

FC 106 : MATHEMATICS II

CREDITS : 4 (L = 4, P = 0)

1. PARTIAL DERIVATIVES :

Partial differentiation, total differentials and its application to errors and approximation, total derivatives, chain rule, Taylor's and Maclaurin's series for functions of two variables, Euler's theorem, maxima and minima, method of Lagrange's multipliers.

2. MULTIPLE INTEGRALS :

Double integral, evaluation, change of order of integration, change to polar coordinates, evaluation of triple integral; Multiple integral in cylindrical and spherical polar coordinates, application to finding area and volume.

3. VECTOR CALCULUS :

Vector and scalar fields, vector differentiation, gradient, divergence, curl. Line, surface and volume integrals; Gauss, Stoke's and Green's theorems (without proof), applications.

4. INTEGRAL FUNCTIONS :

Gamma, Beta and error -functions - definitions, their relationships and properties.

Elliptic integral of first and second kind.

TEXT BOOK :

1. *Grewal B.S.*

Higher Engineering Mathematics

Khanna Publishers

REFERENCE BOOKS :

1. *Wartikar P.N., Wartikar J.N.*
Applied Mathematics Vol. I & II
Pune Vidyarthi Griha Prakashan, 1986

2. *E. Kreyszig*
Advanced Engineering Mathematics
Wiley Eastern Ltd