B.A (Sem –III)

BA305 : ADVANCED CALCULUS (MAJOR)

Pass percentage: 35%
Time allowed : 3hours.

External Evaluation: 70
Internal Evaluation: 30

Course objective: The objective of the course is to help the students acquire skills to understand concepts of limits, continuity and differentiability of a functions of two variables and study the concept of double and triple integration along with applications.

Course learning outcomes: On completion of course , the student will be able to

CO-I: Understand Archimedean and ordered property of real numbers.

CO-II: Understand limits, continuity and differentiability of a functions of two variables.

CO-III: Understand Applications of Euler's theorem on homogeneous functions.

CO-IV: Understand maxima and minima of functions of two or three variables and concept of constrained optimization.

CO-V: Understand Taylor's theorem and Maclaurian theorem with various forms of remainder and their applications

CO-VI: Understand the concept of double and triple integration along with applications.

INSTRUCTIONS FOR THE PAPER-SETTER /EXAMINER

The question paper will consist of three sections A, B and C. Sections A and B will have four questions each from the respective sections of the syllabus and Section C will consist of one compulsory question having eleven short answer type questions covering the entire syllabus uniformly. Each question in Sections A and B will be of 12 marks and Section C will be of 22 marks.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all selecting two questions from each of the Sections A and B and compulsory question of Section C.

SECTION:A

Properties of real numbers: Order property of real numbers ,bounds l.u.b. and g.l.b.,order completeness property of real numbers, Archimedean property of real numbers.
Limit and Continuity of functions of several variables, Differentiability of real valued function of two variables, Partial differentiation, Jacobians and their properties, Schwarz's and Young's theorems, Euler's theorem on homogeneous functions.

SECTION : B

Taylor's theorem for functions of two variables, Maxima and Minima, Langrange's multiplier method for functions of several variables.
Double and Triple integrals, Change of order of integration in double integrals,Change of variables, Applications to evaluation of areas and volume, Centre of gravity and Moments of inertia.

Books Recommended:
1. Malik and Arora: *Mathematical Analysis , New Academic science ,2017.*
2. R.K Jain and S.R.K Iyenger: *Advanced Engineering Mathematics,Narosa Publishing House.*
3. G.B. Thomas & R.L. Finney : *Calculus and Analytic Geometry (Ninth Edition), Pearson Publication.*