SRM Institute of Science and Technology
Ramapuram Campus.

Department of Mathematics

ASSIGNMENT QUESTIONS

Sub. Code: 18MAB101T — Date: 05.02.2021
Sub. Title: Calculus and Linear Algebra — Max. Marks: 19
Year : I Year B. Tech. (Common to all Branches) — Semester : I

Unit – 5

Part – B (5 × 2 = 10 Marks)
(Solution with Full Explanation is Needed.)

1. Test the convergence of the series $\sum \frac{1}{\sqrt{n+1}}$.

   (A) converges — (B) diverges
   (C) oscillates finitely — (D) oscillates infinitely

2. Test the convergence of the series $\sum \frac{n!}{n^n}$.

   (A) converges — (B) diverges
   (C) oscillates finitely — (D) oscillates infinitely

3. Test the convergence of the series $\sum \frac{n^3}{3^n}$.

   (A) converges — (B) diverges
   (C) oscillates finitely — (D) oscillates infinitely

4. Test the convergence of the series $\sum_{n=1}^{\infty} (-1)^{n-1} \frac{1}{n}$.

   (A) convergent — (B) divergent
   (C) conditionally convergent — (D) absolutely convergent

5. Test the convergence of the series $\sum_{n=1}^{\infty} (-1)^{n-1} \frac{1}{n^2}$.

   (A) convergent — (B) divergent
   (C) conditionally convergent — (D) absolutely convergent

Part – C (3 × 3 = 09 Marks)
(Solution with Full Explanation is Needed.)

1. Show that the series $\sum_{n=1}^{\infty} \sin\left(\frac{1}{n}\right)$ is divergent.

2. Test the convergence of the series $\sum_{n=2}^{\infty} \frac{1}{n \log n}$.

3. Test the convergence of the series $\frac{1}{1.2} - \frac{1}{3.4} + \frac{1}{5.6} - \cdots$.

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