भारतीय प्रौद्योगिकी संस्थान गुवाहाटी
INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

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Pre-RIC Events on Mathematics

1. Integration Bee: For Undergraduate

1.1. Syllabus

- Integration up to undergrad level

1.2. Formats and Rounds

- There will be a total of 5 rounds: Elimination round, top 16, quarter final, semifinal and final
- Elimination round will be MCQ based written test; Top 16 is a 4 way match up; and quarter final, semifinal and final is one to one knock-out.
- In Top 16, quarter final, semifinal and final, participants need to solve the problem on the board.

1.2.1. Elimination Round

- The Elimination Round will be a written test consisting of 30 MCQ based integrations.
- For each correct answer, participants will get 4 marks and participants will lose 2 mark for each wrong answer.
- The participants will have 30 minutes to solve these integrations, and the top 16 will be advanced to the Super 16.
- If there is a tie, the ratio of the correct attempts will be considered.

1.2.2. Super 16

- There will be a 4-way matchup to select the top 8, i.e., four students will be called at a time to solve integration on the board.
- Each student will have **five integrations** to solve, and the duration for each integration is **3 minutes.**
- **Marking:** Out of 4 participants, if X solves and Y fails, then solvers get Y points, and the rest lose X points each.
- For example, if 1 participant solves an integral correctly out of 4, the solver will get 3 points, and the rest will lose 1 point each.
- **Tie-Breaker:** The number of correct answers will be considered.

Question Number	Competitor 1	Competitor 2	Competitor 3	Competitor 4
1	P1	P2	P3	P4
2	P5	P6	P7	P8
3	P9	P10	P11	P12
4	P13	P14	P15	P16
5	P1	P5	P9	P13
6	P2	P6	P10	P14
7	P3	P7	P11	P15
8	P4	P8	P12	P16
9	P1	P5	P3	P7
10	P2	P6	P4	P8
11	P9	P13	P12	P16
12	P10	P14	P11	P15
13	P1	P2	P9	P10
14	P5	P6	P13	P14
15	P3	P4	P12	P11
16	P7	P8	P16	P15
17	P1	P9	P5	P13
18	P2	P10	P6	P14
19	P3	P12	P7	P16
20	P4	P11	P8	P15

1.2.3. Quarter Final

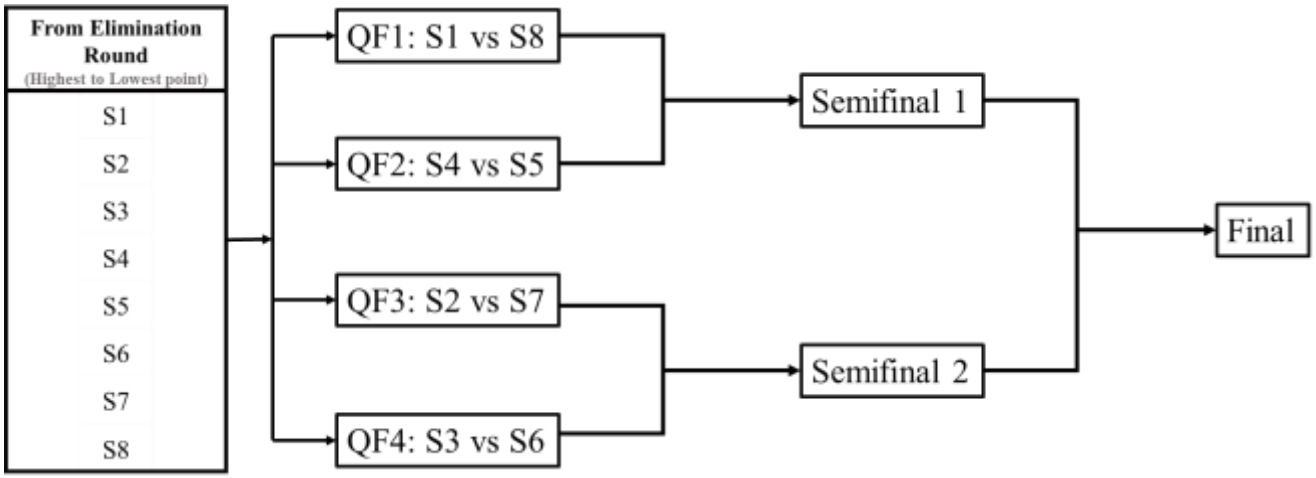
- Knockouts: The quarter finals will be decided based on the position in Super 16.
    - QF1: 1 vs 8
    - QF2: 2 vs 7
    - QF3: 3 vs 6
    - QF4: 4 vs 5
- Each knockout will have 3 integrations and time to solve each integration is 3 minutes.
- Tie-Breaker: Additional round will be there and this will repeat until a winner is decided.

