMS, 500GMS, 750 GMS.

EVALUATION CRITERIA:-

(A)EXTENT OF COMPLETION OF TASK
(B)DEGREE OF AUTOMATION
(C)COMPLEXITY AND INNOVATION
(D)INNOVATION AND ORIGINALITY OF IDEA
(E)CREATIVITY
(F)COST OF SETUP

OPEN TO ALL:-

2) IRRIGATION IN HILLY SLOPES HAS ALWAYS BEEN TEDIOUS. AVAILABILITY AND REACH OF WATER SOURCE ACT AS BOTTLENECK FOR DEVELOPMENT OF CIVILIZATION IN THOSE AREAS. HEAVY COST REQUIREMENT FOR PUMPING WATER, LACK OF SKILLED MANPOWER AND LIMITED ACCESS TO THE FUEL OR ELECTRIC DRIVE HAVE LONG BEEN TROUBLING LIFE OVER THERE. WE THOUGHT OF HELPING THEM OUT.
“DESIGN A MECHANISM WHICH LIFTS WATER TO A HEIGHT OF MORE THAN 0.5 METERS”. YOU'LL HAVE TO DEMONSTRATE THE WORKING MODEL AT THE EVENT VENUE. ELECTRIC MOTORS OR ANY OTHER FUEL OPERATED ENGINES SHOULD NOT BE A PART OF YOUR MECHANISM. DO NOT IMITATE THOSE CONCEPTS WHICH ARE ALREADY IN USE.

JUDGMENT WILL BE BASED UPON:
SIMPLICITY AND FEASIBILITY OF DESIGN
COMPONENTS USED AND THE PRINCIPLE BEHIND YOUR MECHANISM
RAPIDITY OF THE REQUIRED WORK
LEAKAGE/WASTAGE OF WATER DURING THE DEMONSTRATION.

---

3) RECURRING CONTRAPTION:

DESIGN A CONTRAPTION, WHICH CONTAINS CERTAIN SET OF STEPS WHICH ARE TO BE REPEATED 3 TIMES.

FORMAT:

STARTING POINT
STEP 1 TO STEP N (RECURSION 1)
STEP 1 TO STEP N (RECURSION 2)
STEP 1 TO STEP N (RECURSION 3)
STEP 1 TO END AT ANY STEP….

RULES:

1. MIN 4 STEPS SHOULD BE THERE IN 1 RECURSION.(NO LIMIT FOR MAX.)
2. ONLY WHEN ALL STEPS ARE FINISHED ONCE, SECOND RECURSION SHOULD START.
3. EACH RECURSION SHOULD FOLLOW THE SAME STEPS OF PREVIOUS ONE.

MARKING CRITERIA:

1. EACH STEP WILL BE GET +15 POINTS.
2. SUM= 15*(NO. OF STEPS)*(NO. OF RECURSIONS) + 50(ONLY IN CASE OF ZERO PHYSICAL INTERVENTION).
3.NO POINTS WILL BE AWARDED FOR THAT RECURSION WHICH WILL NOT BE COMPLETING ALL THE STEPS. (I.E. IF YOU HAVE COMPLETED 2 RECURSIONS COMPLETELY AND SOME STEPS OF NEXT THEN IT WILL BE COUNTED AS 2 RECURSIONS ONLY.)
4. MORE THAN 3 RECURSIONS HAS NO EXTRA POINTS (I.E. YOU CAN STOP THE PROCESS AT ANY STEP AFTER 3 RECURSIONS).

