QUIZ 1 Grading Scheme:

Q1. Proving points p5-q1 are at least delta distance apart (full marks – 4)

- **2 marks** are awarded for correctly identifying the y-axis dependency.
- **1 mark** is given for mentioning the maximum of 4 points in the square.
- **1 mark** is given for explicitly utilizing the fact that $\delta = \min(\delta L, \delta R)$.

Q2. Describe the elements of set to compute A(x) x B(x) (full marks – 2)

- **0.5 marks** are deducted for errors related to the n-th roots of unity.
- **0.5 marks** are deducted for using an incorrect formula, if any.

Q3a. Cut property and its proof and (full marks – 6)

- **0.5 marks** are deducted for a slightly incorrect definition of a cut (for example, not mentioning that A is a subset of V).
- **1 mark** is deducted for a vague definition of cut
- **1 mark** is deducted if the "Cycle" based proof is given without stating how and why the 's' edge is to be removed.
- **2 marks** are deducted for wrong property
- **4 marks** are deducted for an incorrect proof

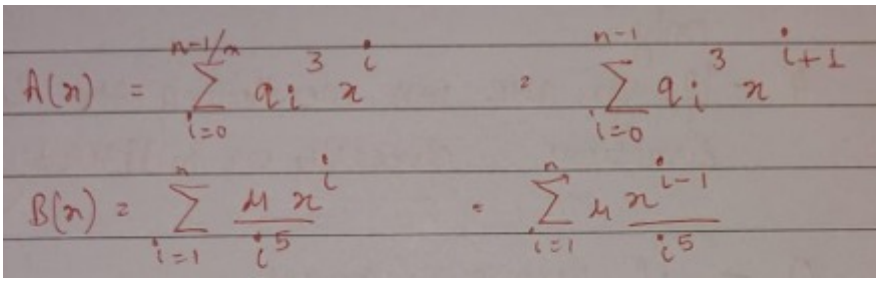
Q3b. Refuting an incorrect statement with an example (full marks – 5)

- **0.5 marks** are deducted for not using distinct edge weight
- **1 mark** is deducted for not mentioning the cycle(violation)
- **5 marks** are deducted for an incorrect example

Q4. Stable Matching (full marks – 6)

- **1 mark** is awarded for incomplete matrices.
- **3 marks** are awarded if only parts (a) and (b) are correct.
- **6 marks** are given for a fully correct solution.

Q5. Describing the coefficient representation for the force exerted on q_i (full marks – 6)



- **1 mark** is deducted if the power of the variable is incorrect.
- **1 mark** is deducted if 'μ' is not included in the expression.
- **0.5 marks** are deducted if the lower limit of the summation is wrong.

Q6a. Stationary Friend (full marks – 5)

- **0 marks** is given if the solution traversed ‘d’ distance in each direction, where 'd' is unknown.
- **3 marks** are awarded if the approach is correct but the solution's time complexity is not O(D).
- **4 marks** are awarded if the solution only considers two directions and not all 4 directions.
- **4 marks** are awarded if the solution fails to consider all four cardinal directions, either by only mentioning two or by not mentioning them at all (directly or indirectly).

Q6b. Mobile Friend (full marks – 11)

- **7 marks** are awarded if the approach is generally correct but is explained unclearly or is incomplete, without a full algorithm and corresponding examples.
- **9 marks** are awarded if the approach is correct and is supported by an algorithm or examples, but either the algorithm or the examples are incomplete.
- **10 marks** are awarded for a nearly perfect response that contains only minor mistakes.