PaperCode: ICT105	Paper: Enl!ineerim! Mechanics	L	TIP	C
PaperID: 164105		3	-	3

Marking Scheme:

1. Teachers Continuous Evaluation: 25 marks
2. Term end Theorv Examinations: 75 marks

Instruction for pacer setter:

1. There should be 9 questions in the term end examinations question paper.
2. The first (1") question should be compulsory and cover the entire syllabus.This question should be objective, single line answers or short answer type question of total 15 marks.
3. Apart from question 1 which is compulsory, rest of the paper shall consist of 4 units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain upto 5 sub-parts / sub-questions. Each Unit shall have a marks weightage of 15.
4. The questions are to be framed keeping in view the learning outcomes of the course / paper. The standard / level of the questions to be asked should be at the level of the prescribed textbook.
5. The requirement of (scientific) calculators / log-tables / data - tables may be specified if required.

Course Obiectives:

1:	To impart knowledge to solve problems pertaining to force systems, equilibrium and distributed svstems.
2:	To impart knowledQe to solve Problems of friction and enQineerinQ trusses.
3:	To impart knowledQe to deal with the problems of kinematics and kinetics of oarticle
4:	To impart knowledQe to deal with the problems of kinematics and kinetics of riQid bodies.

Course Outcomes *(COI:*

C01:	Ability to solve oroblems PertaininQ to force systems, equilibrium and distributed systems.
CO2:	Ability to solve problems of friction and engineering trusses.
C03:	Ability to deal with the problems of kinematics and kinetics of oarticle
C04:	Ability to deal with the Problems of kinematics and kinetics of riQid bodies.

Course Outcomes *(CO)* to Proszramme Outcomes PO) Mancini! (scale 1: low, 2: Medium, 3: Hi h)

CO/P 0	POD 1	POD2	POD 3	POD 4	POD 5	POD 6	POD 7	POD 8	POD 9	PO1 D		PO1 1	1 2
COt	3	3	3	3	2		-	-	1	1		1	2
CO2	3	3	3	3	2		-	-	1	1		1	2
CO3	3	3	3	3	2		-		1	1		1	2
CO4	3	3	3	3	2	-			1	1		1	2

Unit I

Force System: Introduction, force, principle of transmissibility of force, resultant of a force system, resolution of a force, moment of force about a line, Varigon's theorem, couple, resolution of force into force and a couple, properties of couple and their application to engineering problems.

Equilibrium: Force body diagram, equations of equilibrium and their applications to engineering problems, equilibrium of two force and three force members.

Distributed Forces: Determination of center of gravity, center of mass and centroid by direct integration and by the method of composite bodies, mass moment of inertia and area moment of inertia by direct integration and composite bodies method, radius of gyration, parallel axis theorem, polar moment of inertial. [10Hrs]

Unit II

Structure: Plane truss, perfect and imperfect truss, assumption in the truss analysis, analysis of perfect plane trusses by the method of joints, method of section and graphical method.

Friction: Static and Kinetic friction, laws of dry friction, co-efficient of friction, angle of friction, angle of repose, cone of friction, frictional lock, friction in flat pivot and collar bearing, friction in flat belts. [1OHrs]

Unit III

Kinematics of Particles: Rectilinear motion, plane curvilinear motion, rectangular coordinates, normal and tangential coordinates.

Kinetics of Particles: Equation of motion, rectilinear motion and curvilinear motion, work-energy equation, conservation of energy, concept of impulse and momentum, conservation of momentum, impact of bodies, co-efficient of restitution, loss of energy during impact. [1OHrs]

Unit IV

Kinematics of Rigid Bodies: Concept of rigid body, types of rigid body motion, absolut iori, intr. oduction to relative velocity, relative acceleration (Coriolis component excluded) and instantane n velocity, Velocity and acceleration.

Kinetics of Rigid Bodies: Equation of motion, translatory motion and fixed axis rotation, application of work energy principles to rigid bodies conservation of energy.

Beam: Introduction, types of loading, methods for the reactions of a beam, space diagram, types of end supports, beams subjected to couple. [10Hrs]

Textbooks:

1.Engineering Mechanics by A.K.Tayal, Umesh Publications.

References:

1. *'Engineering Mechanics· by K. L. Kumar, Tata Mc-Graw Hill*
2. *'Engineering Mechanics' by S. Timoshenko, D. H. Young, J. V. Rao, Tata Mc-Graw Hill*
3. *'Engineering Mechanics-Statics and Dynamics'by lrwing H. Shames, PHI.*
4. *'Engineering Mechanics· by Basudev Bhattacharya, Oxford Higher Education.*