CHENNAI MATHEMATICAL INSTITUTE
Undergraduate Entrance Examination, 7th May 2023
Time: 3.5 hours

Unless specified otherwise, in this exam all numbers are real and "function" means a function whose codomain as well as domain is the set of all real numbers or an implied subset.

Part A instructions

- **Part A has 10 questions, each worth 4 points, for a total of 40.** Points for part A will be given based only on the answers you enter into the computer.
- **7 out of the 10 questions are objective**, each with a group of four statements. (These statements are numbered 1 to 28 for technical reasons.) For each statement, *independently* choose one of the three options True / False / No Attempt. In particular there is no guarantee that at least one of the four statements in a given question is true. If you do not choose an option for a statement, it will be treated as No Attempt.
- **Grading scheme for the 7 objective questions** is as follows.

All 4 answers correct	4 points
3 correct and 1 No Attempt	2 points
2 correct and 2 No Attempt	1 point
Anything else	0 points

Note that getting even one of the four answers wrong will result in zero points for that question. So if you are not sure, you are advised to choose No Attempt instead of guessing.

- The remaining three questions have two parts each. For each part, enter only the final answer into the computer in the precise format specified in the question. There is no negative marking for these questions.
- **Part A will be used for screening.** Part B is assured to be graded if you meet *any one* of the following two conditions. (i) You score at least 24 in part A. (ii) You are among the top 400 students in part A. Thus part B will be graded for at least 400 students, more if enough students score at least 24 in part A.

Part B instructions

- **Part B has 6 problems worth a total of 80 points.** See each question for the break-up. You are advised to spend at least 2 hours on part B.
- **Clearly explain your entire reasoning**. No credit will be given without correct reasoning. Partial solutions may get partial credit. You may solve a later part of a problem by assuming a previous part, even if you could not do the earlier part.
- **Solve each part B problem on the designated pages** in the answer booklet. Use the blank pages at the end for rough work OR if you need extra space for any problem. Clearly label any such solution overflowing to last pages. For problems with multiple parts, clearly label your solution to each part separately.