

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 2016.

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'!!!)

Event 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 **15th of February 2016 by 11:59 pm.**

Format of Mix Design report can be downloaded from [here](#).

Note: Reports sent to **mortarmaster@pragyan.org** will only be considered

Stage 2

- Bring the casted concrete blocks to our college 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.

PROBLEM STATEMENT

Design three concrete cubes of 100mm size having minimum compressive strength of 30Mpa using predominantly eco-friendly and waste materials. Additional weightage will be given for least weight and for the highest strength achieved. Take note that the value is for the average strength of the three cubes.

Rules:

- 2 - 3 members per team.
- The mix design should strictly adhere to the Indian Standards Code and in the prescribed format.
- 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, 2016**.
- 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:

1. Minimum compressive strength & least weight:

Teams with average compressive strength of their cubes greater than 30Mpa will be considered satisfying the eligibility criteria. Maximum weight of each cube should be 2.5kg with permissible error of 10% give or take.

The teams satisfying both the criteria will qualify for the oral round. In case the number of teams falling within this range is low, then the top six teams with minimum compressive strength(30Mpa) and least weight will proceed for the oral round.

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

A total of 20 marks will be awarded for the average weight of concrete cubes. A perfect 20 will be awarded for least average weight. The other teams will be given scores in relative to the highest score achieved. The average strength of the three cubes over 30 Mpa will be divided by 5 and this will be added to the total score. For example an average strength of 35Mpa will get a score of 7.

2. Design report:

The design report to be submitted online will carry 20 marks, to be awarded by the judge. Additional weightage will be given for economical and eco-friendly design. 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.

FAQ:

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

Ans: Yes, as long as they 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 Trichy?

Ans: 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. The conditions are: It must be brought to our notice and 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.

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

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

4. Are cross-college teams allowed?

Ans: Yes.

5. Is it maximum of 3 people or strictly a team of 3?

Ans: It is maximum of 3 and minimum of 2 members per team

6. Are UG-PG collaboration teams allowed?

Ans: No. Only UG students are allowed for the event.

7. Is any registration fee required?

Ans: No.

8. Do we get any participation certificate?

Yes participation certificates will be provided for only those participants who submit their mix design reports and show up for the event with their cubes.

9. Is it compulsory to start the casting of cubes 28 days prior to the event?

Ans: No, we are not looking for the 28-day strength. All that we need is that when the cubes are brought here for testing, their strength should lie within the specified range.

10. Can we make our own design report including all the necessary details?

Ans: No, a standard format has been uploaded on the Pragyan site. You can download it, fill in the details, get it attested from your Head of Department and send it to us by the scheduled date.

11. Is it compulsory to fill all the details in the given design report?

Ans: The more the details you fill, it will help your cause in getting more points. If any detail is not filled, it would not lead to any disqualification but only loss in points in that category (Refer Judging Criteria for the points allotted).

PRIZE MONEY: INR 27,000.

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