

MORTAR MASTER

EVENT DESCRIPTION :

Concrete is a widely used material in the field of civil engineering – both, at the construction sites and for research purposes. As we all know, a slight variation in the concrete mix can produce a significant change in the strengths, setting period and other properties of concrete. We would like to exploit this unique property of concrete and this gives rise to our event, MORTAR MASTER, in Pragyan 2015.

The objective of the event is to design and produce concrete blocks of the least weight for a specified strength and size that would be mentioned in the problem statement. Quite simple isn't it? But, as an engineer, one has to be versatile. So, the teams to prepare a proper design mix report, cast cubes of impeccable finish and present a briefing of their work to the judges will be declared the 'Mortar Masters' at the end of the event !

(P.S: Don't ask us why it isn't Concrete Master; we just wanted our event name to sound less 'coarse'!)

FORMAT :

The event can be divided into two stages (note: it isn't two rounds). The first stage will include activities that you will be carrying out at your respective colleges and the second stage will be conducted at NIT-Trichy.

Stage 1

- Registration for the event
- Release of the problem statement
- Designing the mix and casting three concrete blocks within the specified restrictions.
- Preparing a report of the design mix and its online submission to us before the specified deadline.

Stage 2

- Bring the casted concrete blocks to NIT Trichy during Pragyan.
- Weight, strength and size of the blocks will be tested.
- The submitted design reports would be evaluated and the team would be asked to give a brief oral presentation of their work upon which they will be questioned.
- Points would be awarded across each category (See Judging Criteria) and the winner will be adjudged accordingly.

RULES :

- 2 - 3 members per team.
- The mix design should strictly adhere to the Indian Standards Code.
- It is necessary to get the design report attested by the Head of the Department of your college.
- Design mix report should be submitted to mortarmaster@pragyan.org on or before **20th Feb, 2015**.
- Make sure the oral presentation is kept down to 5 minutes.
- Any violation or deviation from the criteria mentioned in the problem statement will result in the disqualification of the team.
- Any violation from the rules mentioned will also lead to the disqualification of the team.
- The judge's word would remain final.

JUDGING CRITERIA :

The contestants will be judged on the following points:

1. Least weight:

The least average weight among the contestants will be adopted as the datum say D kg. Teams with average weight of their cubes falling within D kg and (D + 5% of D) kg will proceed for the oral round. In case the number of teams falling within this range is low, then the top five teams with the lowest average weights will proceed for the oral round.

The next section concerns only those teams that qualify for the oral round.

Points awarded for the least weight will be equal to $(2.5 - w) * 25$, 'w' being the average weight of the three cubes in kg.

Note: Only teams scoring positive points in this will proceed to the next stage. For example if average weight of the cubes turn out to be 2.6 kg then points awarded will be

$= (2.5 - 2.6) * 25 = -2.5$, in which case the contestants automatically fail to qualify, even if the team finishes in the top five.

2. Design report:

The design report to be submitted online will carry 10 marks, to be awarded by the judge. Contestants are advised to stick with the design format provided in the Pragyan website.

3. Oral briefing:

The oral presentation will be conducted by our senior faculty member and judge, Dr C.Natarajan who will also quiz the team members on the submitted design report. This section will carry a total of 20 marks.

PROBLEM STATEMENT :

Design three concrete cubes of 100 mm size having strength of 40-48Mpa. Take note that the range is not for the average strength of the three cubes but calls for each cube's strength to fall within the specified range. Within the specified range there are no points awarded for higher strength. Least weight of the concrete cubes is desirable and their average will be taken for grading in the judging format.

FAQ :

1. Are participants from departments other than Civil Engineering allowed within the team?

Yes, as long as you have knowledge in designing and casting concrete blocks.

2. Is it not difficult to carry three concrete blocks all the way from our college to NIT Tricky?

Yes, we understand it is difficult. If you wish to send your blocks a couple of days before your arrival using some transport agencies, you are welcome to do so.

The conditions are the blocks should arrive at our college prior to your arrival at Pragyan and we will not take any responsibility for damage of the blocks during transport.

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3. Can I participate without submitting the photos?

No, all participants registering online will have to submit the photos by the deadline mentioned.

4. Can we register once the problem statement is released?

Yes, you can register. But the rules won't change and the deadlines would remain the same.

RESOURCES :

Learning modules would be posted once the problem statement is released in January. They would contain information which might not only assist you during the course of the competition but also help in gaining some useful knowledge in the field of civil engineering.

Additionally, Prof. C. Natarajan, our esteemed faculty advisor and judge of this event, would be delivering a lecture on a topic of his expertise towards the end of the event, which would be interesting and enlightening.

PRIZE MONEY: Worth INR 25,000

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