COMSATS Institute of Information Technology
Attock campus

Department of Mathematics

Assignment # 03

Class: MSc-III
Subject: Real Analysis II
Instructor: Dr. Atiq ur Rehman

Due Date: 21-10-2017
Course Code: MTH322
Marks: 08

Give the short answers of the following not more than five lines.

1. Find the pointwise limit of $\{(\sin x)^n\}$ for $x \in \left[0, \frac{\pi}{2}\right]$.
2. Give two examples of sequences, which are bounded but not convergent.
3. Prove that $\lim_{n\to\infty}\left(1+\frac{1}{n}\right)=1$, by definition.
4. If $\sum a_n$ with $a_n > 0$ is convergent, then $\sum a_n^2$ always convergent? Either prove it or give a counter example.

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.
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.