Subject Code : P8MA9

CC IX - CLASSICAL DYNAMICS

UNIT I

Introductory concepts: The mechanical system - Generalised Coordinates - constraints - virtual work - Energy and momentum.

UNIT II

Lagrange's equation: Derivation and examples - Integrals of the Motion - Small oscillations.

UNIT III

Special Applications of Lagrange's Equations: Rayleigh's dissipation function - impulsive motion - Gyroscopic systems - velocity dependent potentials.

UNIT IV

Hamilton's equations: Hamilton's principle - Hamilton's equations - Other variational principles - phase space.

UNIT V

Hamilton - Jacobi Theory: Hamilton's Principal Function – The Hamilton - Jacobi equation - Separability.

TEXT BOOK(S)

[1] Classical Dynamics, Donald T. Greenwood, PHI Pvt. Ltd., New Delhi-1985.

UNIT – I - Chapter 1: Sections 1.1 to 1.5
UNIT – II - Chapter 2: Sections 2.1 to 2.4
UNIT – III - Chapter 3: Sections 3.1 to 3.4
UNIT – IV - Chapter 4: Sections 4.1 to 4.4
UNIT – V - Chapter 5: Sections 5.1 to 5.3

REFERENCE(S)

[1] H. Goldstein, Classical Mechanics, (2nd Edition), Narosa Publishing House, New Delhi.
[2] Narayan Chandra Rana & Promod Sharad Chandra Joag, Classical Mechanics, Tata McGraw Hill, 1991.