COMSATS University Islamabad

Attock Campus

Department of Mathematics

Assignment # 01

Class: BSM-V
Subject: Real Analysis I
Instructor: Dr. Atiq ur Rehman

Due Date: 7-3-2023 (8:30PM)
Course Code: MTH321
Marks: 10

Note: *Please follow the due date & time strictly.*

Write a brief response to the following in no more than four lines.

1. Write three bounded subsets of $\mathbb{Z}$.
2. Write three bounded below subsets of $\mathbb{Z}$, which are not bounded above.
3. Write three bounded above subsets of $\mathbb{Z}$, which are not bounded below.
4. Write three subsets of $\mathbb{Z}$, which are neither bounded above nor bounded below.
5. Write three bounded subsets of $\mathbb{Q}$.
6. Write three bounded below subsets of $\mathbb{Q}$, which are not bounded above.
7. Write three bounded above subsets of $\mathbb{Q}$, which are not bounded below.
8. Write three subsets of $\mathbb{Q}$, which are neither bounded above nor bounded below.
9. Consider $S=\mathbb{Z}$, $E=\{-1,-2,-3,...,-100\}$ and $F=\{1,10,100,...\}$. Write sets of upper and lower bounds of E and F.
10. Consider $S=\mathbb{N}$ and $E=\{50,51,52,...,500\}$. Use definition to prove that 50 is infimum of E.
11. Give an argument stating why the set of integers $\mathbb{Z}$ is not a field.
12. Define continuity axiom.

Academic Honesty Requirements:

You are encouraged to work with others in the completion of assignments, but it doesn't include copying. Academic integrity is an ethical code, whereby the student guarantees that all work submitted is the student's own work. For this purpose, please include the following statement with every submitted assignment on title page:

I worked on this homework myself, and I understand it.