1.2.4. Semifinal

- Knockouts
    - SF1: Winner of QF1 vs Winner of QF4
    - SF2: Winner of QF2 vs Winner of QF3
- Each knockout will have 5 integrations and time to solve each integration is 4 minutes.
- Tie-Breaker: Additional round will be there and this will repeat until a winner is decided.

1.2.5. Final

- Winner of SF1 vs Winner of SF2
- Each knockout will have 7 integrations and time to solve each integration is 5 minutes.
- Tie-Breaker: Additional round will be there and this will repeat until a winner is decided.



1.3. Prize

- Eliminated quarter finalist
- Eliminated semifinalist
- Winner and Runner-up trophy and Prize Money for Winer and Runner-up.

1.4. General Rules

- Calculators, formula sheets or any other gadget are not allowed.
- The integrals can be definite or indefinite
- Participants do not have to write the arbitrary constant (+C) for indefinite integral.
- Participants can leave the answer in terms of large power/binomial coefficient/factorial etc. We will check if the answer is equivalent or not.
- Only the final answer will be evaluated.
- Participants need to circled/boxed the final answer for the judge to evaluate.
- If participant want to change the answer, he/she have to erase or strike out the previous answer.

2. Differentia Challenge: For Class: XI-XII

2.1. Syllabus

- NCERT Class-XI syllabus of Trigonometry and Differential Calculus

2.2. Formats and Rounds

- There will be a total of 5 rounds: Elimination round, top 16, quarter final, semifinal and final
- Elimination round will be MCQ based written test; Top 16 is a 4 way match up; and quarter final, semifinal and final is one to one knock-out.
- In Top 16, quarter final, semifinal and final, participants need to solve the problem on the board.

2.2.1. Elimination Round

- The Elimination Round will be a written test consisting of 30 MCQ based problems.
- For each correct answer, participants will get 4 marks and participants will lose 2 mark for each wrong answer.
- The participants will have 30 minutes to solve these problems, and the top 16 will be advanced to the Super 16.
- If there is a tie, the ratio of the correct attempts will be considered.

2.2.2. Super 16

- There will be a 4-way matchup to select the top 8, i.e., four students will be called at a time to solve problem on the board.
- Each student will have **five integrations** to solve, and the duration for each problem is **3 minutes.**
- **Marking:** Out of 4 participants, if X solves and Y fails, then solvers get Y points, and the rest lose X points each.
- For example, if 1 participant solves a problem correctly out of 4, the solver will get 3 points, and the rest will lose 1 point each.
- **Tie-Breaker:** The number of correct answers will be considered.

Question Number	Competitor 1	Competitor 2	Competitor 3	Competitor 4
1	P1	P2	P3	P4
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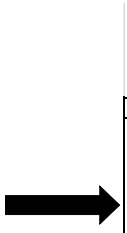


