

COMSATS University Islamabad

Attock Campus



Department of Mathematics

Assignment # 02

Class: BSM-IV
Subject: Set Topology
Instructor: Dr. Atiq ur Rehman

Due Date: 25-03-2025 (0830) **Course Code:** MTH251 **Marks:** 25

Question # 1: Define closure of a set. Let *A* and *B* be two subsets of a topological space *X*. Then prove that $\overline{A \cup B} = \overline{A} \cup \overline{B}$.

Question # 2: Define limit point. Prove that if $A \subset B$, then $A' \subset B'$. Also prove that

$$(A \cup B)' = A' \cup B'.$$

Question # 3: Let A be subset of a topological space X. Prove that A is closed iff $A' \subset A$.

Question # 4: Let A be subset of a topological space X. Prove that A' is closed.

Question # 5: If A' is subset of a topological space then prove that $A \cup A'$ is closed.

Question # 6: Define neighborhood of point p. Let N_1 and N_2 be two neighborhoods of point p, then prove that $N_1 \cap N_2$ is also neighborhood of p.

Academic Honesty Requirements:

You are encouraged to work with others in the completion of assignments, but it doesn't include copying. However, in the spirit of Academic Honesty, which includes crediting others for their contribution to your work, please include one of the following statements with every submitted assignment on title page:

- 1. I worked alone on this assignment and write myself.
- 2. I worked with the following: List their full names. Include their relationship to you if they are not also a member of this class and write myself.