SUBJECT NO-ME21008, SUBJECT NAME- Kinematics of Machines

LTP- 3-0-0,CRD- 3

SYLLABUS :-

Prerequisite - Dynamics

Introduction to mechanisms: kinematic pairs, kinematic diagrams, classification of kinematic chains, kinematic inversions, and equivalent linkages. Kinematic analysis of planar mechanisms: mobility analysis and range of movement, Grashof criterion and inversions, displacement analysis, relative instantaneous centers, Aronhold-Kennedy theorem, velocity and acceleration analysis. Dimensional synthesis of planar mechanisms: three position synthesis for function generation, path generation and rigid body guidance, dead center problems, branch and order defects. Cams: synthesis of translating flat-face, translating roller and oscillating roller follower cams. Gears: fundamental law of gearing, characteristics of involutive action, analysis of gear trains. Spatial kinematic chains and robot kinematics: kinematic analysis of spatial chains, Denavit-Hartenberg parameters, robot kinematics.