Highest to Lowest point
S1
S2
S3
S4
S5
S6
S7
S8

2.2.3. Quarter Final

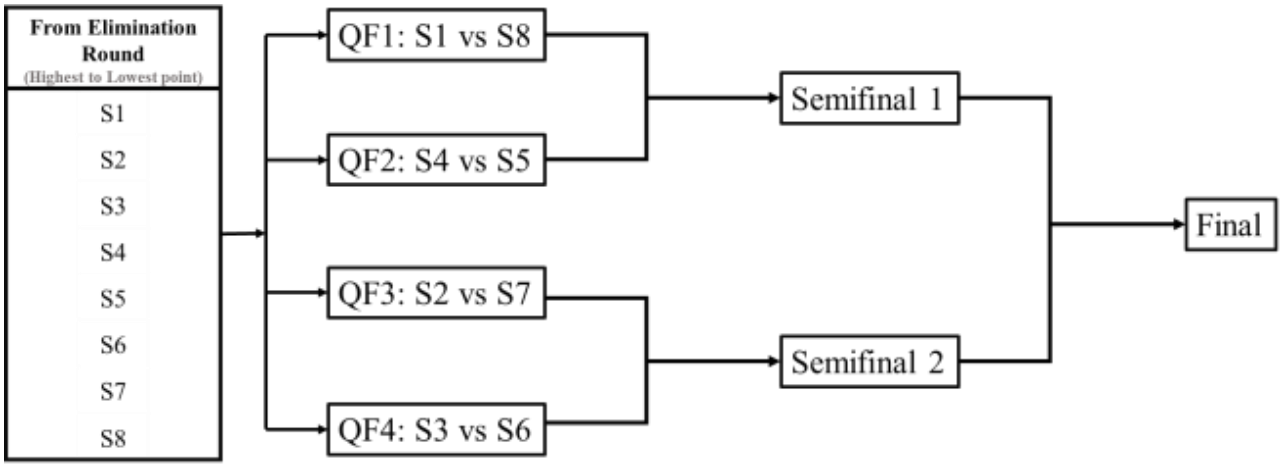
- Knockouts: The quarter finals will be decided based on the position in Super 16.
    - QF1: 1 vs 8
    - QF2: 2 vs 7
    - QF3: 3 vs 6
    - QF4: 4 vs 5
- Each knockout will have 3 problems and time to solve each problem is 3 minutes.
- Tie-Breaker: Additional round will be there and this will repeat until a winner is decided.

2.2.4. Semifinal

- Knockouts
    - SF1: Winner of QF1 vs Winner of QF4
    - SF2: Winner of QF2 vs Winner of QF3
- Each knockout will have 5 problems and time to solve each problem is 4 minutes.
- Tie-Breaker: Additional round will be there and this will repeat until a winner is decided.

2.2.5. Final

- Winner of SF1 vs Winner of SF2
- Each knockout will have 7 problems and time to solve each problem is 5 minutes.
- Tie-Breaker: Additional round will be there and this will repeat until a winner is decided.



2.3. Prize

- Eliminated quarter finalist
- Eliminated semifinalist
- Winner and Runner-up trophy and Prize Money for Winer and Runner-up.

2.4. General Rules

- Calculators, formula sheets or any other gadget are not allowed.
- Participants can leave the answer in terms of large power/binomial coefficient/factorial etc. We will check if the answer is equivalent or not.
- Only the final answer will be evaluated.
- Participants need to circled/boxed the final answer for the judge to evaluate.
- If participant want to change the answer, he/she have to erase or strike out the previous answer.

4. Math Olympics: For Class: VI-X

4.1. Syllabus

- Class wise competition and there will be total 5 groups.
- **Syllabus:**
    - Class VI: NCERT Mathematics Syllabus up to Class -VI
    - Class VII: NCERT Mathematics Syllabus up to Class -VII
    - Class VIII: NCERT Mathematics Syllabus up to Class -VIII
    - Class IX: NCERT Mathematics Syllabus up to Class -IX
    - Class X: NCERT Mathematics Syllabus up to Class -X

4.2. Formats and Rounds

4.2.1. Elimination Round

- The Elimination Round will be a written test consisting of 30 MCQs.
- For each correct answer, participants will get 2 marks and participants will lose 1 mark for each wrong answer.
- The participants will have 30 minutes to solve these integrations, and the top 24 will be advanced to the next round.
- If there is tie in top 24, then number of correct answers will be considered.

4.2.2. Pre-Final Round

- 20 MCQs for 30 mins
- Correct answer: +3 and wrong answer: -1
- Top 8 will be selected for the final round
- If there is tie, then number of correct answers will be considered.

4.2.3. Final

- 10 MCQs for 30 mins
- Correct answer: +4 and wrong answer: -2
- If there is tie, then number of correct answers will be considered.

4.3. Prize

- First, Second and Third position
- Five consolations prize