**B.Sc. DEGREE EXAMINATION, APRIL 2016.**

**I YEAR — II SEMESTER**

**Major Paper-IV INTEGRAL CALCULUS AND FOURIER SERIES**

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

**SECTION A — (10 × 2 = 20 marks)**

**Answer any *TEN* questions**

1. Evaluate: 
2. Write the Bernoulli’s formula
3. Express  in terms of 
4. Define the Beta function
5. Evaluate 
6. Evaluate 
7. Can the function be expanded in Fourier series?
8. What are the Fourier coefficients 
9. If what is the value of bn ?
10. Define a half range sine series.
11. If , find the value of a0
12. If find the value of bn ?

**SECTION B — (5 × 5 = 25 marks)**

**Answer any *FIVE* questions**

1. Obtain a reduction formula for 
2. Prove that 
3. Evaluate .
4. Expand as a Fourier series in 
5. Find the cosine series of the function 
6. Evaluate taken over the positive quadrant of the circle 
7. Change the order of integration and hence evaluate 

[P.T.O.]

**SECTION C — (3 × 10 = 30 marks)**

 **Answer any *THREE* questions**

1. If  prove that 
2. Show that 
3. Change the order of integration in , and evaluate it.
4. Find the Fourier series for 
5. Expand  in a Fourier sine series.

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