5. MAX 3 PHYSICAL INTERVENTIONS AFTER THAT YOU WILL BE MARKED TILL THAT STEP ONLY.

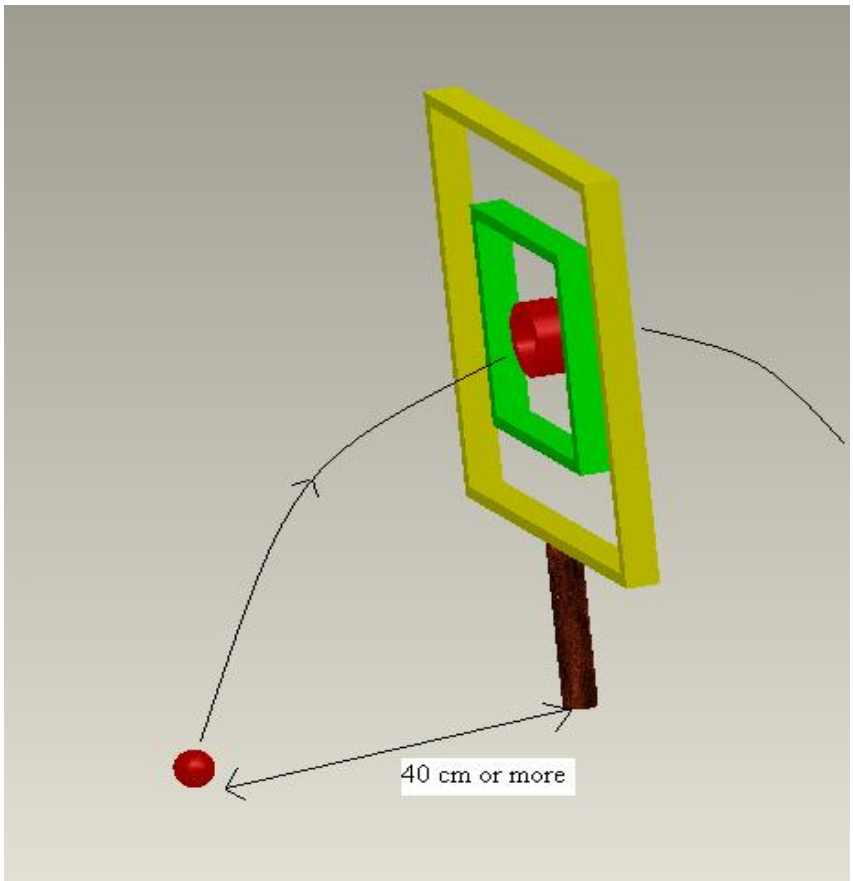
---

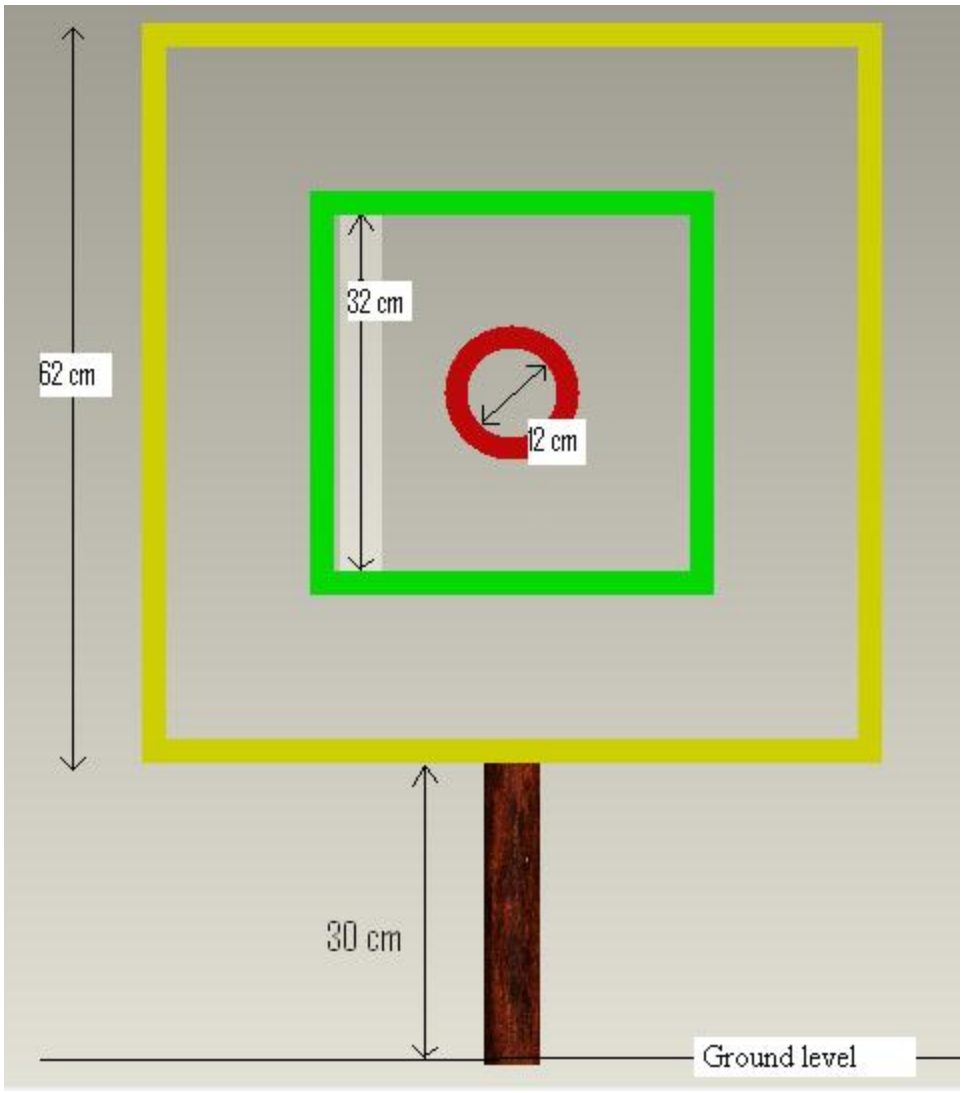
4) MAKE A CONTRAPTION WITH AS MANY ENERGY CONVERSIONS AS POSSIBLE WITHIN 3 MINUTES. THE CONTRAPTION DURING ITS PROGRESS SHOULD PERFORM TWO TASKS

