**B.Sc. DEGREE EXAMINATION, APRIL 2017.**

**I YEAR — II SEMESTER**

 **(For Statistics Only)**

 **Allied II — ALLIED MATHEMATICS —II**

**Time : 3 hours Max. Marks : 75**

**SECTION A — (10 × 2 = 20 marks)**

**Answer any *TEN* questions.**

1. Define characteristic function of a set.
2. Define a countable set.
3. Define limit of a sequence of real numbers.
4. When is a sequence of real numbers said to be convergent.
5. State Rolle’s theorem.
6. Write Taylor’s series.
7. Write the value of .
8. Write the value of 
9. Write the value of 
10. Find 
11. Find 
12. Find .

**SECTION B — (5 × 5 = 25 marks)**

**Answer any *FIVE* questions.**

1. Show that the set of all rational numbers is countable.
2. Show that a non decreasing sequence which is not bounded above diverges to infinity.
3. Expand *sin x* as an infinite series.
4. Find .
5. Find 
6. Find 
7. Evaluate

**SECTION C — (3 × 10 = 30 marks)**

**Answer any *THREE* questions.**

1. If then prove that .
2. Show that the series  is divergent.
3. Expand *ex* as an infinite series.
4. Show that .
5. Find 

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