

GUJARAT TECHNOLOGICAL UNIVERSITY

Marine Engineering B. E. SEMESTER: VI

Subject Name: **Mechanics of Machines- I**

Subject Code: **161806**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Practical (I)
4	1	0	5	70	30	50

Sr. No	Course Content	Total Hrs.
1.	Drives and Brake: Belt and Rope drives; Open and cross Belt dimensions, ratio of belt tension; Modification for V-groove pulleys; Power of Belt drives and maximum power transmitted. Effect of Centrifugal tension; Creep in Belts; Different types of band brakes and block brakes Dynamometer and their working principles, Absorption Dynamometer Band & rope Brake Dynamometer, Hydraulic Dynamometer	10
2.	Governors: Functions of governor; comparison between a Governor and a fly wheel; Various types of Governors; Centrifugal and inertia types of Governors, Sensitiveness; Stability and Hunting of Governors; Governor effort and power Consideration of friction in governors.	10
3.	Turning Moment of Flywheel: Function of a flywheel, Crank effort diagrams. Fluctuation of speed and energy. Effect of centrifugal tension of flywheel, Inertia torque and its effects on Crank effort diagrams.	06
4.	Kinematic and Link-Mechanisms: Relative motion between bodies moving in different planes. Instantaneous method; Rubbing velocities at pin joints. Graphical construction for relative Velocity and acceleration in different link and sliding mechanisms. Analytical Determination of velocity and acceleration. Forces in Crank and connecting rods. Inertia force on a link connecting rods etc. Effect of friction.	10

5.	Cams: Types of cams and followers, Specified motion of followers. Uniform acceleration & deceleration, S.H.M. and uniform velocity Graphical construction of cam-profile.	06
6.	Analytical design procedure for cams with straight flank, Curved flank, Circular flank with various types of followers Spring force and Reaction Torque. In-line cams and off center cams.	06
7.	Spur Gearing: Various definition e.g. p.c.d., module, path of contact, velocity of sliding, Interference, Gear ratio and center distance of simple and compound gear trains.	06

Reference Books:

1. Theory of Machines by S.S Ratan, Tata McGraw Hill Pub Co
2. Theory of Machines And Mechanisms by J.E.Shigley, Tata Mcgraw Hill
3. Theory of Machines by R.S. Khurmi, S. chand Co Pub.
4. Theory of Machines by V.P.Singh, Dhanpatrai Pub., Delhi
5. Theory of Machines & Mechanisms by P.L.Ballaney , Khanna Publishers, Delhi
6. Practical Boat Machanics by Ben L everidge, McGraw Hill.