

Revised for 2nd Year III Semester batch admitted in 2017-18 only

3ME3-04: ENGINEERING MECHANICS		
Credit: 2	Max. Marks: 100 (IA:20, ETE:80)	
2L+0T+0P	End Term Exam: 2 Hours	
SN	Contents	Hours
1	<p>Statics of particles and rigid bodies: Fundamental laws of mechanics, Principle of transmissibility, System of forces, Resultant force, Resolution of force, Moment and Couples, Varignon's theorem, Resolution of a force into a force and a couple, Free body diagram, Equilibrium, Conditions for equilibrium, Lami's theorem.</p> <p>Plane trusses: Types of structures, Trusses, Support Conditions, Types of Loadings, Classification of trusses, Determinacy of trusses, Basic assumptions of truss analysis, Method of joints, Method of sections.</p> <p>Virtual work: Principle of Virtual Work, Active forces and active force diagram, Stability of equilibrium.</p>	5
2	<p>Centroid & Moment of inertia: Location of centroid and center of gravity, Moment of inertia, Parallel axis and perpendicular axis theorem, Radius of gyration, M.I of composite section, Polar moment of inertia, M.I of solid bodies.</p> <p>Lifting machines: Mechanical advantage, Velocity Ratio, Efficiency of machine, Ideal machine, Ideal effort and ideal load, Reversibility of machine, Law of machine, Lifting machines; System of pulleys, Simple wheel and axle, Wheel and differential axle, Weston's differential pulley block, Worm and worm wheel, Single purchase winch crab, Double purchase winch crab, Screw jack, Differential screw jack.</p>	5
3	<p>Friction: Types of Friction, Laws of friction, Angle of friction, Angle of repose, Ladder, Wedge, Belt Friction.</p> <p>Belt and Rope drive: Types of belts, Types of belt drives, Velocity ratio, Effect of slip on Velocity ratio, Crowing of pulleys, Length of belt, Ratio of tensions in flat belt drive, Power transmission by belt drives, Advantage and disadvantages of V-Belt over Flat Belt.</p>	5
4	<p>Kinematics: Fundamentals of rectilinear motion and curvilinear motion, applications of general equations, Projectiles motion on plane and on inclined plane, Concept of Relative motion.</p> <p>Dynamics: Principles of Dynamics, D'Alembert's principle, conservation of momentum and energy, Work and Energy and impulse momentum methods, central impact, oblique impact, system of variable mass.</p>	6
5	<p>Vibrations: Introduction to vibrations, Free vibrations of particles, Simple, compound and torsional pendulum, Energy Method.</p>	5
TOTAL		26

Syllabus of 2nd year B. Tech. (ME) for students admitted in 2017-18 onwards