TASK (1) DEMOLITION OF A STRUCTURE (MADE UP OF 6 STACKED BRICK) WITH MORE THAN ONE BLOW.HERE, REMOVAL OF ATLEAST 2 BRICKS WOULD BE CONSIDERED AS COMPLETION OF TASK.

2 BRICKS REMOVED – 10 POINTS
3 BRICKS REMOVED – 20 POINTS
4 OR MORE REMOVED – 30 POINTS

TASKS (2) PASS THE TENNIS BALL THROUGH THE FRAME, CARRYING OUT PARABOLIC MOTION PLACED AT GROUND LEVEL.THE SCHEMATIC IS SHOWN BELOW.





IF THE BALL PASSES THROUGH
INSIDE RED REIGION-30 POINTS
INSIDE GREEN REIGION-20 POINTS
INSIDE YELLOW REIGION-10 POINTS

MARKING CRITERIA:
(A):-POINTS WILL BE EQUALLY DIVIDED FOR COMPLETION OF TWO TASKS (TEAMS WITH ONE TASK WILL ALSO BE CONSIDERED AND JUDGED BASED ON CONTRAPTIONS COMPLEXITY AND CREATIVITY)
(B)NUMBER OF VALID ENERGY CONVERSIONS
(C)CREATIVITY
(D)INNOVATION AND ORIGINALITY OF IDEA
(E)COST OF SETUP
(F)TIME TAKEN FOR CONTRAPTION

5) ITS 8:00 AM -TIME FOR BREAKFAST

ITS 3:00 PM -TIME FOR A NAP

ITS 6:00 PM -TIME FOR REFRESHMENT

HAVE YOU EVER WONDERED HOW COMPLEX LIFE WOULD HAVE BEEN WITHOUT A CLOCK.DONT JUST WONDER.

HERE IS AN OPPURTINITY TO MAKE ONE.

DESIGN A CLOCK THAT SHOWS A SECOND HAND (ATLEAST) AND SHOULD RUN MINIMUM FOR 120 SECONDS WITH AN ACCURACY OF 10 SECONDS.USE OF GEARS , SPRING OR

OR ANY ENERGY STORAGE ELEMENTS, ELECTRONIC CHIPS (OSCILLATOR ETC) IS NOT ALLOWED.

SCORING CRITERIA WILL BE BASED ON:

.COMPLEXITY OF PROCESS

.ACCURACY OF CLOCK

.ADDITIONAL FEATURES (LIKE "A MINUTE HAND")

.THEORY BEHIND WORKING

NOTE- TEAM ATTEMPTING MORE THAN ONE PROBLEM WILL BE GIVEN ADVANTAGE.

Please submit an abstract to the attempted problem which outlines the design, the concept used along with the names of the team members, latest by 18th September.
For queries: - contraption.mechrocosm2k11@gmail.com.